MARTIN TRACKPOD

1.0β

Getting Started

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Martin Professional A/S
Olof Palme Allé 18
8200 Aarhus, Denmark
www.martin.dk

APR inc.
Suite 200, 8526-109 St.
Edmonton, Alberta
T6G 1E5 Canada

Contents

General warnings

1. The TrackPod is not for domestic use.
2. Use the device only as described in this manual.
3. Do not expose it to rain or moisture.
4. The TrackPod controller does not have an ON/OFF switch. It turns ON automatically when it is connected to the mains. Therefore, before connecting, please make sure to switch the TrackPod controller's power to 115 or 230V according to your needs.
5. Make sure the device is properly grounded.
6. Immediately repair or replace damaged power cords.
7. There are no user-serviceable parts inside; refer all service to a qualified technician.

Laser information

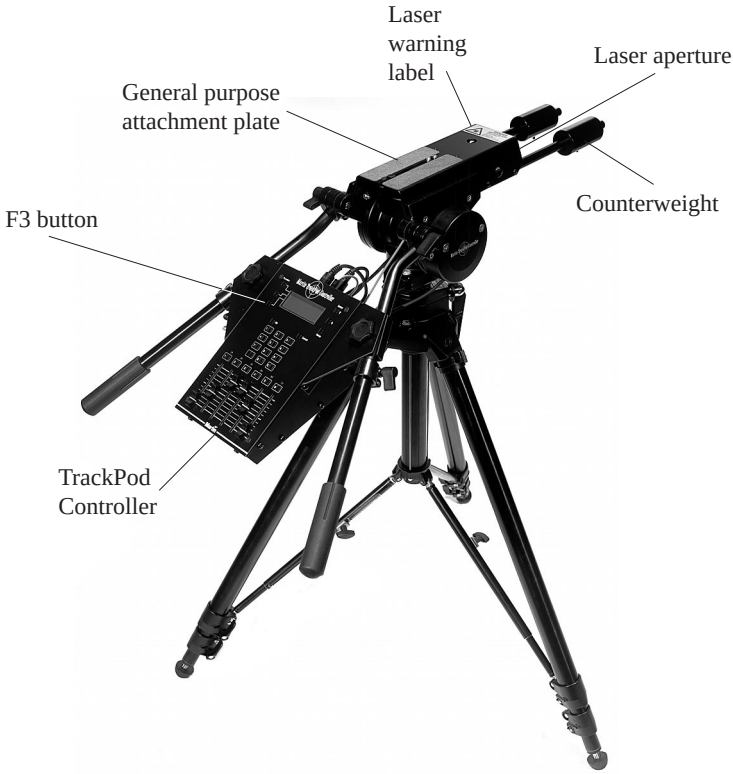
The TrackPod contains a class 3A laser calibrator with a 5mW maximum power output. It is located below and protruding from the TrackPod's general-purpose attachment plate, between the two counterweights and within a grounded enclosure (see diagram in the next page). The only aperture through which laser light is emitted is directly in the centre of the grounded enclosure, with the beam being colinear with the attachment plate.

The laser produces an intense, highly directional beam of light. It is needed only briefly during the TrackPod calibration procedures and cannot be turned on during normal operation. The TrackPod's laser will only turn ON when all the following conditions are met:

1. The TrackPod is powered on.
2. The laser is connected to the TrackPod controller.
3. The TrackPod is connected to the control PC.
4. The TrackPod software is running in the control PC.
5. The TrackPod is in the automatic calibration mode. *Tip: you may block access to this mode to prevent unauthorized operators from calibrating the instrument. Set the appropriate access priviledges in the preferences screen of the TrackPod software.*
6. The laser aperture is not blocked by a lid or cap.
7. The F3 button in the TrackPod controller is pressed. Releasing the F3 button stops laser emission.

Laser safety

1. DO NOT STARE INTO THE BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS. Extended direct exposure can result in damage to the eyes.
2. The laser should never be used while other people are walking around the stage, unless they are wearing protective goggles.
3. Avoid pointing the laser at mirrors or reflective surfaces.
4. Only qualified and trained employees approved by a laser safety officer should be assigned to install, adjust and calibrate the TrackPod.
5. When not in use, the TrackPod should be stored safely out of reach of unauthorized personnel.
6. Do not remove the warning label on the TrackPod's general purpose attachment plate.
7. Consult local and state laws regarding laser use and possible registration requirements.
8. Do not open the laser enclosure under any circumstances.



Welcome!

Thank you for purchasing the Martin TrackPod! The TrackPod is the World's most sophisticated automated followspot tracking system. This booklet contains introductory information on how to set up and use your system. For in-depth discussion, examples and reference please check the TrackPods's built-in online help system.

To get the most out of the TrackPod, like with any other sophisticated controller, the lighting designer or technician will need to familiarise him or herself with the system. While you may want to receive training from your Martin dealer in order to learn the TrackPod quickly, the TrackPod online help system contains all the information that you need to tackle even the most ambitious show control projects.

The following instructions will detail only one way of performing the set up of the system. Every task may be performed in a variety of ways and you are encouraged to read the online help for alternatives.

What's included with the TrackPod package?

1 CD-ROM with software and online manuals
1 Getting Started booklet
1 TrackPod ISA card with TrackPod and DMX connectors
1 TrackPod controller with switchable power supply
1 sensor head with laser calibrator
4 Targets for calibration
All necessary cables
1 Tripod
1 Flight case

What's NOT included with the TrackPod package?

A PC compatible computer
DMX cables
MIDI card, connectors or cables
A sighting device such as a video camera, telrad or scope (necessary only for large stages or high-precision jobs).

Software installation

The TrackPod software is supplied in a CD-ROM. Insert the CD-ROM and double-click on the “Setup” icon. This will run a wizard that will help you install the software.

You may also download the most recent software from the Martin website www.martin.dk. This may be useful if you do not have a CD-ROM reader in your TrackPod PC as you may download the software in a zipped format that can fit into a few 3.5” diskettes.

You may use the software without installing the TrackPod ISA card. For example, you may design maps in a portable computer and use these later in the TrackPod PC.

The minimum PC requirements to run the software are:

Operating System:	Windows 95 or 98
Processor:	Pentium 233
RAM:	32 MB RAM
Hard disk:	10 MB disk space
Display:	800 x 600 pixels, 16-bit (high colour)
Mouse:	2-button mouse
Expansion Slot:	one 8-bit ISA slot.

TrackPod card installation

The TrackPod card is an 8-bit ISA card that needs to be inserted into your TrackPod PC. Make sure the PC is turned off and its power cord is unplugged from the wall. Remove the PC chassis cover as discussed in your PC owner’s manual. Locate an ISA bus card slot and insert the TrackPod card in it, making sure that the card is nestled all the way into the slot. Secure the card by screwing the card’s bracket to the computer chassis.

Please note: the TrackPod card is very sensitive to electrostatic charges. When it is not in the PC, keep the card in the anti-static bag provided.

The TrackPod card is a memory mapped I/O device with a default memory setting of $D0000. To verify that this memory is free in your PC do the following:

Right-click on “My Computer” icon
On the pop-up menu that appears, select “Properties”
Select the “Device Manager” tab
Click on the “Properties” button
Click on the “Memory” radio button

This will open a window that details the memory assignments for the installed hardware. The default address of the TrackPod ISA card is $D0000 - D0FFF. If this is not free, check which memory space is available and use the card’s dip switches to set that address. Since the TrackPod card is based on Martin’s 4064 card you can obtain detailed instructions on setting the address at http://www.martin.dk/service/manuals/4064inst.pdf

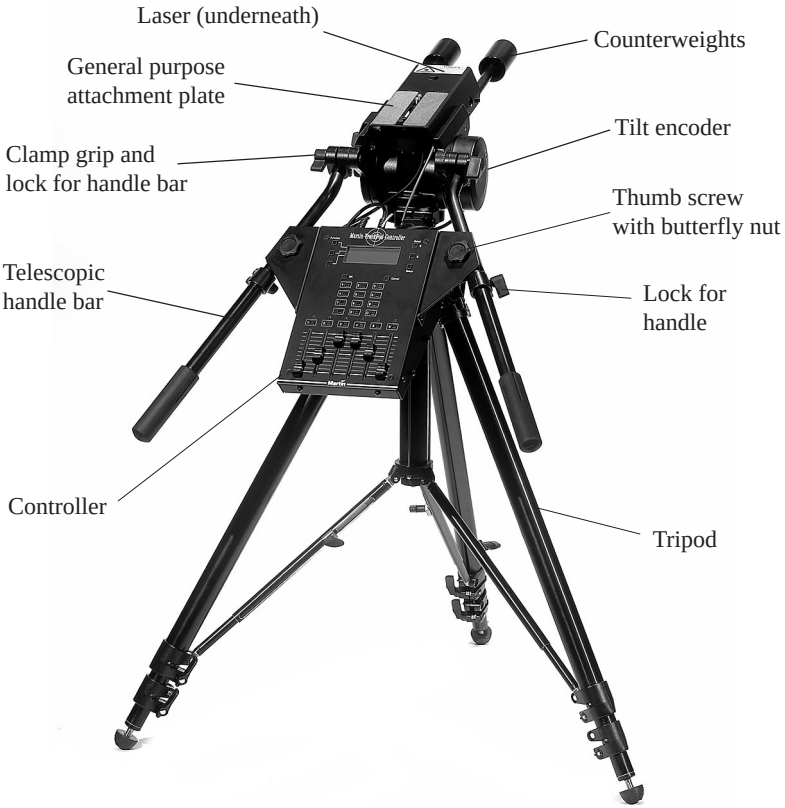
Please note that in the great majority of cases the default address is fine. If you are aware that other hardware in the PC is using the TrackPod default address, or if you are experiencing unexpected system crashes, then perform this procedure.

Tip: Shadowing should be disabled for the TrackPod card’s memory address. This is done by visiting your PC’s BIOS, typically under the heading “BIOS Features Setup”.

TrackPod assembly

Unfold the tripod and set it to a comfortable height. Screw the TrackPod head on the tripod until it is fully inserted in the thread. Make sure to lock the head using the pan lock knob; the idea is that the pan movement will take place at the pan encoder not the tripod thread. Attach the handle bars by inserting them in the clamp grips on the sides of the TrackPod head plate. The grips for the handle bars are saw-toothed so that you may choose an appropriate angle between the TrackPod attachment plate and the handles. Since TrackPods are located above the stage, the operator will be pointing it down most of the time and therefore a sharp angle of 90-120 degrees is preferred. Lock the handles in place, making sure that the handles protrude from the head at an angle of about 30 degrees between them, as shown in the picture below.

Place the controller on the handle bars so that the two handle bars are *outside* the thumb screws, i.e. the handle bars should NOT go between the screws and the controller box. You will have to find the right height at which this is possible and perhaps even adjust the angle at which the handles diverge. Secure the controller in place by using the thumb



screw, the bracket holder and the butterfly nut. Extend the handle bars to a comfortable length and lock them in place.

Mount and lock the counterweights underneath the front end of the attachment plate, beside the laser. Slide the weights along the bars until the TrackPod is balanced.

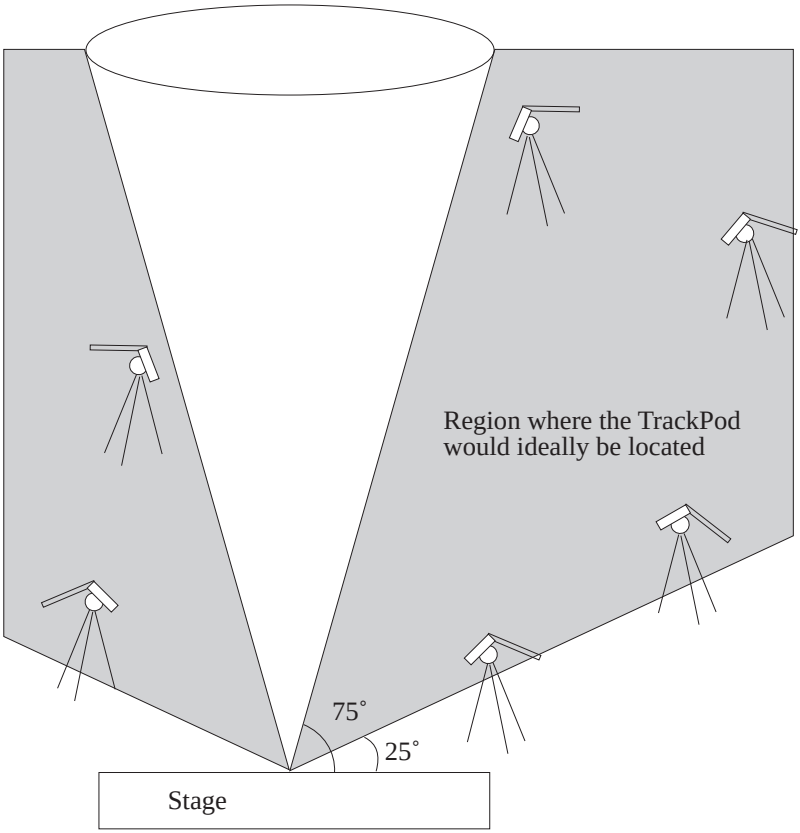
TrackPod connections

The back of the controller box has several connectors. The laser and the pan and tilt encoders come with attached cables which must be plugged into the appropriate connectors. The male XLR “IN” connector is used to hook the TrackPod up to the TrackPod card in the PC. This is done with the supplied serial cable (which is the same as DMX cables, using pins 1 and 2). The female XLR “OUT” connector is used to connect up to six additional TrackPods in series.

TrackPod placement

The TrackPod may be placed anywhere around the venue, preferably close to the stage. It should be elevated between 25 and 75 degrees from the stage floor and have a good visibility of the area to be tracked. The key issue is to maximize the amount of pan and tilt movement that needs to be done to cover the area to be tracked. At the same time, the operator must be able to have perspective: a location exactly over the stage would not be suitable because the operator would not be able to gage the height at which the followspots should be directed.

There is quite a bit more flexibility in positioning TrackPods than, for example, conventional followspots. It is perfectly possible to have the TrackPod operator be on a side truss and have most automated followspots shining from the proscenium. It is likewise possible (and desirable!) to have a TrackPod aim frontally but controlling several side



and back followspots on the performer. In short, the TrackPod does not need to be placed colinear with the fixtures that it is controlling. This means that if you have several TrackPods in a show they can all be placed close to each other in some ideal convenient location, even if they are each controlling fixtures that aim from different sides.

The distance and angle to the stage depends on the venue. If you would like to track a stadium the TrackPod should not be located on the playing field but rather on a centrally located, elevated bleacher (or VIP box!). On the other hand, if you are tracking a small stage you may place the TrackPod on a short platform or riser on the stage. One important rule: never place the TrackPod at a height that is similar to the target height of your performers.

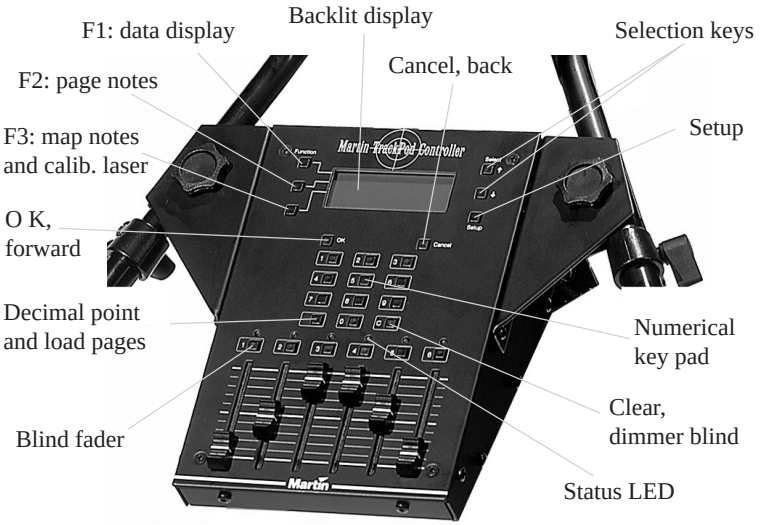
The TrackPod connects to the PC ISA card via standard 3-pin cable used for DMX. The PC is usually placed right next to the main lighting board so it is easy to see and override what the TrackPods are doing.

Tip: it is possible to place a TrackPod head on a threaded mount on a truss. This is useful when there is little space for the tripod. It is worth noting also that the head's panning plane does not need to be horizontal nor the tilt plane vertical. The automatic calibration of the TrackPod corrects for such situations.

TrackPod controller

The TrackPod controller allows an operator to perform a very wide variety of functions. It's faders can be programmed to control any DMX channel for individual or groups of fixtures, thus allowing manual selection of traditional followspot parameters (e.g. dimmer, iris, or colour) or of new intelligent lighting parameters (e.g. prism, rotating gobos or automated framing). The controller allows the operator to load and browse maps, to bump pages of fader assignments, to see detailed tracking data, to temporarily blind the pan and tilt functionality and more. The controller is also used to calibrate the TrackPod and may be used to calibrate the fixtures. Of course, all or some of the features may be disabled so that the central lighting board retains full control and override capability.

The setup button in the TrackPod controller is available at all times (even when the TrackPod software is not running on the PC). The setup allows you to change the brightness and contrast of the controller display, to test the faders and buttons and to directly read the pan and tilt encoder values to make sure they are working properly. You may lock



the TrackPod head in which case all the functions will be blocked until you enter the security code, which is the number 1209.

Before you begin

The TrackPod can be powered by either 115 or 230V. Please ensure that the switch on the back of the controller is set to the appropriate voltage before connecting it to the mains. Also, make sure that the power is properly grounded. When you power the TrackPod a welcome message appears on the display followed by a screen that reports the “TrackPod number”. The TrackPod number is a unique address that each TrackPod must have in order to be recognized properly by the computer. Since a single PC can be hooked up to seven TrackPods in series you can choose a number from 1 to 7. To do this, press the setup key and choose the second option: “TrackPod#”. Ensure that each TrackPod that is connected to the same card has a unique number.

Once the TrackPod(s) are connected to the PC, launch the TrackPod software. At start-up the software will automatically detect all the TrackPods that are available. Go to the stage set-up screen. At the bottom, you will see a field where you can enter the “Head ID number” for each TrackPod. This number is clearly printed on the pan encoder of the head. The Head ID number is different for every TrackPod as it

contains essential factory settings specific to the hardware. Fortunately, you only have to enter this information once for a specific configuration.

Tip: write the head ID number somewhere safe in case the label fades or is removed from the head.

TrackPod calibration

The software must know the precise 3D location and orientation of each TrackPod with respect to the centre of the stage: this is called "calibrating the TrackPod". There are two ways of performing the calibration: automatic and manual.

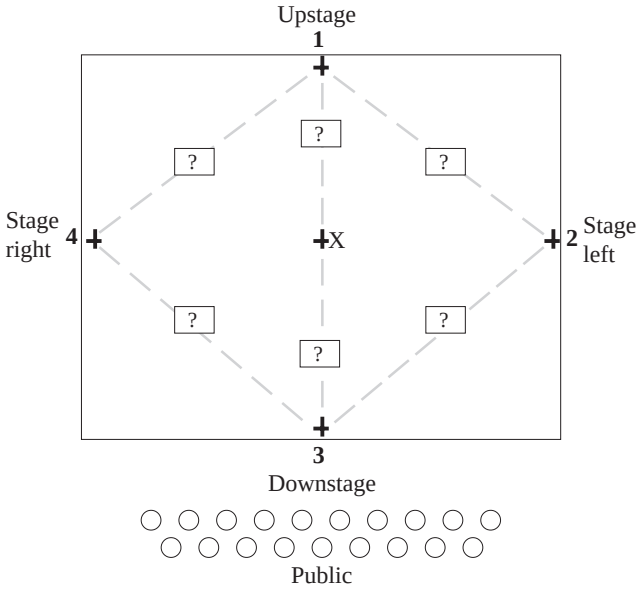
Automatic calibration

Automatic calibration is the most common method for setting up the tracking system. This method entails measuring the distances between five gaffer-tape stage-marks and then pointing the TrackPod to correlate those distances to actual TrackPod readings.

Mark the centre of your stage with some gaffer tape. This will be the central reference point for the tracking system, also called the origin. Make four other markings: the centre-edge of your stage downstage (close to the public), the centre-edge of your stage upstage (far from the public) and the centre-edge of the stage's right and left wings, as you stand on the stage facing the public.

Tip: even if your public surrounds the stage or if you do not have a specific place for the public, you must choose some points that will define your interactive area and its orientation. These points will serve as a reference when you are using the TrackPod software to define regions of your stage. For convenience, if there is no clear stage orientation, set the "downstage" of the stage to be the side that is closest to the TrackPod computer so that the orientation of the space matches the orientation presented in the software's map editor.

Make sure that:
1. The marks are as far apart from each other as possible in the stage.
2. That marks 1 and 3 form a straight line with the centre mark, —this will be the orientation of the stage on the TrackPod software. Conversely marks 2 and 4 do not need to be in a straight line.
3. That all marks are within range of the TrackPod target.



4. That all marks are at the same height (you may also have the marks on an inclined plane, but then the plane becomes your stage floor and your height references will be perpendicular to the plane, which is not very convenient).
5. That the marks are not moved during calibration.

Measure the distances between the stage marks as shown in the diagram above, six in total. The measurements have to be in centimetres if metric units are chosen in the preferences and in inches if Imperial units are chosen. Place laser reflectors on the stage marks 1 to 4; this is not essential but it will help you see the laser if you are calibrating in broad daylight.

The next procedure will require the use of the laser calibrator. Make sure to read the "warnings" section of this manual (pages 4-5) before attempting this step. Please note that failure to read and understand the warnings may result in hazardous radiation exposure.

Starting on the TrackPod launch pad —the first screen that appears on the TrackPod display when it is connected to the PC— do the following:

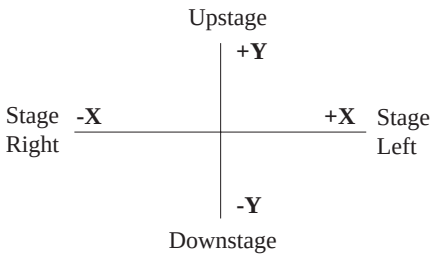
- Press number 2 to select the option "Calibration".
- Press 1 "Auto TrackPod"
- Press 1 if you have already entered the TrackPod's Head ID Number

- Press 2 to enter new “Calibration Point distances”
- A screen appears with six distances that must be entered in centimetres, or inches if those are the units chosen in the preferences. The distances correspond to stage mark 1 (upstage) to X (centre stage), 1 to 4, 1 to 2, 3 to 4, 2 to 4 and X to 4. To navigate the number fields press the selection arrows that are on the right of the controller display. When you have filled in all the values press OK to continue.
- Enter a height for the stage marks, if any, and press OK.
- To point at calibration point number 1, press and hold the F3 “Laser” key to start the laser. When the laser hits the stage mark, release the F3 key: this will turn off the laser, record the stage mark position and advance to the next screen.
- Repeat the above procedure to point at calibration points 2, 3 and 4. If you make a mistake you can always press the “cancel” button to go back one screen and repeat the step.
- After recording the last calibration point a screen will tell you if the calibration was successful and show the 3D coordinates and orientation of the TrackPod.
- Press any key to go back to the Launch Pad... you are done!

Tip: all TrackPods connected to a PC should be calibrated using the same stagemarks. To facilitate this, you only need to enter the distances between the stagemarks once and simply choose the “use existing” option to recall them in subsequent calibrations.

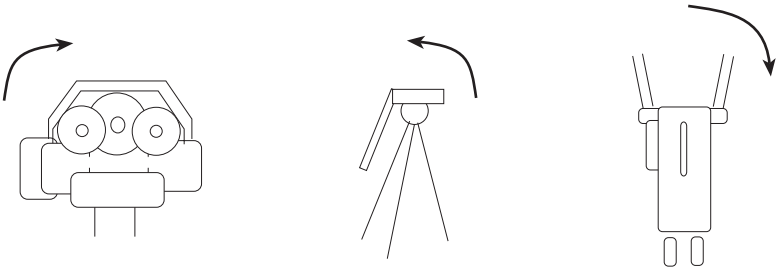
Manual calibration

Manual calibration should be used only if for some reason automatic calibration is not possible, for instance, if it is impossible to use the laser due to stage obstructions. To use this method you must measure the exact position in centimetres (or inches) of each TrackPod relative to the origin, which is the centre stage mark.



By convention:
- At the origin the X, Y and Z are zero.
- X is the stage width, with positive values towards stage left and negative values towards stage right.
- Y is the stage depth, with positive values towards upstage and negative values towards downstage.
- Z is the stage height, with positive values above the stage floor.

The following diagram shows the conventions for TrackPod orientation. Positions shown correspond to a zero value and the arrows indicate the direction of positive movement:



Rotation Tilt Pan

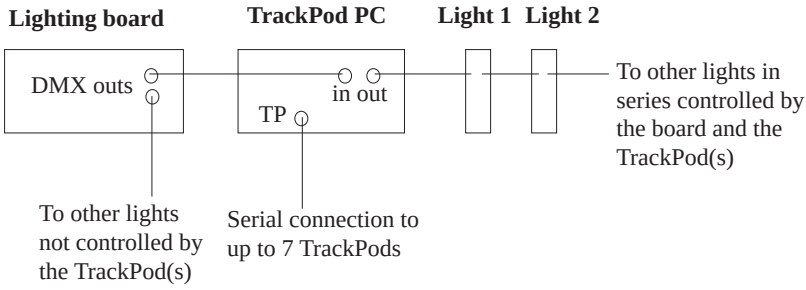
To enter manual calibration data, press option 2 “Manual TrackPod” in the calibration menu, or you may also enter the data on the PC software in the “manual calibration” tab in the stage set-up screen.

After TrackPod calibration

Once you have calibrated the TrackPod the software will automatically create an “interactive area” of a certain width and length (slightly larger than the area described by the stage marks). This is the area where tracking will take place. In the stage set-up screen of the software, you may enter a custom size and position offset for the interactive area. Once TrackPods have been calibrated they appear on the Map Editor and real time screen. It is very important that the TrackPods not be moved from their exact 3D position or orientation once they are calibrated. If they are moved, even slightly, it will be necessary to recalibrate them (but you can use the same stage marks and measurements if they have not changed since the last calibration).

How to connect the TrackPod to DMX consoles and fixtures

The TrackPod can work as a stand-alone control system or in tandem with DMX consoles, software controllers, MIDI instruments, and so on. The TrackPod card features two 5-pin DMX connectors, one for IN and one for OUT. Normally the TrackPod card is between the main lighting console and the fixtures.



This is the most common configuration for the system: the TrackPod intercepts DMX data coming from a console and replaces predetermined DMX channels with data generated by the TrackPod. For example, the TrackPod may take control of pan and tilt channels while letting all the other channels be controlled by the console. In addition, through DMX, the console may load and unload TrackPod maps to change the behaviour of the tracking system, or to override it. This is ideal for performance situations in which the lighting designer wants to integrate the TrackPod system into a sophisticated light show, with the DMX console directing all show control.

Once your lights have been securely fixed in their final positions, your DMX chain has been set up, and the fixtures have all been addressed and powered-up, you are ready to define and calibrate all your lights.

Tip: if you want your lighting board to control fixtures by sending them DMX through the TrackPod, you will need to define those fixtures in your console in the same way that if you did not have the TrackPod in between.

Basic light definition

The TrackPod supports up to 128 DMX fixtures or devices, using up to 512 DMX channels. You may add more DMX channels by adding additional TrackPod cards. The system needs to know specific information about the lights that you will be controlling. To enter the light model, addressing mode, base channel, and 3D position, choose “Lighting Set-up” from the “Go to” menu.

To define a light, first click on one of the 128 boxes in the “Available Lights” zone. You can associate any of these boxes to any light, but it is advisable, for reference’s sake, to choose adjacent boxes for lights that are close together on a truss, that have contiguous DMX base channel assignments, or that are the same fixture model. Once you click on a box to select it, you may use the controls in the upper right corner to select a light model, base channel and addressing mode. If you have several TrackPod cards you must also choose an appropriate DMX link. Upon defining a fixture, it will appear in the DMX Map bar under the 128 light boxes.

Tip: you may right click boxes to define several boxes at the same time.

Groups

You can define up to 16 groups of fixtures in order to be able to call up several of them at the same time during programming and playback. To define a group right click on same-model fixtures and then right click on an empty group box. To clear a group right click on the group box without any fixtures selected.

Followspot calibration

If the light that you are defining will be used as an automated followspot, you need to do a followspot calibration. The TrackPod needs to know the exact position and orientation of the light that you want to convert into a followspot. You may enter this information manually, but this can be a tedious procedure, particularly if your fixture is difficult to reach or if you have several fixtures to measure. Consequently, an automatic calibration routine has been implemented for your convenience.

Automatic followspot calibration

The automatic calibration method involves pointing the lights to four points on the stage floor, called followspot calibration points, and then measuring those points with the tracking system. The procedure can be performed directly from the TrackPod controller by following the instructions in the “auto fixture” section of the “calibration” menu. However, we recommend that you read the software procedure below to familiarize yourself with how it is done.

In the bottom of the lighting set-up screen find a “Followspot Calibration” zone with four tabs. Step 1 is normally done only once, while steps 2, 3 and 4 should be done for each fixture that you want calibrated.

Step 1

You have two options to define the four followspot calibration points:

i) Use the four stagemarks previously measured for an automatic TrackPod calibration in the stage set-up. If you use these marks remember the numbering that they had. *Tip: the option will be greyed-out until you perform an automatic TrackPod calibration.*

ii) Define new followspot calibration points. Mark the vertices of a large square or rectangle with some gaffer tape on the stage floor. Make sure the four markings have a clear line of sight to the TrackPod and to the fixtures that you will calibrate. Number the vertices as followspot calibration points 1, 2, 3 and 4. The numbering does not have to have any particular order so long as you remember which marking corresponds to which number. It is preferable that this square or rectangle have roughly 90 degree angles and that it be as large as possible within the tracking area. Now you must tell the system where the new points are and, while you can enter their location manually, it is easier to “detect” them with a calibrated TrackPod: Press button number 1 to evoke a tracking screen. Press the “track” button, point the TrackPod at followspot calibration point 1 and press “Save”. Repeat this procedure for calibration points 2, 3 and 4.

Step 2

Select the fixture that you want to calibrate from the 128 boxes and point it to the four calibration points. Again, you have two options:

i) Use the TrackPod software controls. By pressing on these buttons the TrackPod's graphical pan/tilt controller will let you point the light to the corresponding calibration point.

ii) Use your DMX board and capture its data. If you have a DMX console connected to the TrackPod you may find it easier to point the light at the calibration points by using the console's trackball, touchpad, tablet, joystick or sliders rather than using the TrackPod software. Once pointed, simply capture the appropriate pan and tilt data by pressing the capture buttons.

Please note that it is very important that the light beam be positioned exactly over the calibration point. This is particularly difficult for wash fixtures as their beam is very wide and diffuse. The centre of the beam must coincide exactly with the followspot calibration points.

Step 3

Press the "Calculate" button to let the TrackPod calculate the three-dimensional position and orientation of the light.

Tip: occasionally the four followspot calibration points chosen happen to have a geometric relationship to the fixture that produces two solutions and the software may choose the wrong one. If this does happen for a specific fixture, you can tell immediately because the light will not match the points when you press the "verify" buttons. If this happens, make sure that you pointed the light to the correct calibration point numbers. If the problem persists, repeat the calibration for that fixture only using four different calibration points; even a small displacement of one or two of the points may suffice.

Step 4 (optional)

This optional step allows you to select a predetermined position for the followspot, which will be asserted when you start tracking. This is useful, for example, to avoid moving heads doing a large swing from their zero position to the target position, when the tracker is first found.

You are done! If you would like to see the values that the TrackPod calculated for the position and orientation of the light press the "3D info" button.

Manual calibration

If for some reason automatic calibration of followspot fixtures is not possible, you may directly enter the data for each fixture by physically measuring its position and orientation in relation to the centre of your stage. This information can be entered in the screen that appears when you press the “3D info” button. Please see the online help file for a discussion of conventions used for measuring fixture’s position and orientation.

Tip: manual entry is not necessarily more accurate than automatic calibration. Therefore, the only times that you might use the manual method are: a) if you already know the position and orientation of the fixture (e.g. reading it from a previous configuration file), b) if you can’t power up your fixtures but still need to set-up, and c) if you must calibrate in bright sunlight and you cannot see the light beam.

Followspot set-up recommendations

Using moving lights as followspots has advantages and disadvantages. In this section we will discuss what can be done to improve the look and performance of automated followspots.

• Choose the right fixture for the job. A PAL FX fixture is better than the profiling one because it has an adjustable iris. Moving mirror lights are faster than moving yoke lights but the latter are smoother.

• Place the fixture keeping in mind that the smoothest response will be obtained when only pan or tilt is moving and not both. So, for example, if you have a shallow stage where the performer moves from left to right mostly, then set the fixture in a central, frontal location with an orientation such that only pan or tilt will swing for such movement.

• If you are using a moving head fixture, it should be outside the interactive area to avoid the non-continuous rotation problem that appears when the performer goes “around” the fixture.

• Use 16-bit mode. For Martin lights this means using mode 4.

• Control iris, zoom and focus with dynamic control curves so that the followspot has the same appearance everywhere on the stage.

• For very large stages you may want to automatically cross fade (dynamic dimming curves) so that “closer” followspots “take over” when the performer approaches.

• Use MANY followspots for cool effects. Granted, automated followspots do not have the power, stability, linearity and throw that normal followspots have. However, with the TrackPod system you can have up to 128 followspots simultaneously on the same performer (this would get a little pricey the old way!). Also, play with dynamic control of colour, gobo rotation speed, wash, etc. Use the fixtures creatively not as simple simulations of plain followspots.

A quick tour of the TrackPod software

The TrackPod software has three main uses: set-up, programming and playback. So far we have only covered the calibration routines in the set-up. Programming involves designing “maps” that specify which TrackPods will control which lights and in what way. Maps are the fundamental file format of the TrackPod and they are designed using the “Map Editor”. Playback involves using the software to run maps during a show or performance; this is done in the “Real Time” screen.

Map Editor - programming

The map editor is a “bird’s eye” view of an area measuring 100 x 100 m (328 x 328 ft). Within this, the actual area that will be tracked is the “interactive area”, which is the cyan rectangle. The interactive area is defined during the stage set-up, either by direct entry into width and depth fields, or by the TrackPod calibration routines, which define the area where tracking is most likely to be effective. The editor shows fixtures, TrackPods and the stagemarks used during TrackPod and followspot calibration.

QuickMap versus Layers

The first thing to do is to specify where on the stage you want a particular set of followspots or effects to be operative. If you want to cover the whole stage area then you can simply make a ***Quickmap***, which by definition is applicable over the whole stage area. If on the other hand you want to define specific regions of the stage you would use ***layers***.

Layers allow you, for instance, to have some followspots on the left side of the stage but different followspots on the right side of the stage. You define the area(s) that a layer represents by using the Map Editor tools. You may create up to 20 layers that identify different regions of the stage.

Assigning behaviours

The control options are pretty straightforward for a quickmap. In the quickmap screen, choose the light or group of lights that you want the map to control. Then select the effects that you want to enable:

- **Automated followspot** - the selected fixture(s) will follow the Track-Pod target. The system will take over control of pan and tilt to make this possible.
- **Automatic focus and size** - allows the fixture(s) to have a constant focus and/or beamwidth no matter where they are pointed on the stage.
- **Edge fade** - the followspots will fade automatically when they are pointed outside the interactive area.
- **Static dimmer** - the Map will take over and set the fixture's dimmer channel to a predetermined value. *Tip: it is normally preferable that the dimmer be controlled either by the main show console or by a TrackPod fader.*

If you have chosen to draw layers then you have many more options for fixture control. While these options are very powerful, they may be overkill for simple shows. Users are encouraged to start by using quickmaps and only use layers once they are confident with the software and they have read the online help. Next is a brief overview of the control options for layers. These options are available in the "Layer Media" screen which appears for each layer when you double click on its name. Apart from the effects that may be enabled with a quickmap (followspot, auto size, etc.) you also have:

- **Static control** - You may define static values for any DMX channel of any light. Think of this as a preset "look" that is triggered whenever the performer walks into the area of the stage that you specified with the current layer. To start, by default, most DMX channels are unselected for static control. This means that they are free to be controlled by the lighting console (if it is connected to the TrackPod card's DMX IN). To select static control for a DMX channel, you must set the value of the channel that you want the map to control (when you do, its controller turns red). As soon as the target enters the regions

of the current layer the map will take over control of the channel and send the value you have specified.

- **Dynamic control** - In a DMX control screen, when you double click the selection box of a DMX controller it turns blue-green and shows the letters “DYN”. Any channel selected in this way will respond to a “dynamic control curve”. If you want, for example, to automatically change the dimmer value of your light gradually as your performer moves on the stage you will select the “dimmer” button to have dynamic control. How the dimmer will change depends on the dynamic control curve that you define for the layer. There are three kinds of curves:

  - **Stage-based curve** – a relationship where DMX changes according to the position or velocity of the target in the direction of the stage dimensions: upstage - downstage, stage left - stage right, and floor - ceiling. Example: gradually change the fixtures’ frost as the performer approaches the audience.
  - **Speed-based curve** – where DMX changes according to the absolute speed of the target on the stage. Example: make the followspot iris bigger the faster the performer moves and smaller as he or she slows down.
  - **Point-based curve** – also called a radial curve, the DMX values will change according to the position of the target in relation to a 3D point such as a prop or a fixture. Example: dim a stage light as the performer walks toward a bed on the stage.

- **MIDI control** - You may define static or dynamic MIDI behaviours using the MIDI option in the layer media screen.

Fader Patch

Every map has an associated fader patch. This is a definition of which light parameters, if any, will be manually controlled by the TrackPod operator using the TrackPod controller’s on-board faders. It is a good idea to allow the operator to control parameters that are normally controlled by followspot operators, such as dimmer, iris, focus and even colour. Alternatively, you may leave the fader patch empty if you want the operator to only control the direction of the beams (i.e. pan and tilt). *Tip: try to make patches consistent for all maps. For example, always set the first fader to control dimmers and the last fader to control the target height offset. This way the operator will be able to remember fader assignments.*

Fader patches may be generated automatically by choosing the “suggest patch” item in the patch menu. They may also be saved and loaded. The patch name and notes are important because these notes can be seen in the TrackPod display so that the operator may remember what parameter is controlled by what fader. You may have up to 10 pages of different fader assignments for each map. During a show, the operator can “bump” or switch the pages by simply pressing the asterisk button followed by the desired page number.

Height control

Target height - Each map has a predetermined “target height” at which followspots will be directed. By default this is 1.5 metres, which is an average height to light performers’ faces. Setting this constant value will suffice for most shows but there are two other ways to control the height.

Risers - If the stage has ramps or platforms you may use the “riser tool” to define their location, inclination, size and height. When the TrackPod is pointed at a defined riser it will automatically add the target height to the height of the ramp or platform so the performers are still properly lit while on the riser.

Manual control - In the fader patch there is an option to control “the target height offset”. This option is normally mapped onto the last fader and it allows the operator to change this target height manually by using the fader. This is useful, for instance, if the performer suddenly lays down on the stage.

Tip: the three methods of determining the target height can be used simultaneously.

More on maps

A map is the fundamental file format for the Martin TrackPod tracking system. It can be thought of as a “cue” which can be called by the show’s main console or by the TrackPod operator. The maximum number of maps possible is given by hard drive size. Each map may have explanatory notes which can be seen by the TrackPod operator during a show. In all, a map has a quickmap and/or up to 20 control layers, behaviour assignments, a fader patch, a target height, and notes.

Map remote control

When you are in real-time tracking mode, i.e. during a performance, you can let your lighting console (or any DMX, serial or MIDI controller) control which maps are loaded and executing. To do this select the “Map Remote Control” option from the File menu. A dialogue box appears which lets you specify when the particular map that you are working with will load and be enabled for operation and when it will be disabled from operation and unloaded from memory. Select the appropriate protocol for your purposes and give the map a unique set of data for enabling and disabling the map.

Suppose you wanted 2 followspots to lock onto the performer and then, at a certain point in the show, you would like to have 30 followspots. You would define two maps, let’s call them “follow2” and “follow30”:
“follow2” would have a quickmap with the 2 fixtures set to be followspots. In the “Map Control” dialogue box you could set a “Map load trigger” when DMX channel 512 has a dimmer value between 1 and 127.
“follow30” would have a quickmap with the 30 fixtures set to be followspots. In the “Map Control” dialogue box you could set a “Map load trigger” when DMX channel 512 has a dimmer value between 128 and 255.
When in real-time mode, the TrackPod software would load and unload the maps when the console sends the right values through the defined DMX channels. So the TrackPod is completely controlled remotely and it appears as one more fixture or device to the main control console.

Tip: You may choose to load and unload all your maps using different dimmer values or ranges of values in the same DMX channel, or set different DMX channels for each map. Some users prefer to use a DMX channel per TrackPod and load and unload all of his or her maps using dimmer values in that channel. It’s your choice!

Real Time - playback

The Real time screen

Real-time mode allows TrackPod(s) to start tracking performers on stage or simulate tracking by using the computer mouse. The real time mode allows the system to send and receive data according to the behaviours programmed in the loaded maps. The real time screen, like

the map editor, is a bird's eye view of the stage. The software automatically zooms the window to show the area defined by the interactive area.

A variety of buttons at the top of the screen affect the system's global operation. The *Map browser* allows you to view and manually load any of the maps that have been designed for the current show. The *DMX master* lets you manually override specific channels and set their value. The *DMX monitor* shows all the input and output DMX channels, which is useful in debugging. The *detect* button polls the TrackPod link to find any TrackPods that may have been added to the link. The *mouse test* button lets you test maps by simulating the movement of the TrackPod target by using the mouse.

At the right of the screen, there are seven areas with buttons, controllers and diagnostics that pertain to each of the possible TrackPods. When you press the "Track" button you will see a little cross on the screen, the TrackPod target. For each TrackPod there is a column showing the current height, a raw display of X, Y and Z co-ordinates, a label showing the loaded map, and a few buttons. Pressing the monitor button will show a screen that will simulate everything that is happening in the TrackPod's controller. Pressing the "lock" button will lock out the TrackPod until the four digit code is entered (1209) or the lock button is pressed again.

The TrackPod real time features

The TrackPod display shows important information during real time tracking. The first line shows the map number, followed by the target height and then the target height offset. If the target is on a riser the letter "R" appears. The second line shows the current page name. The third line shows the loaded map's name. The fourth line shows the selected map's name (i.e. the name of the map that would load if you press the OK button).

The F1 key toggles the display to show the exact XYZ coordinates where the TrackPod is pointing to. Also, the DMX values of the faders are displayed. The F2 key shows the page notes for the current fader page. The F3 key shows the map notes of the currently selected map (this way the operator can read the notes *before* he loads the map). For both the fader page and map notes you may scroll up and down using the arrow keys.

Pressing the up and down selection arrows scrolls through all the available maps for the TrackPod. When you want to load a selected map simply press OK to accept the selection. Alternatively, you may enter the map number directly in the keypad to select it and then press OK to load it. *Tip: you may prevent the operator from loading maps by setting the appropriate "access priviledges" in the preferences screen.*

To switch fader pages simply press the asterisk key followed by the number from 0 to 9 that corresponds to the desired page number. To temporarily "blind" the followspots press the "c" clear button in the keypad, as you press it the followspots blackout and you may point at a different place. To blind a fader press the blind button on top of the fader, this will allow the operator to set a fader without asserting it and snap the value by unblinding the fader.

If during a show the TrackPod is moved from its calibrated position you may quickly calibrate it again (if the preferences screen grants calibration priviledges) by pressing the cancel button, which takes you to the main launch pad.

Example

Here are the necessary steps to have a TrackPod control pan and tilt for a number of lights to follow a performer, with a few DMX channels controlled by the faders and the rest by the main lighting board:

1. Install the card in the PC and connect its DMX IN and OUT links to the board and the lights respectively.
2. Assemble the TrackPod and connect it to the card's TrackPod serial link.
3. Power and calibrate the TrackPod as described in topic stage set-up.
4. Define and calibrate your lights as described in lighting set-up.
5. On the map editor, make sure the TrackPod1 is selected.
6. Press "QuickMap" and choose the desired fixtures and automated controls.
7. Click on the fader patch button and define a fader patch for the map.
8. Select Real-Time in the Go To menu.
9. Press Yes to save the changes and name the map.
10. Select Go in the tracking menu.
11. Load the map from the TrackPod or from the Map Browser.

For further reference

The TrackPod software has a built-in, comprehensive help system. To activate it:

- Select “TrackPod Help” from the Start menu.
- Press the “help” buttons that appear in many screens of the software.
- Select an item from the “Help” menu in the map editor or real time screen.

Once activated you may find topics by browsing the contents tab, by entering a keyword in the index tab, or by searching for a particular term in the find tab. There is substantial information and pictures in the help system to help you tackle even the most ambitious show control projects. Please review the topics and, if you like, print them for hard copy reference.

Among the help file topics you will find all you need to know to design and run shows, as well as troubleshooting, FAQ, tech support and example sections.

Please visit our website at www.martin.dk for free software upgrades, news, and the TrackPod newsgroup. Contact us at mld@martin.dk for bug reports, feature requests, suggestions or questions.

Subscribe to the “APR announcements” mailing list by sending a message to mld@martin.dk with the message “subscribe”. This subscription is free and open to anyone who wants to learn the latest tricks, case studies and features of the system. On average there is only one message a month.

Martin Professional A/S
Olof Palme Allé 18
8200 Aarhus, Denmark
www.martin.dk

APR inc.
Suite 200, 8526-109 St.
Edmonton, Alberta
T6G 1E5 Canada