



# **Multimedia Developer's Guide For: The Interactive Pictures Corp. IPIXtra**

For Director 5/6  
For Authorware 4.0.2

**Windows 3.1/95/98/NT Release – v.2.1**  
**Mac PPC/68K Release – v.2.1**

IPIX is a registered trademark of Interactive Pictures Corp.,

IPIX are a means of viewing a totally immersive, unbounded image created from a fisheye photograph.  
Based on U.S. Patents 5,185,667 and 5,384,588 (others pending). IPIX give new opportunities for

photography. IPIX are distributed by Interactive Pictures Corp. of Oak Ridge, TN (info@ipix.com, <http://www.ipix.com>, 423-482-3000, fax 423-482-5447). Contact Interactive Pictures Corp. to learn how you can take advantage of IPIX for CD-ROMs, Web pages, or VR applications.

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**Table of Contents**


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IPIXtra Overview.....	4
IPIX License Agreement.....	4
Installing the Interactive Pictures Corp. IPIXtra.....	5
Hardware and Software Requirements.....	6

**Director**

Menu Options.....	8
Inserting a IPIX into a Director Movie.....	8
Frame Rate.....	9
Preloading and Unloading IPIX Images.....	9
IPIX Images Directory.....	9
Palettes.....	10
IPScripts.....	11
IPIXtra Registered Handler.....	11
Cross Platform Director Movie.....	14
IPIXtra Lingo Commands	
ipxGetPTRZ.....	15
ipxResetPTRZ.....	15
ipxSetDefaultPTRZ.....	16
ipxSetPTRZ.....	16
ipxRegisterHandler.....	16
ipxLoadIPIX.....	17
ipxSetHsEnable.....	17
ipxSetHsTargetState.....	18
ipxSetScriptState.....	18
ipxRewindIPScript.....	18
ipxSetInteractState.....	18
ipxIsIPScriptLoaded.....	19
ipxSetKeyboardState.....	19
ipxSetNavigationSpeed.....	19
Trouble Shooting.....	20

**Authorware**

Menu Options.....	21
Inserting a IPIX into a Authorware Piece.....	21
Preloading and Unloading IPIX Images.....	22
IPIX Images Directory.....	22
Palettes.....	22
IPScripts.....	23
IPIXtra Authorware Event Handling.....	23
Cross Platform Authorware Piece.....	25
IPIXtra Lingo Commands	
ipxGetPTRZ.....	27
ipxResetPTRZ.....	27
ipxSetDefaultPTRZ.....	28
ipxSetPTRZ.....	28
ipxLoadIPIX.....	29
ipxSetHsEnable.....	29
ipxSetHsTargetState.....	30
ipxSetScriptState.....	30
ipxRewindIPScript.....	30
ipxSetInteractState.....	30
ipxIsIPScriptLoaded.....	31
ipxSetKeyboardState.....	31
ipxSetNavigationSpeed.....	31
ipxSetDefaultEvent.....	31

Trouble Shooting.....32

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## **IPIXtra Overview**

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IPIX are a means of viewing a totally immersive, unbounded image created from a fisheye photograph. Interactive Pictures Corp.'s IPIXtra is designed to work with Macromedia's Director and Authorware software products to extend the functionality by allowing the Multimedia Developers to add IPIX to into Macromedia products. This Xtra is a combination of a Sprite Xtra as well as a Lingo Xtra, meaning that the developer is capable of using IPIX as sprites as well as customizing the behavior of IPIX using specific Lingo methods. Below is a brief description of the features contained in this Xtra:

- Incorporate IPIX into Director movies as new Cast Members
- Incorporate IPIX into Authorware piece as new icons
- Use the Interactive Pictures Corp. 'Default' navigation and cursors for fast implementation
- Customize IPIX using Macromedia Lingo scripting language

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## **IPIX License Agreement**

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### **IPIX Authoring License**

The IPIX License file (IPIXtra.lic) is the license to use the IPIXtra in conjunction with Macromedia's Director or Authorware in authoring mode. **THE LICENSE IS NOT TO BE DISTRIBUTED.** The license file must be in the same xtra directory as the IPIXtra files in order to import IPIX images, IPIX palettes, IPIX IPScript, and create an empty IPIX cast member.

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## **Installing the Interactive Pictures Corp. IPIXtra**

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The IPIXtra installation process is a standard process established by Macromedia.

### **Win95/NT Installation**

Procedure:

Copy the IPIXtra folder IPIX into Director's/Authorware's xtras subdirectory. Once the Xtra is installed, a new submenu will appear under Director's/Authorware's 'Insert' Menu, called 'Interactive Pictures Type.' Use this menu to 'Import IPIX' into Director casts or the Authorware piece. This is also a good method for verifying that the Xtra has been installed correctly.

#### **Director Projector:**

For Director projectors, the IPIXtra files need to be placed in a subdirectory named 'xtras' in the Projector's directory. For more information, see Macromedia Director documentation. The license file should not be distributed with the projectors.

#### **Packaged Authorware Piece:**

For Packaged Authorware piece, the IPIXtra files need to be placed in a subdirectory named 'xtras' in the Packaged Authorware piece's directory. For more information, see Macromedia Authorware documentation. The license file(IPIXtra.lic) should not be distributed with the Packaged Authorware piece.

There are two different modes of the IPIXtra. The Authoring mode and the Distribution mode. The Authoring Mode requires the IPIXtra.lic file to be in the same directory as the IPIXtra file. THE LICENSE FILE(IPIXTRA.LIC) IS NOT TO BE DISTRIBUTED.

### **The IPIXtra Files You Need Are:**

#### **Windows 95/NT**

##### **Authoring License( NOT TO BE DISTRIBUTED)**

- IPIXtra.lic -- the IPIXtra Authoring license

##### **The IPIXtra(Distributable)**

- IPIXtra.x32 -- the actual distributable Xtra file
- Ipx32\_53.dll -- shared library file
- picn13.dll -- shared library file
- picn1113.ssm -- shared library file
- picn1313.ssm -- shared library file

#### **Windows 3.11(Authoring Xtra License does not exist for Win3.1)**

##### **The IPIXtra(Distributable)**

- IPIXtra.x16 -- the actual distributable Xtra file
- Ipx16\_53.dll -- shared library file
- picw13.dll -- shared library file
- picn1113.dll -- shared library file
- picn1313.dll -- shared library file

#### **Macintosh PPC**

##### **Authoring License( NOT TO BE DISTRIBUTED)**

- IPIXtra.lic -- the IPIXtra Authoring license

##### **The IPIXtra(Distributable)**

- IPIXtra PPC -- the actual distributable Xtra file
- IPIX HL PPC.ShLib -- shared library file

#### **Macintosh 68k(Authoring Xtra License does not exist for 68K)**

##### **The IPIXtra(Distributable)**

- IPIXtra 68k -- the actual distributable Xtra file

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## Hardware and Software Requirements

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The computer requirements of Macromedia projects will vary from project to project. The IPIXtra memory requirements will vary from IPIX to IPIX. The next section explains the memory requirements for the IPIXtra. The faster the computer the better the performance of the IPIXtra. The Xtra will work on the low end machines (486-66/68040), but the IPIX performance will go down.

### **PC only**

The IPIXtra utilizes MMX optimizations to increase viewing performance.

### **The memory requirements for the IPIXtra**

The Memory allocation of the IPIX images and the IPIXtra varies by several factors. The factors include source image resolution, source image color resolution, destination image size, and the Xtra code requirements.

The source color resolution is determined when the IPIX image is loaded into memory. The color resolution is determined by the computer display color depth. The minimum color resolution support by the IPIXtra is 8 bit display. The IPIX images are loaded into memory and are then converted to the current color depth of the computer displaying the image. The 8 bit or 256 color depths are used when the computer display is in 8 bit display mode. The 16 bit IPIX color depth is used when the computer display is 16 bit or greater. The 16 bit display will allocate twice as much source and destination image memory as the 8 bit display.

The source image size is determined when the IPIX image is created in the IPIX Builder. The image size, from low resolution to high resolution, can be 512x1024, 1024x2048, or 2048x4096. The following chart shows the source memory allocated by the IPIXtra:

IPIX Source Memory Requirement		
IPIX Image Resolution	8 bit display	16 bit display
512x1024	0.52 megabytes	1.1 megabytes
1024x2048	2.1 megabytes	4.2 megabytes
2048x4096	8.4 megabytes	16.8 megabytes

The destination image memory allocation varies by window size. The larger the window the more pixels the destination image will contain, thus requiring more memory. Below is a list of memory requirements related to window size. Again, a major factor for the memory requirements is the color depth of the computer. 8 bit color display uses 1 byte per pixel as opposed to 2 bytes per pixel 16 bit color depth.

Destination Memory Requirement		
Window Size	8 bit destination	16 bit destination
160x120	19.2 Kbytes	38.4 Kbytes
320x240(default)	76.8 Kbytes	153.6 Kbytes
640x480	307.2 Kbytes	614.4 Kbytes

The last thing that requires memory is the actual IPIXtra code. The estimated memory requirement for the Xtra code itself is approximately 1 megabyte.

To calculate the total memory required for a 512x1024 IPIX image in a 320x240 window in 8 bit display mode:

$$512 \times 1024 \times 1 + 320 \times 240 \times 1 + \sim 1 \text{ megabyte} = \sim 1.6 \text{ megabytes}$$

in 16 bit display mode:

$$512 \times 1024 \times 2 + 320 \times 240 \times 2 + \sim 1 \text{ megabyte} = \sim 2.2 \text{ megabytes}$$

### **The IPIX Load Speed for IPIX images**

The load speed for the IPIX images varies depending on several factors. These factors include IPIX image resolution, IPIX image compression, and File Storage Medium (CDROM, Hard drive).

The **IPIX image resolution** effects the load time because of the size of the files. The higher the resolution an image has the more pixels are in the image and the larger the file size. The larger the file size of the image, the longer the File Storage Medium requires to load the file.

The **IPIX image compression** effects load time because of the time required to load and decompress the image. The higher the compression the more time required to decompress the image.

The **File Storage Medium** effects the load time because different computers have different file transfer speeds. For instance, a 2x CDROM has a slower data transfer rate than a 16x CDROM. The IPIXtra is limited by the speed of the data transfer of the storage medium.

Determining the best combination for all three factors can be complicated. The image resolution can be adjusted, but that effects the image quality. The image compression can be adjusted, but that effects the file size. The combination requirements vary from one Director movie to the next. It is recommended that you use low image compression for CDROM applications, because CDROMS can usually read large files faster than the computer can decompress the image.



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## Director

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### Menu Options

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The IPIXtra is utilized by several menu options available in the *'Interactive Picture Types'* under the 'Insert' menu. Most of these menu options will create new cast members of the types described below.

*Import IPIX* – This menu option will import the IPIX images into the current cast member or the next available cast member. The member type of this cast member is *InteractivePictureIPIX*.

*Import IPIX Palette* – This menu option will take the palette from the IPIX image and create a palette cast member. The type of member is the Director palette type.

*Import IPIX Script* – This menu option will import IPIX IPScript into the current cast member or the next available cast member. The member type of this cast member is *InteractivePictureIPIXScript*.

*Create Empty IPIX Cast* – This menu option creates an empty IPIX cast member in the current cast member or the next available cast member. The member type of this cast member is *InteractivePictureIPIXLingoLoad*.

*About IPIXtra* – This menu option will display information about IPIX and relay contact information to the users. This menu option does not create a cast member.

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### Inserting an IPIX into a Director Movie

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- **Step 1:** Make sure the IPIXtra and IPIX Authoring License are installed into Director's xtra subdirectory.
- **Step 2:** Open the appropriate Cast and select the cast member where the IPIX is to be inserted.
- **Step 3:** Select *'Interactive Picture Types'* from Director's 'Insert' Menu. Select Import IPIX Image. You will be prompted to locate the IPIX from the desired drive. After doing so, the IPIX will be loaded in as a new cast member. If a thumbnail exists in the IPIX image, it will appear in the cast member; otherwise, the IPIX logo will appear in the cast member.
- **Step 4:** Again, Select *'Interactive Picture Types'* from Director's 'Insert' Menu. This time select Import IPIX Palette. You will be prompted to locate the IPIX from the desired drive. After doing so, the IPIX Palette will be loaded in as a new cast member.
- **Step 5:** Drag the cast member onto the stage and drag the palette into the palette channel of the frame.
- **Step 6:** You are finished! Now, use the new IPIX cast member in the same way you would use any other. Remember to increase the frame rate to get a higher IPIX update rate and remember to unload the IPIX cast member once finished. See unLoadMember section.
- **NOTE 1:** Once the Director movie has been saved the IPIX images must be in the movie's IPIX subdirectory to reopen the movie.
- **NOTE 2:** Upon completion of the above steps, while viewing an IPIX on Director's Stage, you may find that the IPIX's navigational cursors flicker when simply rolling over an IPIX on the Windows 3.1 Xtra. To solve this issue, refer to the *'Developer Issues'* portion of this documentation.

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## Frame Rate

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The frame rate of a Director movie affects the panning abilities of the IPIXtra. The faster the frame rate the faster the IPIX window update, up to the maximum update rate of the computer. This maximum update rate of the IPIX sprite depends upon RAM memory, processor speed, and size of the IPIX sprite window. If the frame rate of the movie is set to 1 frame per second, the IPIXtra sprite will update up to one frame per second. It's recommended that you set the frame rate of the IPIX sprite to maximum frame rate. The minimum frame rate should be 30 frames a second. Again, the IPIX sprite will update at maximum speed, up to 30 frames a second.

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## Preloading and Unloading IPIX Images

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The IPIX images are not loaded into memory until the sprite has been created, unless the images have been preloaded using Director preload lingo commands. Once an IPIX is loaded into memory the image will remain in memory until one of the following events occur:

- The cast member is unloaded using Director lingo.
- Director unloads the cast member because of lack of memory on the machine
- The Director movie is closed

### Preloading IPIX:

IPIX images can be preloaded using the standard Director Lingo commands for cast members or frames. One word of caution: preloading an IPIX image will work only on movies that have been saved and reopened.

### Unloading IPIX:

Once the movie is finished with an IPIX sprite, the cast member should be unloaded using the unLoadMember Lingo command. This command will unload the cast member and remove the IPIX image from memory. If this command is not called, the movie's memory requirement will increase for each IPIX loaded. The unLoadMember command is referenced in the online Lingo help. Also, the unLoad Lingo command will unload the IPIX cast member if it is used in the frame.

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## IPIX Images Directory

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When Director imports an IPIX image the entire path is stored into the movie once the movie is saved. The IPIX images are not imported into the Director movie so the IPIX images are external files for the movie. When the movie loads an IPIX it will search for the IPIX image files. The IPIXtra looks in three different locations for the IPIX image whenever the Xtra needs to load an IPIX. The list below is the IPIXtra's search order for the IPIX images:

- 1 The Director movie's or projector's IPIX subdirectory
- 2 The Director movie's or projector's directory
- 3 The original import path

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## Palettes

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The IPIXtra displays the IPIX images in two different color resolutions, 8 bit (256 colors) and 16 bit (thousands of colors). The color resolution is determined by the settings on the computer at run time. When the computer display is in 8 bit (256 color) display mode, the IPIXtra uses the current palette in the palette channel. The IPIXtra will display the 16 bit IPIX image when the display mode is above 8 bit display mode.

### **8 Bit IPIX (256 colors)**

The IPIXtra utilizes the palette in the Director Palette channel to display the IPIX images in 8 bit. The IPIX palette can be imported into a cast member by the *Import IPIX Palette* menu option. This menu option will take the palette from an IPIX image and create a palette cast member in the current or next available cast member. When the computer display is in 8 bit (256 color) display mode, the IPIXtra uses the current palette in Director's palette channel. The IPIXtra will map the IPIX image colors to the palette in the Director palette channel as closely as possible.

The IPIX palette imported by the IPIXtra is the optimized palette for the color quality of the IPIX. The imported IPIX palette can be modified in Director but the quality of color conversion for the IPIX is poor. The optimal method of modifying the IPIX palette is to change the palette in the IPIX image using the IPIX Photoshop plugin in Equilibrium's Debabelizer Pro version 4.5. This program can find the optimal color conversion for the IPIX image. Once the palette of the IPIX has been modified in Debabelizer, the new IPIX palette can be reimported with the new palette.

### **16 Bit IPIX (Thousands of colors)**

In 16 bit or greater the IPIXtra uses 16 bit IPIX images and the director palette channel is ignored.

### **Computer Display Color Resolution**

The source color resolution is determined when the IPIX image is loaded into memory. The color resolution is determined by the computer display color depth. The minimum color resolution support by the IPIXtra is 8 bit display. The IPIX images are loaded into memory and are then converted to the current color depth of the computer displaying the image. The 8 bit or 256 color depths are used when the computer display is in 8 bit display mode. The 16 bit IPIX color depth is used when the computer display is 16 bit or greater.

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## IPScripts

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IPScripts are self-moving IPIX images complete with full multimedia possibilities not dependent on user interaction. IPScripts are generated using IPIX--TV Studio software. See the IPIX website or contact IPIX sales for more information about IPIX TV Studio.

When a director movie has an IPScript as a cast member of a movie, the IPIXtra and the Director movie will load the media required for the IPScript. When the IPScript needs to load a media (IPIX, Sounds, etc.), the IPIXtra will send an event to the registered handler. The Director movie can either handle the event or except the default functionality of the IPIXtra. The IPIXtra will only load IPIX or IPScript and they must be in the same directory as the IPScript. The rest of the media must be handled by the Director movie through the registered handler. See the Registered handler section for more information.

The IPIXtra has some Lingo commands that are specific to the IPScript. These commands are described in the IPIXtra Lingo commands section.

### IPScript Controls

- ipxSetScriptState ()
- ipxRewindIPScript ()
- ipxSetInteractState()
- ipxIsIPScriptLoaded ()

Also, there are IPScript events that are passed to the registered handler to tell the Director movie that the IPIXtra has finished playing the IPScript. See the IPScript Event in the Registered Handler section.

The IPScript allows the user to interact with the IPIX image causing the IPScript to stop running. The Director movie needs to provide ways to resume the IPScript. There are also ways for the IPScript to prevent the users from interacting with the IPScript while the script is automating. See the IPIX TV Studio documentation for more information about the IPScript.

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## IPIXtra Registered Handler

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The IPIXtra Registered Handler will allow the customization of the controls of the IPIX Sprite window. The handler will allow the Director movies to control the cursor shapes, hot spot cursor shapes, sends a event when a media is about to load, draw hot spot targets on the image, and draw embedded text on the window.

The events of the IPIXtra Registered Handler are determined by the event parameter of the Registered Handler. The events are:

- 1 Set Cursor
- 2 Launching a Media (IPIX, Sounds, etc.)
- 3 Draw Hot spot Target
- 4 Pre Display Embedded Text
- 5 IPScript Event

The registered handler created in Director must have the following lingo parameters:

on **IPIXEventsHandler** *event, param1, param2, param3*

For the Registered Handler to receive the events the handler must be registered using the ipxRegisterHandler Lingo command. The parameters of the registered handler are described in the event table below.

The Registered handler has several words of warnings.

- Do not close the Director application or movie in the registered handler. Go to another frame before exiting.
- This allows the IPIXtra to complete the callback routine (Registered handler).

**Event Table**

event	
1	<p><b>Set Cursors</b></p> <p>Description: This event is called when the IPIXtra needs to update the cursor.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <li>param1 - Cursor Index (200-207) and (216,217) See Cursor Index Table</li> <li>param2 - Hot spot Type(0-16) (-1 no hot spot) See Hot spot Types Table</li> <li>param3 - Hot spot filename</li> </ul> <p>Return Value:</p> <ul style="list-style-type: none"> <li>TRUE – Cursor handled by Movie</li> <li>FALSE – Use Default IPIX Cursor(default)</li> </ul>
2	<p><b>Launching a media</b></p> <p>Description: This event is called when the IPIXtra is about to launch a media. There are two media types that the default will execute (IPIX and IPScript). The other media types will be ignored by the Xtra.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <li>param1 - Media Type(0-16) See Media Types Table</li> <li>param2 - Media filename</li> <li>param3 - NULL</li> </ul> <p>Return:</p> <ul style="list-style-type: none"> <li>TRUE – Media handled by Movie</li> <li>FALSE – Default Launch Media(default)</li> </ul>
3	<p><b>Draw Hot spot Bullseye</b></p> <p>Description: This event is called before the IPIXtra draws a hot spot bullseye at the location given in param1. This event allows the user to draw a bullseye at the location given in param1. If the bullseye has been overwritten by the movie, then this event needs to return a TRUE to prevent the IPIXtra from drawing the bullseye in the sprite.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <li>param1 - Hot spot Center Point(x-coordinate,y-coordinate)</li> <li>param2 - Media Type(0-16) See Media Types Table</li> <li>param3 - Media Filename</li> </ul> <p>Return:</p> <ul style="list-style-type: none"> <li>TRUE – Hot spot Bullseye drawn by the movie</li> <li>FALSE – Use the Default Hot spot Bullseye(default)</li> </ul>

4	<p><b>PreDisplay Embedded Text</b></p> <p>Description: This event is called to allow users to add embedded text windows in the location given in param1. If this event returns a TRUE, the Xtra will display the embedded text. This is not recommended unless the windows palette is used in the palette channel. If the movie sets a palette in the palette channel, the embedded text will appear as black and white.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <li>param1 - Embedded Text location</li> <li>param2 - Media Type(0-16) See Media Types Table</li> <li>param3 - Media Filename</li> </ul> <p>Return:</p> <ul style="list-style-type: none"> <li>TRUE – The IPIXtra will display the hot spot embedded text</li> <li>FALSE – No embedded text drawn(default)</li> </ul>
5	<p><b>IPScript Event</b></p> <p>Description: This event is called when an IPScript is paused, resumed, or the last command of the IPScript has been executed.</p> <p>Parameters:</p> <ul style="list-style-type: none"> <li>param1 - Type of IPScript event(0-2) <ul style="list-style-type: none"> <li>0 – End of Script</li> <li>1 – Script Paused</li> <li>2 – Script Resumed</li> </ul> </li> <li>param2 - NULL</li> <li>param3 - NULL</li> </ul> <p>Return: The IPIXtra ignores the return value</p>

Cursor Index Table	Media Types Table	Hot spot Types Table
200: Right	0: Undefined	-1: No Hot spot
201: Up Right	1: IPIX	0: Undefined Hot spot
202: Up	2: JPEG	1: IPIX Hot spot
203: Up Left	3: Wave	2: JPEG Hot spot
204: Left	4: MIDI	3: Wave Hot spot
205: Down Left	5: Text	4: MIDI Hot spot
206: Down	6: Video	5: Text Hot spot
207: Down Right	7: IPScript	6: Video Hot spot
216: Zoom In	8: URL	7: IPScript Hot spot
217: Zoom Out	9: EXE	8: URL Hot spot
	10: Custom	9: EXE Hot spot
	11: Vox	10: Custom Hot spot
	12: QTSound	11: Vox Hot spot
	13: QTVideo	12: QTSound Hot spot
	14: Exit	13: QTVideo Hot spot
	15: SY7	14: Exit Hot spot
	16: NullText	15: SY7 Hot spot
		16: NullText Hot spot

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**Cross Platform Director Movie (Win95/NT/3.1/Mac PPC/68k)**

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- Director authoring mode requires the IPIX images to be in the IPIX subdirectory of the Director movie or in the same directory as the Director movie to make the movie cross-platform friendly. In Projector mode the IPIX images must either be in the projector's directory or in an IPIX subdirectory of the projector.
- Windows 3.1 requires all files (cast or IPIX) to have eight or less characters.

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**IPIXtra Lingo Commands**

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The IPIXtra implements most of a normal sprite's behavior. There are specific Lingo methods that are incorporated inside the Xtra to extend the developer's control of IPIX. Below are the different IPIX methods that can be used to manipulate an IPIX's behavior through the IPIXtra. Detailed descriptions will follow.

**IPIX View Point**

- ipxGetPTRZ()
- ipxResetPTRZ()
- ipxSetDefaultPTRZ()
- ipxSetPTRZ()

**Callback handler**

- ipxRegisterHandler()

**IPIX Load**

- ipxLoadIPIX()

**Hot spot Controls**

- ipxSetHsEnable()
- ipxSetHsTargetState()

**IPScript Controls**

- ipxSetScriptState ()
- ipxRewindIPScript ()
- ipxSetInteractState()
- ipxIsIPScriptLoaded ()

**General**

- ipxSetKeyboardState()
  - ipxSetNavigationSpeed()
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**IPIX View Point**


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These Lingo commands will allow Director movies to manipulate the PTRZs (Pan, Tilt, Rotation, Zoom) of an IPIX image. The following will describe the effects of the PTRZ and give the limitations of the parameters.

<b>Pan:</b>	Horizontal Angle (-180 to 180 Left to Right)
<b>Tilt:</b>	Vertical Angle (-90 to 90 Bottom to Top)
<b>Rotation:</b>	Rotation Angle (-180 to 180 Clockwise)
<b>Zoom:</b>	Magnification (~0.2 to ~1.8 Zoomed Out to Zoom In)

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**Syntax:** **ipxGetPTRZ ( listCast, listPTRZ )**

**Description:** This Lingo command will set the listPTRZ parameter to the current PTRZ(Pan, Tilt, Rotation, Zoom) viewed by the IPIXtra.

**Parameters:**

*listCast* A linear list describing the Cast Member. [c, m]

*listPTRZ* A linear list large enough to retrieve the PTRZ values from the IPIX. The limits of the parameters are as follows: **[P,T,R,Z]**

**P(Pan)** -180 to 180 left to right

**T(Tilt)** -90 to 90 bottom to top

**R(Rotation)** -180 to 180 clockwise

**Z(Zoom)** -The magnification is varied both by size of the output window and the resolution of the IPIX. (~0.2 to ~1.8)

**Returns:** Nonzero if Lingo command executed successfully

**Example:** set result to ipxGetPTRZ([1,5], [30, 30, 0, 0.7])

**See Also:** ipxSetPTRZ, ipxsetDefaultPTRZ

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**Syntax:** **ipxResetPTRZ(listCast)**

**Description:** This Lingo command will reset the current pan, tilt, rotation, and magnification to the IPIX default PTRZ and update the display. The default PTRZ can be reset by the ipxsetDefaultPTRZ command.

**Parameters:**

*listCast* A linear list describing the Cast Member. [c, m]

**Returns:** Nonzero if Lingo command executed successfully

**Example:** set result to ipxResetPTRZ ([1,5])

**See Also:** ipxsetDefaultPTRZ



**Syntax:** `ipxSetDefaultPTRZ(listCast, listPTRZ )`

**Description:** Sets the default PTRZ viewing angles of the IPIX. The default view is utilized when the right mouse button or the space bar is pressed. The `ipxResetPTRZ` Lingo command will reset to this PTRZ value.

**Parameters:**

*listCast*

A linear list describing the Cast Member. [c, m]

*listPTRZ*

A linear list containing the PTRZ to set the IPIX Default viewing angles . The limits of the parameters are as follows: **[P,T,R,Z]**

**P(Pan)** -180 to 180 left to right

**T(Tilt)** -90 to 90 bottom to top

**R(Rotation)** -180 to 180 clockwise

**Z(Zoom)** -The magnification is varied both by size of the output window and the resolution of the IPIX. (~0.2 to ~1.8)

**Returns:** Nonzero if Lingo command executed successfully

**Example:** `set result to ipxSetDefaultPTRZ ([1,5], [30, 30, 0, 0.7])`

**See Also:** `ipxResetPTRZ`

**Syntax:** `ipxSetPTRZ(listCast, listPTRZ )`

**Description:** This Lingo command will set the PTRZ(Pan, Tilt, Rotation, Zoom) currently viewed by the IPIXtra.

**Parameters:**

*listCast*

A linear list describing the Cast Member. [c, m]

*listPTRZ*

A linear list containing the PTRZ to set the current IPIX view. The limits of the parameters are as follows: **[P,T,R,Z]**

**P(Pan)** -180 to 180 left to right

**T(Tilt)** -90 to 90 bottom to top

**R(Rotation)** -180 to 180 clockwise

**Z(Zoom)** -The magnification is varied both by size of the output window and the resolution of the IPIX. (~0.2 to ~1.8)

**Returns:** Nonzero if Lingo command executed successfully

**Example:** `set result to ipxSetPTRZ ([1,5], [30, 30, 0, 0.7])`

**See Also:** `ipxGetPTRZ`

## IPIX Callback Handler

**Syntax:** `ipxRegisterHandler( listCast, EventHandler )`

**Description:** This lingo command will allow the Director movie to handle special IPIX events to allow the Director movie to modify default functionality. Sets the Director callback handler that will receive the IPIXtra events (i.e. Mouse Events, Hot spot Events, etc.). See the IPIX Registered Handler section in this manual.

**Parameters:**

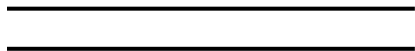
*listCast*

• A linear list describing the Cast Member. [c, m]

*EventHandler*

• The movie's callback handler to receive the event messages.

**Returns:** Nonzero if Lingo command executed successfully



---

**IPIX Load**


---

**Syntax:** **ipxLoadIPIX(listCast, filename, usePalette, palCastMem )**

**Description:** This Lingo command will load the IPIX filename into the cast member specified (listCast). This command will be ignored if the cast member's sprite does not exist on the stage. The palette cast member (palCastMem) will receive the palette of the IPIX image loaded by this lingo command. The Palette cast member must be a palette member and this lingo command will change the palette colors. After the IPIX is loaded into the cast member and the IPIX palette has been set into the palette cast member this command will puppetPalette the cast member. You must unpuppet the palette (puppetPalette 0) or puppet a different palette when finished displaying the IPIX.  
 WARNING: The palette cast member (palCastMem) cannot be the current active palette before this Lingo command is executed.  
 WARNING: The palette cast member (palCastMember) will be overwritten by this command.

**Parameters:**

*listCast* A linear list describing the Cast Member. [c, m]  
*filename* A String containing either the full path of the IPIX file or the filename itself. The Xtra will look in the movie's IPIX subdirectory.  
*UsePalette* Flag to set an IPIX palette: If zero, then palCastMem is ignored, and the palette is not set. If greater than zero, the IPIX palette will be set in the Palette cast member given in palCastMem.  
*palCastMem* A Linear list describing the palette cast member that will receive the IPIX palette. The cast member must be a Palette cast member. WARNING: this will change the palette colors in the cast member, and the new palette will be saved in the movie when the movie is saved.

**Returns:** Nonzero if Lingo command executed successfully

---

**Hot spot Controls**


---

These Lingo commands will allow Director to control the hot spot states. These Lingo commands can enable/disable hot spots and enable/disable hot spot targets. Hot spot cursor events and hot spot targets can be controlled by the registered handler callback.

---

**Syntax:** **ipxSetHsEnable(listCast, enable)**

**Description:** This Lingo command will enable/disable hot spots displayed in the IPIX window. When hot spots are enabled the hot spot event will be called in the registered handler when the mouse moves over a hot spot. If the event returns a FALSE, the default functionality will be executed. When the hot spots are disabled, the hot spot event will not be called and the mouse cursor will not be set to a hot spot cursor. The hot spots are enabled initially.

**Parameters:**

*listCast* • A linear list describing the Cast Member. [c, m]  
*enable* • Hot spot enable/disable state (0-disable 1-enable)

**Returns:** Nonzero if Lingo command executed successfully

**Syntax:** **ipxSetHsTargetState(listCast, enable)**

**Description:** This Lingo command will enable/disable states for hot spot targets displayed in the IPIX window. Hot spot targets are drawn into the IPIX window to give a visible location of all hot spots in the image. The hot spot targets will appear only if the hot spots are both enabled and the targets are enabled. The hot spot target state can be set any time, but the hot spots must be enabled for the targets to appear in the IPIX window.

**Parameters:**

- listCast* • A linear list describing the Cast Member. [c, m]
- enable* • Hot spot target enable/disable state (0-disable 1-enable)

**Returns:** Nonzero if Lingo command executed successfully

### **IPScript Controls**

These IPIX Lingo commands will control the states of the IPIX IPScripts. These commands will pause/resume, rewind, and check to see whether an IPScript is currently loaded. IPIX IPScripts control the timing of: motion within an individual IPIX (pan, tilt, rotation, and zoom), other multimedia events (narration, music, etc.), and transitions to other IPIX or other images. IPScripts are generated using the IPIX-TV Studio software.

**Syntax:** **ipxSetScriptState (listCast, newState)**

**Description:** This Lingo command will play or pause the IPScript.

**Parameters:**

- listCast* • A linear list describing the Cast Member. [c, m]
- newState* • TRUE – Run the IPScript, FALSE – Pause the IPScript

**Returns:** Nonzero if Lingo command executed successfully

**Syntax:** **ipxRewindIPScript (listCast)**

**Description:** This Lingo command will rewind the IPScript.

**Parameters:**

- listCast* • A linear list describing the Cast Member. [c, m]

**Returns:** Nonzero if Lingo command executed successfully

**Syntax:** **ipxSetInteractState(listCast, interactState)**

**Description:** This Lingo command will set the user interface interaction state. This command will allow the Director Movie developer to play IPScripts and will not allow the user to pause the IPScript.

**Parameters:**

- listCast* • A linear list describing the Cast Member. [c, m]
- newState* • TRUE – Allow Interaction(default), FALSE – No Interaction

**Returns:** Nonzero if Lingo command executed successfully

- Syntax:** **ipxIsIPScriptLoaded (listCast)**
- Description:** This Lingo command will return TRUE if the file loaded in the Xtra is an IPScript
- Parameters:**  
*listCast* • A linear list describing the Cast Member. [c, m]
- Returns:**  
 TRUE – IPScript is loaded  
 FALSE – IPScript is not loaded

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## General

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- Syntax:** **ipxSetKeyboardState(listCast, enable )**  
 (PC only)
- Description:** Sets the enable/disable state for the keyboard.  
 One word of caution: when the IPIXtra has the keyboard state enabled, Director movies will not receive any keyboard inputs. The default keyboard state for the IPIXtra is disabled to allow Director to utilize the keyboard inputs.
- Parameters:**  
*listCast* • A linear list describing the Cast Member. [c, m]  
*enable* • Keyboard enable/disable state (0-disable 1-enable)
- Returns:** Nonzero if Lingo command executed successfully

- 
- Syntax:** **ipxSetNavigationSpeed(listCast, speed )**
- Description:** This Lingo command will set the pan/tilt/zoom navigation speed to allow movies to accelerate or slow the panning speed.
- Parameters:**  
*listCast* • A linear list describing the Cast Member. [c, m]  
*speed* • Speed increment base (0 to 100)
- Returns:** Nonzero if Lingo command executed successfully

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## Trouble Shooting

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**Interactive Pictures Corp. Type' menu item does not appear in Director's 'Insert Menu':**

The IPIXtra has not been installed correctly. Refer back to the 'Installing the Interactive Pictures Corp. IPIXtra' section of this documentation for exact installation procedure.

**Error cannot run in Director Authoring mode:**

If the IPIX types menu appears and the Xtra shows an error message saying that the Xtra cannot run in authoring mode, this means the IPIXtra cannot find the license (IPIXtra.lic) in the directory with the IPIXtra. Copy the license to the Director subdirectory where the IPIXtra file resides. If you have not purchased an IPIXtra license, contact IPIX sales to get the IPIXtra license.

**IPIXtra cannot find the IPIX images:**

When an IPIX has been imported into a Cast Library, the pathname of the image is saved in the movie. . When the movie with the IPIX cast member is opened again, the IPIXtra will search for the IPIX image to be in the IPIX subdirectory of the movie or the movie's directory. If the IPIXtra still hasn't found the IPIX image then it will search the entire path saved when the image was imported. The recommended location for the IPIX images in is either the movie's or projector's IPIX subdirectory. See the IPIX Image Directory section.

**Slow Panning rate:**

This can be caused by three reasons:

1. The computer processing speed is slow
2. The frame rate of the movie is slow
3. The palette is not the IPIX palette and the ipix has to convert each frame.

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## Authorware

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### Menu Options

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The IPIXtra is utilized by several menu options available in the *'Interactive Picture Types'* under the 'Insert' menu. Most of these menu options will create new Authorware icons of the types described below.

*Import IPIX* – This menu option will import the IPIX images into the current icon location. The member type of the icon is *InteractivePictureIPIX*.

*Import IPIX Script* – This menu option will import IPIX IPScript into the current icon location. The member type of the icon is *InteractivePictureIPIXScript*.

*Create Empty IPIX Cast* – This menu option creates an empty IPIX into the current icon location. The member type of the icon is *InteractivePictureIPIXLingoLoad*.

*About IPIXtra* – This menu option will display information about IPIX and relay contact information to the users. This menu option does not create a icon.

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### Inserting an IPIX into a Authorware's Piece

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- **Step 1:** Make sure all the IPIXtra files and IPIX Authoring License are installed into Authorware xtra subdirectory.
- **Step 2:** Set the Authorware pointer location to the location that the IPIX xtra is to be inserted.
- **Step 3:** Select *'Interactive Picture Types'* from Authorware's 'Insert' Menu. Select Import IPIX Image. You will be prompted to locate the IPIX from the desired drive. After doing so, the IPIX will be loaded into the piece.
- **Step 4:** You are finished! Now, use the new IPIX icon in the same manner you would use any other. See unLoad section.
- **NOTE 1: Once the Authorware's Piece has been saved the IPIX images needs to be in the Piece's IPIX subdirectory to reopen the Piece.**
- **NOTE 2:** Upon completion of the above steps, while viewing an IPIX on the presentation window, you may find that the IPIX's navigational cursors flicker when simply rolling over an IPIX on the Macintosh Xtra. To solve this issue, refer to the *'Developer Issues for Authorware'* portion of this documentation.

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## Preloading and Unloading IPIX Images

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The IPIX images are not loaded into memory until the sprite has been created, unless the images have been preloaded using Authorware's preLoad lingo commands. Once an IPIX is loaded into memory the image will remain in memory until one of the following events occur:

- The icon is unloaded using Authorware lingo.
- Authorware unloads the icon because of lack of memory on the machine
- The Authorware Piece is closed

### Preloading IPIX:

IPIX images can be preloaded using the standard Authorware Lingo commands for piece icons. One word of caution: preloading an IPIX image will work only on piece that have been saved and reopened.

### Unloading IPIX:

Once the piece is finished with an IPIX sprite, the icon should be unloaded using the Unload Lingo command. This command will unload the icon and remove the IPIX image from memory. If this command is not called, the piece memory requirement will increase for each IPIX loaded. The Unload command is referenced in the online Lingo help.

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## IPIX Images Directory

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When Authorware imports an IPIX image the entire path is stored into the piece once the piece is saved. The IPIX images are not imported into Authorware movie so the IPIX images are external files for the piece. When the piece loads an IPIX it will search for the IPIX image files. The IPIXtra looks in three different locations for the IPIX image whenever the Xtra needs to load an IPIX. The list below is the IPIXtra's search order for the IPIX images:

1. The Authoware piece's or packaged piece IPIX subdirectory
2. The Authorware piece's or packaged piece directory
3. The original import path

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## Palettes

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The IPIXtra displays the IPIX images in three different color resolutions, 8 bit (256 colors), 16 bit (thousands of colors), and 24 bit. The color resolution is determined by the settings on the computer at run time. When the computer display is in 8 bit (256 color) display mode, the IPIXtra sets the palette for the image. The IPIXtra will display the 16 or 24 bit IPIX image when the display mode is above 8 bit display mode.

### 8 Bit IPIX (256 colors)

The IPIXtra utilizes the palette in the IPIX images in 8 bit imported at load time of the image. The IPIX palette imported by the IPIXtra is the optimized palette for the color quality of the IPIX. The optimal method of modifying the IPIX palette is to change the palette in the IPIX image using the IPIX Photoshop plugin in Equilibrium's Debabelizer Pro version 4.5. This program can find the optimal color conversion for the IPIX image. Once the palette of the IPIX has been modified in Debabelizer, the new IPIX palette will be used when the piece loads the IPIX.

### Computer Display Color Resolution

The source color resolution is determined when the IPIX image is loaded into memory. The color resolution is determined by the computer display color depth. The minimum color resolution support by the IPIXtra is 8 bit display. The IPIX images are loaded into memory and are then converted to the current color depth of the computer displaying the image. The 8 bit or 256 color depths are used when the computer display is in 8 bit display mode. The 16 bit IPIX color depth is used when the computer display is 16 bit and the 24 bit IPIX color depth is used when the computer display is 24 bit..

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## IPScripts

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IPScripts are self-moving IPIX images complete with full multimedia possibilities not dependent on user interaction. IPScripts are generated using IPIX TV Studio software. See the IPIX website or contact IPIX sales for more information about IPIX TV Studio.

When a Authorware Piece has an IPScript as a icon of a piece, the IPIXtra and the Authorware piece will load the media required for the IPScript. When the IPScript needs to load a media (IPIX, Sounds, etc.), the IPIXtra will send an event to Authorware. The Authorware Piece can either handle the event or except the default functionality of the IPIXtra. The IPIXtra will only load IPIX or IPScript and they must be in the same directory as the IPScript. The rest of the media must be handled by the Authorware piece by event handling. See Authorware event handling section for more information.

The IPIXtra has some Lingo commands that are specific to the IPScript. These commands are described in the IPIXtra Lingo commands section.

### IPScript Controls

- ipxSetScriptState ()
- ipxRewindIPScript ()
- ipxSetInteractState()
- ipxIsIPScriptLoaded ()

Also, there are IPScript events that are passed to Authorware to tell the Authorware piece that the IPIXtra has finished playing the IPScript. See the IPScript Event in the Authorware event handling section.

The IPScript allows the user to interact with the IPIX image causing the IPScript to stop running. The Authorware piece needs to provide ways to resume the IPScript. There are also ways for the IPScript to prevent the users from interacting with the IPScript while the script is automating. See the IPIX TV Studio documentation for more information about the IPScript.

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## IPIXtra Authorware Event Handling

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The IPIXtra event control will allow the customization of the controls of the IPIX Sprite window. The events will allow the Authorware pieces to control the cursor shapes, hot spot cursor shapes, sends a event when a media is about to load, draw hot spot targets on the image, and draw embedded text on the window.

The events are:

- 1 Set Cursor
- 2 Launching a Media (IPIX, Sounds, etc.)
- 3 Draw Hot spot Target
- 4 Pre Display Embedded Text
- 5 IPScript Event

### Event Table

#### Set Cursors

Description: This event is called when the IPIXtra needs to update the cursor.

Parameters:

- |                   |  |
|-------------------|--|
| Cursor Index -    | Cursor Index (200-207) and (216,217)<br>See Cursor Index Table   |
| HotspotType -     | Hot spot Type(0-16) (-1 no hot spot)<br>See Hot spot Types Table |
| HotspotFilename - | Hot spot filename  |

### Launching a media

Description: This event is called when the IPIXtra is about to launch a media. There are two media types that the default will execute (IPIX and IPScript). The other media types will be ignored by the Xtra.

Parameters:

MediaType - Media Type(0-16)  
See Media Types Table  
MediaFilename - Media filename

### Draw Hot spot Bullseye

Description: This event is called before the IPIXtra draws a hot spot bullseye at the location given in param1. This event allows the user to draw a bullseye at the location given in param1. If the bullseye has been overwritten by the piece, then this event needs to return a TRUE to prevent the IPIXtra from drawing the bullseye in the sprite.

Parameters:

HotspotCenter - Hot spot Center Point(x-coordinate,y-coordinate)  
MediaType - Media Type(0-16)  
See Media Types Table  
MediaFilename - Media Filename

### PreDisplay Embedded Text

Description: This event is called to allow users to add embedded text windows in the location given in param1. If this event returns a TRUE, the Xtra will display the embedded text. This is not recommended unless the windows palette is used in the palette channel. If the movie sets a palette in the palette channel, the embedded text will appear as black and white.

Parameters:

Location - Embedded Text location  
MediaType - Media Type(0-16)  
See Media Types Table  
MediaFilename - Media Filename

### IPScript Event

Description: This event is called when an IPScript is paused, resumed, or the last command of the IPScript has been executed.

Parameters:

IPScriptState - Type of IPScript event(0-2)  
0 – End of Script  
1 – Script Paused  
2 – Script Resumed

Cursor Index Table	Media Types Table	Hot spot Types Table
200: Right	0: Undefined	-1: No Hot spot
201: Up Right	1: IPIX	0: Undefined Hot spot
202: Up	2: JPEG	1: IPIX Hot spot
203: Up Left	3: Wave	2: JPEG Hot spot
204: Left	4: MIDI	3: Wave Hot spot
205: Down Left	5: Text	4: MIDI Hot spot
206: Down	6: Video	5: Text Hot spot
207: Down Right	7: IPScript	6: Video Hot spot
216: Zoom In	8: URL	7: IPScript Hot spot
217: Zoom Out	9: EXE	8: URL Hot spot
	10: Custom	9: EXE Hot spot
	11: Vox	10: Custom Hot spot
	12: QTSound	11: Vox Hot spot
	13: QTVideo	12: QTSound Hot spot
	14: Exit	13: QTVideo Hot spot
	15: SY7	14: Exit Hot spot
	16: NullText	15: SY7 Hot spot
		16: NullText Hot spot

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### **Cross Platform Authorware Piece (Win95/NT/3.1/Mac PPC/68k)**

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- Authorware authoring mode requires the IPIX images to be in the IPIX subdirectory of the Authorware Piece or in the same directory as the Authorware Piece to make the Piece cross-platform friendly. In the Authorware Packaged piece the IPIX images must either be in the packaged piece's directory or in an IPIX subdirectory of the packaged piece.
  - Windows 3.1 requires all files to have eight or less characters.
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## IPIXtra Lingo Commands

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The IPIXtra implements most of a normal sprite's behavior. There are specific Lingo methods that are incorporated inside the Xtra to extend the developer's control of IPIX. Below are the different IPIX methods that can be used to manipulate an IPIX's behavior through the IPIXtra. Detailed descriptions will follow.

### **IPIX View Point**

- ipxGetPTRZ()
- ipxResetPTRZ()
- ipxSetDefaultPTRZ()
- ipxSetPTRZ()

### **IPIX Load**

- ipxLoadIPIX()

### **Hot spot Controls**

- ipxSetHsEnable()
- ipxSetHsTargetState()

### **IPScript Controls**

- ipxSetScriptState ()
- ipxRewindIPScript ()
- ipxSetInteractState()
- ipxIsIPScriptLoaded ()

### **General**

- ipxSetKeyboardState()
  - ipxSetNavigationSpeed()
  - ipxSetDefaultEvent()
- 
-

---

**IPIX View Point**


---

These Lingo commands will allow Director movies to manipulate the PTRZs (Pan, Tilt, Rotation, Zoom) of an IPIX image. The following will describe the effects of the PTRZ and give the limitations of the parameters.

<b>Pan:</b>	Horizontal Angle (-180 to 180 Left to Right)
<b>Tilt:</b>	Vertical Angle (-90 to 90 Bottom to Top)
<b>Rotation:</b>	Rotation Angle (-180 to 180 Clockwise)
<b>Zoom:</b>	Magnification (~0.2 to ~1.8 Zoomed Out to Zoom In)

---

**Syntax:** `ipxGetPTRZ (listPTRZ )`

**Description:** This Lingo command will set the listPTRZ parameter to the current PTRZ(Pan, Tilt, Rotation, Zoom) viewed by the IPIXtra.

**Parameters:**

*listPTRZ* A linear list large enough to retrieve the PTRZ values from the IPIX. The limits of the parameters are as follows: **[P,T,R,Z]**

**P(Pan)** -180 to 180 left to right

**T(Tilt)** -90 to 90 bottom to top

**R(Rotation)** -180 to 180 clockwise

**Z(Zoom)** -The magnification is varied both by size of the output window and the resolution of the IPIX. (~0.2 to ~1.8)

**Returns:** Nonzero if Lingo command executed successfully

**Example:** set result to ipxGetPTRZ([30, 30, 0, 0.7])

**See Also:** ipxSetPTRZ, ipxsetDefaultPTRZ

---

**Syntax:** `ipxResetPTRZ()`

**Description:** This Lingo command will reset the current pan, tilt, rotation, and magnification to the IPIX default PTRZ and update the display. The default PTRZ can be reset by the ipxsetDefaultPTRZ command.

**Returns:** Nonzero if Lingo command executed successfully

**Example:** set result to ipxResetPTRZ ()

**See Also:** ipxsetDefaultPTRZ

---

<b>Syntax:</b>	<b>ipxSetDefaultPTRZ(listPTRZ )</b>
<b>Description:</b>	Sets the default PTRZ viewing angles of the IPIX. The default view is utilized when the right mouse button or the space bar is pressed. The ipxResetPTRZ Lingo command will reset to this PTRZ value.
<b>Parameters:</b>	A linear list containing the PTRZ to set the IPIX Default viewing angles . The limits of the parameters are as follows: <b>[P,T,R,Z]</b>
<i>listPTRZ</i>	<b>P(Pan)</b> -180 to 180 left to right <b>T(Tilt)</b> -90 to 90 bottom to top <b>R(Rotation)</b> -180 to 180 clockwise <b>Z(Zoom)</b> -The magnification is varied both by size of the output window and the resolution of the IPIX. (~0.2 to ~1.8)
<b>Returns:</b>	Nonzero if Lingo command executed successfully
<b>Example:</b>	set result to ipxSetDefaultPTRZ ([30, 30, 0, 0.7])
<b>See Also:</b>	ipxResetPTRZ

---

<b>Syntax:</b>	<b>ipxSetPTRZ(listPTRZ )</b>
<b>Description:</b>	This Lingo command will set the PTRZ(Pan, Tilt, Rotation, Zoom) currently viewed by the IPIXtra.
<b>Parameters:</b>	A linear list containing the PTRZ to set the current IPIX view. The limits of the parameters are as follows: <b>[P,T,R,Z]</b>
<i>listPTRZ</i>	<b>P(Pan)</b> -180 to 180 left to right <b>T(Tilt)</b> -90 to 90 bottom to top <b>R(Rotation)</b> -180 to 180 clockwise <b>Z(Zoom)</b> -The magnification is varied both by size of the output window and the resolution of the IPIX. (~0.2 to ~1.8)
<b>Returns:</b>	Nonzero if Lingo command executed successfully
<b>Example:</b>	set result to ipxSetPTRZ ([30, 30, 0, 0.7])
<b>See Also:</b>	ipxGetPTRZ

---

**IPIX Load**


---

**Syntax:** `ipxLoadIPIX(filename, usePalette, palCastMem )`

**Description:** This Lingo command will load the IPIX filename into the cast member specified (listCast). This command will be ignored if the cast member's sprite does not exist on the stage. The palette cast member (palCastMem) will receive the palette of the IPIX image loaded by this lingo command. The Palette cast member must be a palette member and this lingo command will change the palette colors. After the IPIX is loaded into the cast member and the IPIX palette has been set into the palette cast member this command will puppetPalette the cast member. You must unpuppet the palette (puppetPalette 0) or puppet a different palette when finished displaying the IPIX.  
 WARNING: The palette cast member (palCastMem) cannot be the current active palette before this Lingo command is executed.  
 WARNING: The palette cast member (palCastMember) will be overwritten by this command.

**Parameters:**

*filename* A String containing either the full path of the IPIX file or the filename itself. The Xtra will look in the movie's IPIX subdirectory.

*UsePalette* Flag to set an IPIX palette: If zero, then palCastMem is ignored, and the palette is not set. If greater than zero, the IPIX palette will be set in the Palette cast member given in palCastMem.

*palCastMem* A Linear list describing the palette cast member that will receive the IPIX palette. The cast member must be a Palette cast member. WARNING: this will change the palette colors in the cast member, and the new palette will be saved in the movie when the movie is saved.

**Returns:** Nonzero if Lingo command executed successfully

---

**Hot spot Controls**


---

These Lingo commands will allow Director to control the hot spot states. These Lingo commands can enable/disable hot spots and enable/disable hot spot targets. Hot spot cursor events and hot spot targets can be controlled by the registered handler callback.

---

**Syntax:** `ipxSetHsEnable(enable)`

**Description:** This Lingo command will enable/disable hot spots displayed in the IPIX window. When hot spots are enabled the hot spot event will be called in the registered handler when the mouse moves over a hot spot. If the event returns a FALSE, the default functionality will be executed. When the hot spots are disabled, the hot spot event will not be called and the mouse cursor will not be set to a hot spot cursor. The hot spots are enabled initially.

**Parameters:**

*enable*

- Hot spot enable/disable state (0-disable 1-enable)

**Returns:** Nonzero if Lingo command executed successfully

---

**Syntax:** **ipxSetHsTargetState(enable)**

**Description:** This Lingo command will enable/disable states for hot spot targets displayed in the IPIX window. Hot spot targets are drawn into the IPIX window to give a visible location of all hot spots in the image. The hot spot targets will appear only if the hot spots are both enabled and the targets are enabled. The hot spot target state can be set any time, but the hot spots must be enabled for the targets to appear in the IPIX window.

**Parameters:**  
*enable*

- Hot spot target enable/disable state (0-disable 1-enable)

**Returns:** Nonzero if Lingo command executed successfully

---

### **IPScript Controls**

---

These IPIX Lingo commands will control the states of the IPIX IPScripts. These commands will pause/resume, rewind, and check to see whether an IPScript is currently loaded. IPIX IPScripts control the timing of: motion within an individual IPIX (pan, tilt, rotation, and zoom), other multimedia events (narration, music, etc.), and transitions to other IPIX or other images. IPScripts are generated using the IPIX-TV Studio software.

**Syntax:** **ipxSetScriptState (newState)**

**Description:** This Lingo command will play or pause the IPScript.

**Parameters:**  
*newState*

- TRUE – Run the IPScript, FALSE – Pause the IPScript

**Returns:** Nonzero if Lingo command executed successfully

---

**Syntax:** **ipxRewindIPScript ()**

**Description:** This Lingo command will rewind the IPScript.

**Returns:** Nonzero if Lingo command executed successfully

---

**Syntax:** **ipxSetInteractState(interactState)**

**Description:** This Lingo command will set the user interface interaction state. This command will allow the Authorware Piece developer to play IPScripts and will not allow the user to pause the IPScript.

**Parameters:**  
*newState*

- TRUE – Allow Interaction(default), FALSE – No Interaction

**Returns:** Nonzero if Lingo command executed successfully



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<b>Syntax:</b>	<b>ipxIsIPScriptLoaded ()</b>
<b>Description:</b>	This Lingo command will return TRUE if the file loaded in the Xtra is an IPScript
<b>Returns:</b>	TRUE – IPScript is loaded FALSE – IPScript is not loaded

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### General

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<b>Syntax:</b>	<b>ipxSetKeyboardState(enable)</b> (PC only)
<b>Description:</b>	Sets the enable/disable state for the keyboard. One word of caution: when the IPIXtra has the keyboard state enabled, Director movies will not receive any keyboard inputs. The default keyboard state for the IPIXtra is disabled to allow Director to utilize the keyboard inputs.
<b>Parameters:</b> <i>enable</i>	<ul style="list-style-type: none"> <li>Keyboard enable/disable state (0-disable 1-enable)</li> </ul>
<b>Returns:</b>	Nonzero if Lingo command executed successfully

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<b>Syntax:</b>	<b>ipxSetNavigationSpeed(speed)</b>
<b>Description:</b>	This Lingo command will set the pan/tilt/zoom navigation speed to allow movies to accelerate or slow the panning speed.
<b>Parameters:</b> <i>speed</i>	<ul style="list-style-type: none"> <li>Speed increment base (0 to 100)</li> </ul>
<b>Returns:</b>	Nonzero if Lingo command executed successfully

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<b>Syntax:</b>	<b>ipxSetDefaultEvent(event, enable)</b>
<b>Description:</b>	This Lingo command will enable/disable the default functionality of an event from getting executed by the IPIXtra. If the piece is going to set the cursors for the IPIX sprite then this lingo command must set the enable of event 1 to 0 to prevent the cursor from getting set by the IPIXtra. If an event has the default disabled then the piece must handle all of the different cases of the event. For instance the Set Cursor event must handle all the cursors in the Cursor Index Table or the cursor will not be updated.
<b>Parameters:</b> <i>event</i>	<ul style="list-style-type: none"> <li>Event number to enable/disable default functionality(1-5)</li> </ul>
	<ol style="list-style-type: none"> <li>Set Cursor</li> <li>Launching a Media</li> <li>Draw Hot spot Bullseye</li> <li>PreDisplay Embedded Text</li> <li>IPScript Event</li> </ol>
<i>enable</i>	<ul style="list-style-type: none"> <li>Event default enable/disable(0-disable 1-enable )</li> </ul>
<b>Returns:</b>	Nonzero if Lingo command executed successfully



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## Trouble Shooting

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**Interactive Pictures Corp. Type' menu item does not appear in Authorware's 'Insert Menu':**

The IPIXtra has not been installed correctly. Refer back to the 'Installing the Interactive Pictures Corp. IPIXtra' section of this documentation for exact installation procedure.

**Error cannot run in Authorware Authoring mode:**

If the IPIX types menu appears and the Xtra shows an error message saying that the Xtra cannot run in authoring mode, this means the IPIXtra cannot find the license (IPIXtra.lic) in the directory with the IPIXtra. Copy the license to the Authorware subdirectory where the IPIXtra file resides. If you have not purchased an IPIXtra license, contact IPIX sales to acquire the IPIXtra license.

**IPIXtra cannot find the IPIX images:**

When an IPIX has been imported into a Authorware piece, the pathname of the image is saved in the movie. When the piece with the IPIX icon is opened again, the IPIXtra will search for the IPIX image to be in the IPIX subdirectory of the piece or the piece's directory. If the IPIXtra still hasn't found the IPIX image then it will search the entire path saved when the image was imported. The recommended location for the IPIX images is either the piece's or packaged piece's IPIX subdirectory. See the IPIX Image Directory section.

**The cursor flashes when the piece sets the cursor for the Sprite:**

If the piece is setting the cursor for the IPIX sprite the IPIXtra is still setting the cursor at the same time. If the piece sets the cursor the default of the Set Cursor event must be disabled using the ipxSetDefaultEvent Lingo command. See ipxSetDefaultEvent Lingo command in the IPIXtra Lingo section.