USER MANUAL - CYVIZ - STEREO 3D CONVE

xpo.1 xpo.2

VIZ - STEREO 3D CONVERTER - A NEW DIMENSION TO 3D TECHNOLOGY

CYVIZ

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Setting up the xpo

Part II

Using the xpo

Part III

Appendixes

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A Requirements

.1 PC and graphics card

To run stereo using the xpo you need a frame-sequential stereo source, like a computer with a stereo-capable graphic card.

If you have a stereo-capable graphics card, you need to enable the stereo (some refer to it as quad buffer). For a PC, this is usually done in the ***Display Properties***.

Any kind of stereo signal running as active stereo (shutter glasses) will be accepted by the xpo.

See ***www.stereographics.com*** for a list of stereo-capable graphics cards

.2 Projectors

You need two projectors to display stereo.

To get the most out of your xpo, the projectors should support the maximum resolution of your xpo.

Also see ***chapter C.4 (Eyestrain/Color or brightness differences in projectors)***.

You need; a frame-sequential stereo source, a stereo-capable graphic card and two projectors.

The xpo supports resolutions up to 1280x1024.

For the latest information and related url links please visit our ***technical support*** pages at ***www.cyviz.com***

A Requirements

.3 Screen

You need a screen with a non-depolarizing surface. Silverscreens and many rear-projection screens have this quality.

! Ordinary white screens or white walls do not have a non-depolarizing surface and may not be used.

For more information on recommended screens go to ***http://www.stewartfilm.com***

.4 Polarizing filters

You need to place a polarizing filter in front of the lens of both projectors. This is done by using the provided filters and filter stand.

There are two kinds of polarizing filters, the linear (most common) and circular. The provided filters are of the linear type.

! The filters need to be placed at the correct rotational angle, as described in ***chapter B.4 (Setup procedure/Setting up linear polarizing filters)***.

! CAUTION! The filters can easily become distorted or gain hot spots if overheated. Max temperature for filters is 75 degrees Celcius. Precautions should be taken to ensure proper ventilation. Filters should be considered as a replacable item.

! You need; a screen with non-depolarizing surface, two polarizing filters and a filter stand.

i The filter stand and two filters are bundled with the xpo.

For the latest information and related url links please visit our ***technical support*** pages at ***www.cyviz.com***

.5 Viewing glasses

If you need replacement filters visit our web page ***www.cyviz.com***

You need to use a pair of polarizing viewing glasses that match the polarization type of your polarizing filters.

There are 10 pairs of glasses delivered with each xpo. These match the included polarizing filters. You may use other viewing glasses as long as they match the polarization filters in use.

The polarization of your viewing glasses must match the polarization of your polarization filters.

If you require more pairs of viewing glasses visit our web page ***www.cyviz.com***

You need; a pair of polarizing viewing glasses that match the polarization of your polarization filters.

The xpo comes with 10 pairs of glasses. These glasses match the linear polarization of the polarization filters.

For the latest information and related url links please visit our ***technical support*** pages at ***www.cyviz.com***

B Setup procedure

.1 Connecting projectors

Use VGA or DVI cables to connect the two projectors to the left and right VGA or DVI output channel of the xpo. (See ***figure B.1-1*** on the right).

i We recommend using the DVI output on the xpo wherever possible.

! The DVI signal has restrictions regarding cable length.

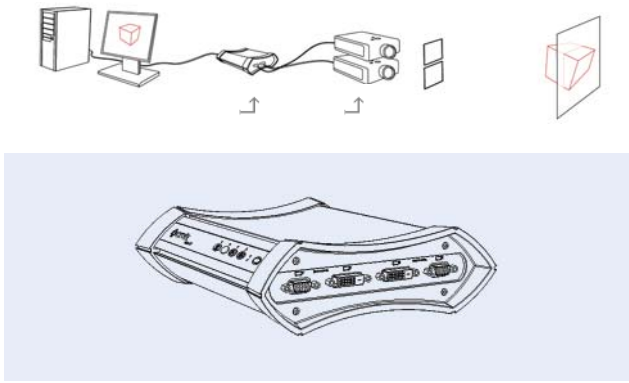


figure B.1-1 (DVI and VGA out)

.2 Connecting the PC

Use a VGA cable to connect the VGA output of the PC to the VGA input of the xpo. (See ***figure B.1-2*** on the right).

The xpo is delivered with a standard cable to be used when there are 15pin VGA connectors at both ends.

i Not all computers have a 15pin VGA

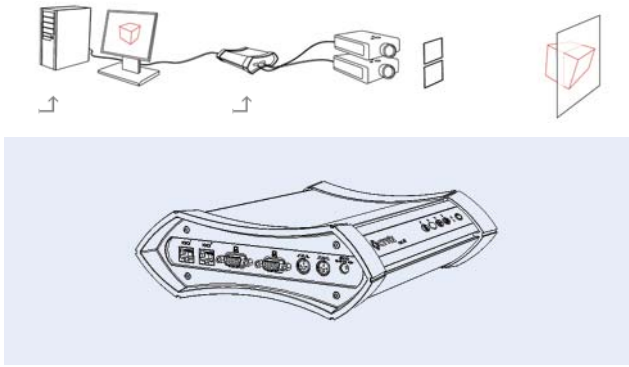


figure B.1-2 (VGA in)

! Follow the setup procedure carefully. This will save you time.

i Use the DVI cable if possible.

You can find more technical information on the connectors in ***Part III (Appendixes)***, ***chapter C (Connectors)***.

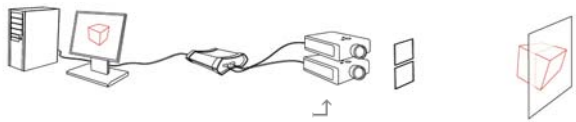
B Setup procedure

.2 Connecting the PC

connector. Some other popular connectors are SUN type 13W3 and SGI type 13W3. These require an adapter or a special cable to connect to the xpo.

! Note that SGI and SUN have different pinout for 13W3 connectors.

.3 Aligning the projectors



To get the highest possible stereo image quality, you need to align the two projectors to display their picture onto the exact same area. Although it may be difficult to get 100% alignment, you will still be able to see stereo even if the projectors are not completely aligned.

i Properly aligned projectors enable you to read 2d details without using viewing glasses or having to black out one of the channels.

To align the projectors you need to get a test image with a cross-hatched geometry pattern. If you are using MS Windows you may download the freeware ***`ntest´*** monitor testing utility (© Nokia Monitors) and run the geometry test.

The ***`ntest´*** and ***test patterns*** can be found on our ***technical support*** pages at ***www.cyviz.com***.

! Correct setup gives optimal image quality and minimal eyestrain.

! Better alignment gives less eyestrain and distortions.

Useful downloads are available from our ***technical support*** pages at ***www.cyviz.com***

B Setup procedure

.3 Aligning the projectors

To set up your projectors, follow the steps below carefully:

Step 1. Placement of projectors

Place the projectors at an appropriate distance from the screen. Depending on your projectors and screen, this might be between 3 - 6 meters.

The projectors need to be stacked on top of each other. (See ***figure B.3-1*** and ***figure B.3-2*** on the right). Try to align the projectors in such a way that they are perfectly on top of each other, and that they are at the same angle for all axes.

! If your projectors have no lens-shift, you need to position the lower projector to point slightly up, and the upper slightly down. (See ***figure B.3-3*** on the right).

! Do not use digital keystone correction if you can avoid it.

Now; power up the projectors. You should be able to see images on both projectors. If they are not already aligned, two images will be visible superimposed on each other.

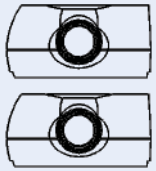


figure B.3-1 (front view)

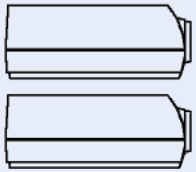


figure B.3-2 (side view)

figure B.3-3 (no lens-shift)

! The two projectors should be aligned at the same angle at all axes.

i A projector rack is not required, but may be useful.

Information on available racks can be found on our ***technical support*** pages at ***www.cyviz.com***

B Setup procedure

.3 Aligning the projectors

Step 2. Zoom

Zoom the images to cover as much of your screen as possible.

Also the size of the image needs to be as equal as possible. Normally this is easiest to do by checking the width of the images. The outer left and right lines of the test image from both projectors need to overlap.

Also check that the bottom projector's lower pixel line is at the bottom of the screen. This can be done with lens shift or physically adjusting the beam direction of the projector, which normally is done by adjusting the projector legs.

i If the image is too small for the screen and you are not able to zoom close enough, you may have put the projector too close to the screen. If the image is too large, you may need to put it closer to the screen.

Step 3. Focus

Adjust focus to get a clear image on both projectors.

i If you have problems focusing, the projectors may be too close or too far away from the screen.

! Follow the alignment steps carefully.

i The outer left and right lines of the two test patterns need to overlap.

Refer to your projector user manual for directions on how to adjust zoom and focus.

B Setup procedure

.3 Aligning the projectors

Step 4. Beam alignment

Make the vertical edges overlap by shifting the upper or lower projector physically sideways, forward or backward.

Step 5. Lens shift

Now adjust the lens shift of the upper projector until the image overlaps the image from the lower projector perfectly.

! If your projectors do not have a lens shift function you must do this by physically adjusting the beam direction. This can normally be done by adjusting the projector legs.

Step 6. Fine-tuning

If you are not satisfied with the result, go back to ***Step 1. Placement of projectors*** and fine-tune the setup.

Step 7. Fine tuning the xpo

Please refer to ***Part II (Using the xpo), chapter B.1 (On Screen Display/Source Setup)*** for fine tuning the xpo to the source.

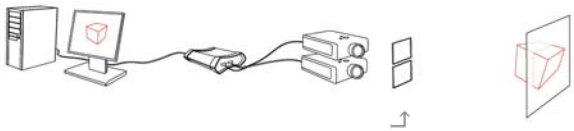
! For optimal stereo image quality fine-tune your setup.

i The lens shift function is not required, but is helpful when aligning the projector beams.

If you have any problems, please refer to our ***technical support*** pages at ***www.cyviz.com***.

B Setup procedure

.4 Setting up linear polarizing filters



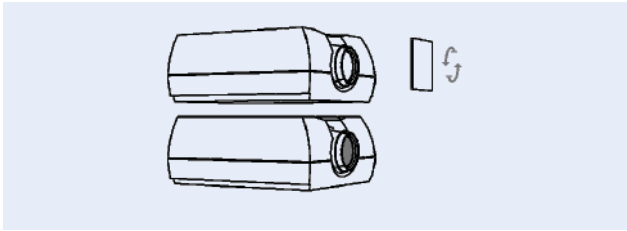


figure B.4-1 (rotation)

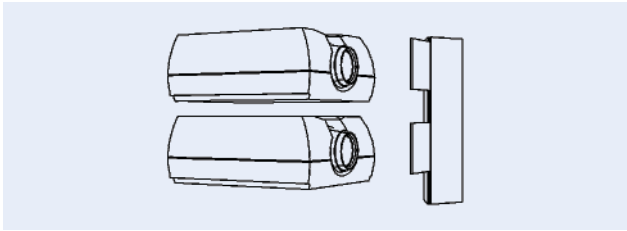


figure B.4-2 (filterstand with filters)

! WARNING: Do not look directly into the beam of the projector! That may cause damage to your eyes!

It is important to get the left image at the left eye. To do this, press the `right black button´ and the projector showing the right eye will go black. Now put on a pair of polarizing glasses, and hold one of the polarizing filters in front of the projector that is not blacked out. Rotate the filter until the image seen through the right eye appears as black as possible. (See ***figure B.4-1*** on the right).

! It is important that your head and glasses are at a normal viewing position horizontally when doing this.

When the correct angle is found, place the filter into the filter stand at that angle, in such a way that it covers the projector light beam. (See ***figure B.4-2*** on the right).

Do the same with the other filter (using the

! WARNING: Do not look directly into the beam of the projector! That may cause damage to your eyes!

! You must hold your head (glasses) at a normal viewing position while checking the image.

B Setup procedure

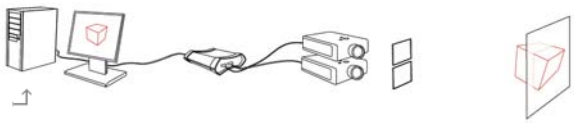
.4 Setting up linear polarizing filters

same projector), but now the images should appear black on the left eye. When the correct rotational angle is found, place the filter into the filter stand making sure it covers the other projector light beam.

Press the `right black button´ L R again to switch on both projectors, and check that the left eye sees one projector image, and the right eye sees the other image.

Also see ***chapter C.3 (Eyestrain/Incorrect setup of polarizing filters)***.

.5 Enabling the stereo software



In addition to enabling the stereo on the graphic card, you normally in OpenGL applications also have to enable the stereo in the software you are using. You may also need to adjust your stereo settings, such as eye distance and focus point.

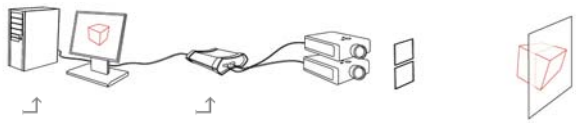
Correct setting of eye distance and focus point will optimize image quality and minimize eyestrain.

Please refer to your graphic cards manual for instructions on how to adjust the stereo settings.

Remember to enable the stereo in the software, as well as on the graphic card.

B Setup procedure

.6 Connect the stereo sync cable (if possible)



If your graphic card has a stereo sync connector, connect it using a stereo cable that fits your stereo sync output. If you do not have such a cable, you may need to press the `toggle button´ L|R on the keyboard to tell the xpo which picture is left and right.

! If no stereo sync is used, the stereo sync may be lost during presentation and you may have to press toggle again!

! It is strongly recommended to use the stereo sync cable.

See ***Part II (Using the xpo)***, ***chapter D (Technical Information), Different types of stereo sync***, for more technical information on this subject.

C Eyestrain

If you feel uncomfortable/dizzy looking at the picture, through the glasses, please check these settings:

.1 Checking left and right image

To check whether the left and right image is swapped, you may easily turn your glasses either upside down, or looking outside in (not both!). If the image looks correct this way, the left and right image are swapped. This may be caused by different things, such as setting the polarizing filters wrong, bad software settings or wrong definition of stereo sync polarity. You may also use the Left/Right Ident function found in the On Screen Display, under Special/Testmodes for easier identification.

.2 Software parameters

Bad software parameters such as eye distance, and focus point may cause eyestrain. Unfortunately also bad algorithms for displaying stereo have been discovered in some software. The best algorithms should have no vertical disparity/displacement at any point of the scene. You can easily detect this by removing the glasses and pick any random edge/point of an object. The point should only have a horizontal displacement, and nothing vertically.

C Eyestrain

.3 Wrong setup of linear polarizing filters

A slight wrong rotation of these filters will make the picture greenish or purplish. This makes the color of the left and right eye slightly different, and may feel uncomfortable.

As the projector lamp gets older, they change their characteristics in color and brightness. Therefore you should start with projectors of the same age, and when replacing lamps, you should replace both lamps at the same time.

.4 Color or brightness differences in projectors

As the projector lamp gets older, they change their characteristics in color and brightness. Therefore you should start with projectors of the same age, and when replacing lamps, you should replace both lamps at the same time.

.5 Moving objects

If you notice eyestrain when objects are moving, it could be because of the order the left and right images are output. Not all graphic cards do this properly.

See ***Part II (Using the xpo)***, ***chapter D (Technical Information)*** for more technical information on this subject.

D Remote controlling

The serial ports enable you to remote control the xpo from a distant location using a standard RS-232 serial port.

Also the master unit may link to a second xpo, the second to a third and so on, so that you may be able to control all units from a single serial port. To do this, see “Serial commands”.

For instructions on how to link multiple xpo converters, see ***Part II (Using the xpo)***, ***chapter C.6 (Serial Commands/Linking of units)***.

The xpo may be remote controlled through the serial port.

You may set up a chain of linked xpo units, all controllable from the master xpo.

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A Keyboard functions

.1 LED indicators

The xpo has two led indicators, one green and one red.

At power on, both the red and green led will light up. After a few seconds the red led will automatically switch off, leaving the green led on while the converter is in operation. When the unit is in standby mode, no light will show.

.2 Standby button

The `standby button´ is used to turn the unit into low-power mode. The button will be disabled while in the OSD.

.3 Toggle button

The `toggle button´ is only used when there is no stereo sync present, or the xpo runs on internal stereo sync. It should be used when the left and right image is swapped.

Use the `toggle button´ when there is no stereo sync present, or when using internal stereo sync.

Use the `toggle button´ to swap the left and right image.

For the latest functionality updates please visit our ***technical support*** pages at ***www.cyviz.com***

A Keyboard functions

.4 Right black button

The `right black button´ is used for turning the right channel black.

It may be useful to turn the right channel black if you need to run 2d without having to use the viewing glasses and the projectors are not perfectly aligned. It is also useful to check your projector and polarizing filter setup.

.5 User button

The function of the user button can be defined in the OSD menu. See ***chapter B.2 (On screen display/Global settings)***.

.6 Menu button

The `menu button´ is used to activate the `On Screen Display´ (OSD).

Please visit our ***support*** pages at ***www.cyviz.com*** for information on the latest updates on this functionality.

Use the `right black button´ to view 2d without viewing glasses.

You may download the latest version of the user manual from our ***technical support*** pages at ***www.cyviz.com***

For the latest functionality updates please visit our ***technical support*** pages at ***www.cyviz.com***

A Keyboard functions

.7 Cursor buttons

When in OSD, the `cursor buttons´ are used for navigation within the menus.

Please visit our ***technical support*** pages at ***www.cyviz.com*** for information on the latest updates on this functionality.

For the latest functionality updates please visit our ***technical support*** pages at ***www.cyviz.com***

B On Screen Display

When not in a menu, pressing the `menu button´ will activate the OSD menu and display the following:

Main Menu

- - - - - - - - - - -

Source Setup
Stereo Setup
Preferences
Advanced
Info

Use the up ^ and down v arrow buttons to move up and down in the menu, and the right arrow > to confirm your selection. If there is a submenu it will be opened. Wherever you are in the menu hierarchy, pressing the left arrow button < will return to the previous menu (one level up hierarchically), or quit the OSD if you are in the main menu.

OSD is short for `On Screen Display´.

When in the OSD menu, the `cursor buttons´ are used for navigation within the menus.

For the latest functionality updates please visit our ***technical support*** pages at ***www.cyviz.com***

B On Screen Display

.1 Source Setup

When selecting the *Source Setup* menu from the *Main Menu*, the OSD will show the following:

Source Setup
- - - - - - - - - - -
Manual Setup
Auto Setup
Revert Source
Force Odd Res
Store

Source Setup
Manual Setup
- - - - - - - - - - -
Pixel Tracking
Pixel Phase
Brightness
Contrast
DVI Position
Picture Sync
Sync Improvement

B On Screen Display

.1 Source Setup

Source Setup
Manual Setup
Pixel Tracking
Adjust Tracking
At entry=1756
\- - - - - - - - - - -
Adjust using ^/v

"At entry=1756" shows the value used before entering this submenu.


figure B.1-1 (bad pixel tracking)

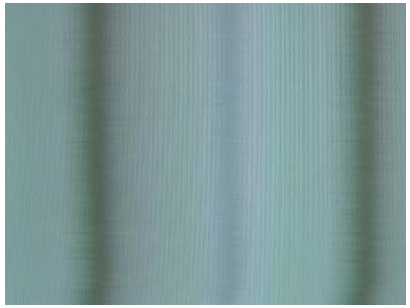


figure B.1-2 (almost ok pixel tracking)

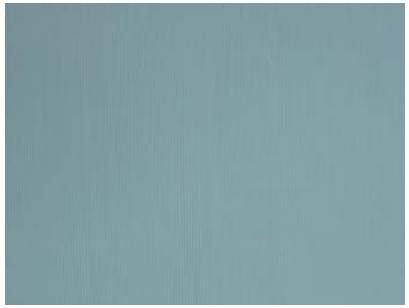


figure B.1-3 (ok pixel tracking)

Pixel tracking (often referred to as frequency or width) controls the width of the image. Generally, an incorrect setting can be observed as an image too wide or too narrow, combined with vertical, unstable bands and irregularities in the pattern displayed. Use the Nokia Monitors© Test Pattern software, or the 50% grey test pattern when performing adjustment

B On Screen Display

.1 Source Setup

procedures. Both can be downloaded from the Cyviz ***technical support*** pages at ***www.cyviz.com***.

The xpo automatically adjusts the pixel tracking to match the incoming source, but non-the-less it might be necessary to do final adjustments manually (unless the image signal has already been stored). The xpo needs the image to have minimum one bright pixel in both left and right border of the frame to do the adjustment. It also requires that the guessed resolution is correct. This is the result in most cases, but if the auto setup doesn't provide you with a stable picture, a manual fine-tuning is needed.

If you are using analog VGA-cable, adjustments may have to be done in both the xpo and the projector. Please refer to the user guide of your projector on how to adjust this. If your xpo is connected to a projector using a DVI-cable this adjustment only has to be done in the xpo (unless your projector overrides the DVI-signals).

Adjust the picture until you see no vertical bands. If you get rid of all the bands, but your picture is still unstable, you will have to adjust the pixel phase as well.

Performing these adjustments requires carefulness and accuracy, but only has to be done once per source. Make sure to store your settings after having achieved the desired result.

B On Screen Display

.1 Source Setup

Source Setup
Manual Setup
Pixel Phase
Adjust Phase
At entry=14
- - - - - - - - - - -
Adjust using ^/v

An image with an incorrect pixel phase can be seen as sideways instability or jitter/swimming. Use this option to fine-tune the picture and get rid of any irregularities. Adjust the pixel phase until you are satisfied with the result, and remember to store your settings. The phase may need readjustment if you are using different cables to the xpo.

"At entry=14" shows the value used before entering this submenu.

Source Setup
Manual Setup
Brightness
Adjust Brightness
At entry=60
- - - - - - - - - - -
Adjust using ^/v

Brightness may be adjusted according to your personal taste, the image and the viewing

B On Screen Display

.1 Source Setup

conditions. Value 60 corresponds to normal setting with no gain. Higher value means higher brightness.

"At entry=60" shows the value used before entering this submenu.

Source Setup
Manual Setup
Contrast
Adjust Contrast
At entry=190
- - - - - - - - - - -
Adjust using ^|v

Contrast may be adjusted according to your personal taste, the image and the viewing conditions. Value 190 corresponds to normal setting with no gain. The higher the number gets, the higher the contrast ratio becomes.

"At entry=190" shows the value used before entering this submenu.

Source Setup
Manual Setup
DVI Position
- - - - - - - - - - -

B On Screen Display

.1 Source Setup

Horizontal
Vertical

Adjustment of the actual DVI position is only affected when using DVI-cables/projectors. Due to minor variations in graphic cards/drivers, the horizontal and vertical position may need adjustment. Tune the vertical and horizontal position until you see the entire picture within the projection area. Download the grid-pattern from the ***technical support*** page at ***www.cyviz.com***, or use the Nokia Monitor Test program when adjusting DVI-position.

When using analog cables, adjusting this value changes the area where the edge-blending is active. When using DVI the active edgeblend area will always be the area shown.

Source Setup
Manual Setup
DVI Position
Horizontal
Adjust Horizontal
At entry=364
- - - - - - - - - - -
Adjust using ^|v

"At entry=364" shows the value used before entering this submenu.

B On Screen Display

.1 Source Setup

Source Setup
Manual Setup
DVI Position
Vertical
Adjust Vertical
At entry=45
\- - - - - - - - - -
Adjust using ^|v

"At entry=45" shows the value used before entering this submenu.

Source Setup
Manual Setup
Picture Sync
\- - - - - - - - - -
Auto
SEP (H+V)
COMP
SOG

Default is *Auto*, and shouldn't be changed unless you are experiencing trouble, or the xpo doesn't recognize the picture sync correctly. Choose the desired picture sync, and press › to activate.

B On Screen Display

.1 Source Setup

Source Setup
Manual Setup
Picture Sync
Auto

Default is *Auto*, and shouldn't be changed unless you are experiencing trouble.

Source Setup
Manual Setup
Picture Sync
SEP (H+V)

Use this option to manually force the xpo to sync on a separate Horizontal and Vertical sync signal.

Source Setup
Manual Setup
Picture Sync
COMP

Use this option to manually force the xpo to sync on a Composite sync signal.

B On Screen Display

.1 Source Setup

Source Setup
Manual Setup
Picture Sync
SOG

Use this option to manually force the xpo to sync on a Sync-On-Green signal (SOG are mostly used on Silicon Graphics (SGI) machines).

Source Setup
Manual Setup
Sync Improvement

Use this option if you experience disturbing artifacts (line jitter) in the middle of the screen. Refer to the serial command ISI for a closer explanation of this function.

Source Setup
Auto Setup

This option causes the xpo to analyse the incoming signal and perform an automatic adjustment.

WARNING: Forcing the xpo to sync on SOG without an incoming SOG signal will render your picture unstable, and may cause it to disappear. In this case you will have to reset the xpo to get the picture back.

B On Screen Display

.1 Source Setup

Source Setup
Revert Source
- - - - - - - - - - -
Press › revert to the settings stored for this source

Source Setup
Force Odd Res
- - - - - - - - - - -
Set X Resolution
Set Y Resolution
Run Force

Source Setup
Force Odd Res
Set X Resolution
- - - - - - - - - - -
1360
1280
1200
1152
1024
856
832

B On Screen Display

.1 Source Setup

800
768
640
Other

Source Setup
Force Odd Res
Set X Resolution
Other
At entry=800
- - - - - - - - - -
Adjust using ^|v

"At entry=800" shows the value used before entering this submenu.

Source Setup
Force Odd Res
Set Y Resolution
- - - - - - - - - -
1024
960
900
864

B On Screen Display

.1 Source Setup

856
800
768
720
642
624
600
576
480
Other

Source Setup
Force Odd Res
Set Y Resolution
Other
At entry=600
- - - - - - - - - -
Adjust using ^|v

"At entry=600" shows the value used before entering this submenu.

Source Setup
Force Odd Res
Run Force

B On Screen Display

.1 Source Setup

Choose this option if you want to run setup with the odd resolution selected. If you accidently force a resolution that is not handled by the monitor or the projector, press > again to restore default settings for this source.

Source Setup
Store

Pressing › will store the settings in a new (or same, if already stored) position, and the position number will be displayed. If the xpo displays *"No changes done"* the source is already stored with the exact same settings. Press ‹ to return to navigation mode.

.2 Stereo Setup

When selecting the *Stereo Setup* menu from the *Main Menu*, the OSD will show the following:

Stereo Setup
- - - - - - - - - -
Input
Output
Output Mode

B On Screen Display

.2 Stereo Setup

Stereo Setup
Input
- - - - - - - - - -
Stereo Format
Stereo Sync
Eye Priority

Stereo Setup
Input
Stereo Format
- - - - - - - - - -
Mono
Frame Sequential
Top/Bottom Halves
Line Interleaved

Stereo Setup
Input
Stereo Format
Mono

Choose this option to treat the incoming signal as a mono signal.

B On Screen Display

.2 Stereo Setup

Stereo Setup
Input
Stereo Format
Frame Sequential

Use this option if your incoming stereosignal is frame sequential format. This is the default setting.

Stereo Setup
Input
Stereo Format
Top/Bottom Halves

Use this option if you are using an incoming stereosignal with top/bottom halves, also known as above-below stereo.

Stereo Setup
Input
Stereo Format
Line Interleaved

Use this option if you are using an incoming stereosignal in line interleaved format.

B On Screen Display

.2 Stereo Setup

Stereo Setup
Input
Stereo Sync
- - - - - - - - - -
Toggle Internal
Stereo Sync Source
Stereo Sync Pol

Stereo Setup
Input
Stereo Sync
Toggle Internal

Pressing › changes the polarity on the internal sync-generator. The toggle option is only active when there is no external stereo sync present and the xpo runs on internal stereo sync. It should be used when the left and right image is swapped, and the order needs to be toggled.

Stereo Setup
Input
Stereo Sync
Stereo Sync Source
- - - - - - - - - -

B On Screen Display

.2 Stereo Setup

Auto
Cyvizync
Interlace
VGA pin 12
DIN connector
Internal

The xpo needs to know what type of stereo sync source the incoming signal is in order to handle the signal correctly.

Stereo Setup
Input
Stereo Sync
Stereo Sync Source
Auto

Auto analyses the incoming signal and chooses the one it considers to be the correct one. Use this mode if you are not sure which stereo sync you have.

B On Screen Display

.2 Stereo Setup

Stereo Setup
Input
Stereo Sync
Stereo Sync Source
Cyvizync

Use this mode if you have a stereo sync source that uses the length of the vertical sync for stereo sync purposes.

Stereo Setup
Input
Stereo Sync
Stereo Sync Source
Interlace

Use this mode if you are using an interlaced format where odd fields represent the left eye picture, and even fields represent the right eye picture. The order of these can be swapped by changing the *Stereo Sync Polarity*.

B On Screen Display

.2 Stereo Setup

Stereo Setup
Input
Stereo Sync
Stereo Sync Source
VGA pin 12

Use this mode if you are using a stereo sync cable connected to a VGA to VGA + 3 pin mini-DIN splitter, or any other cable using the signal from pin 12 on the VGA connector.

This is the default pin used by e.g. Elsa/nVidia and other consumer market equipment.

Stereo Setup
Input
Stereo Sync
Stereo Sync Source
DIN Connector

Use this mode if you are using a stereo sync cable connected to a separate stereo connector (DIN) on your graphics card.

B On Screen Display

.2 Stereo Setup

Stereo Setup
Input
Stereo Sync
Stereo Sync Source
Internal

Use this option if you don't have an incoming stereo sync signal, and want to use the built in signal generator of the xpo. In this case you may use the toggle button when not in the menu.

Stereo Setup
Input
Stereo Sync
Stereo Sync Pol
- - - - - - - - - - -
Normal
Inverted

Stereo Setup
Input
Stereo Sync
Stereo Sync Pol
Normal

B On Screen Display

.2 Stereo Setup

Normally the stereo sync polarity is left frame logically high, and right frame logically low for DIN/VGA pin12. For Interlace odd fields is left frame, for above-below top picture is left frame, and for line-interleaved first/odd lines are left frame.

Stereo Setup
Input
Stereo Sync
Stereo Sync Pol
Inverted

Choose this mode if you need to reverse the stereo sync polarity. Changing the stereo sync polarity will swap the left and right image.

Stereo Setup
Input
Eye Priority
- - - - - - - - - - -
Left Then Right
Right Then Left

B On Screen Display

.2 Stereo Setup

Stereo Setup
Input
Eye Priority
Left Then Right

Normally the Eye Priority is left eye first, and then right. Refer to technical pages for more info on Eye Priority.

Stereo Setup
Input
Eye Priority
Right Then Left

Use this mode if you need to change the eye priority to be right eye first, then left.

Stereo Setup
Output
- - - - - - - - - - -
Channel Swap

B On Screen Display

.2 Stereo Setup

Stereo Setup
Output
Channel Swap
\- - - - - - - - - -
Normal
Swapped

Stereo Setup
Output
Channel Swap
Normal

Normal configuration routes left and right channel to the correspondingly labelled outputs.

Stereo Setup
Output
Channel Swap
Swapped

This mode re-routes the signals causing the left channel to be displayed on the connector labelled right channel, and visa versa.

B On Screen Display

.2 Stereo Setup

Stereo Setup
Output Mode
- - - - - - - - - - -
Vrate Sync Low
Vrate Sync High
Asynchronous

Stereo Setup
Output Mode
Vrate Sync Low

Use this option if you need to force the output vertical refresh rate to low.

Stereo Setup
Output Mode
Vrate Sync High

Use this option if you need to force the output vertical refresh rate to high.

B On Screen Display

.2 Stereo Setup

Stereo Setup
Output Mode
Asynchronous

Use this option if you need to force the output vertical refresh rate to stay within 60 to 70 Hz. This mode is not recommended for stereo viewing. Use this if the display device can not handle the synchronous modes (the synchronous mode will either give output vertical refresh rate half, equal or double the input vertical refresh rate)

.3 Preferences

When selecting the *Preferences* menu from the *Main Menu*, the OSD will show the following:

Preferences
- - - - - - - - - -
User Button
SOG Treshold
Serial Baudrate
Unit ID
Store Preferences

B On Screen Display

.3 Preferences

Preferences
User Button
- - - - - - - - - - -
No Action
TBH Stereo
LSS Stereo
Left Black
Stereo Sync Pol

Preferences
User Button
No Action

Selecting this option will at current have no action. Button is reserved for future functions.

Preferences
User Button
TBH Stereo

Choose this option if you want the user button to toggle between frame-sequential stereo (FSS) and top/below halves stereo (TBH) on the input.

B On Screen Display

.3 Preferences

Preferences
User Button
LSS Stereo

Choose this option if you want the user button to toggle between frame-sequential stereo (FSS) and line-sequential (LSS) input stereomode.

Preferences
User Button
Left Black

Select this option if you want the user button to toggle between normal and a black signal on the left output channel.

Preferences
User Button
Stereo Sync Pol

Choose this option if you want the user button to toggle the stereo sync polarity.

B On Screen Display

.3 Preferences

Preferences
SOG Treshold
At entry=15
\- - - - - - - - - -
Adjust using ^|v

If you experience a missing or unstable picture when sync is set to SOG, you might have to adjust the SOG Threshold. SOG Threshold will only be affected if picture sync is set to SOG. Default level is 15.

Technical: Threshold voltage = (x+1) * 10 mV, where x is the number displayed on the xpo converter.

"At entry=15" shows the value used before entering this submenu.

Preferences
Serial Baudrate
\- - - - - - - - - -
300
1200
2400
4800
9600
19200

38400
57600
115200

Pressing › will make the xpo change the serial baudrate accordingly.

Preferences
Unit ID
Adjust Unit ID
At entry=1
- - - - - - - - - - -
Adjust using ^/v

The Unit ID gives the ID of this unit when linked to other units. All linked units should have different Unit ID's for correct linking.

"At entry=1" shows the value used before entering this submenu.

Preferences
Store Preferences
- - - - - - - - - - -
Confirm using › to save all data (User Button, SOG Treshold, Serial Baudrate, Unit ID).

B On Screen Display

.4 Advanced

When selecting the *Advanced* menu from the *Main Menu*, the OSD will show the following:

Advanced
- - - - - - - - - -
Test Patterns
Reset
Factory Settings

Advanced
Test Patterns
- - - - - - - - - -
Alignment Grid
Hor Moving Bars
Resolve
White
Black
Red
Green
Blue
Left/Right Ident

Use these test modes when you are aligning the projectors and adjusting the picture on the projectors and the xpo.

B On Screen Display

.4 Advanced

Advanced
Test Patterns
Alignment Grid

Pressing › brings up a set of black and white alignment grids. Press ‹ to return to the previous menu.

Advanced
Test Patterns
Hor Moving Bars

Pressing › brings up a set of horizontal moving white bars. Press ‹ to return to the previous menu.

Advanced
Test Patterns
Resolve

Pressing › brings up a set of black and white thin lines across the screen. Press ‹ to return to the previous menu.

B On Screen Display

.4 Advanced

Advanced
Test Patterns
White

Pressing › brings up a white screen. Press ‹ to return to the previous menu.

Advanced
Test Patterns
Black

Pressing › brings up a black screen. Press ‹ to return to the previous menu.

Advanced
Test Patterns
Red

Pressing › brings up a red screen. Press ‹ to return to the previous menu.

B On Screen Display

.4 Advanced

Advanced
Test Patterns
Green

Pressing › brings up a green screen. Press ‹ to return to the previous menu.

Advanced
Test Patterns
Blue

Pressing › brings up a blue screen. Press ‹ to return to the previous menu.

Advanced
Test Patterns
Left/Right Ident

Pressing › will cause the xpo to display the text “Right” on the right channel output, and “Left” on the left channel output for easier identification of the different channels on the output devices.

B On Screen Display

.4 Advanced

Advanced
Reset

This option will warm-reboot the xpo. All data not stored will be lost.

Advanced
Factory Settings
\- - - - - - - - - -
Cancel
Restore

Advanced
Factory Settings
Cancel

Pressing › will cancel the operation and return to the previous menu.

Advanced
Factory Settings
Restore

Pressing › will delete all user data and restore the xpo to factory settings.

B On Screen Display

.5 Info

When selecting the *Info* menu from the *Main Menu*, the OSD will show the following:

Info
- - - - - - - - - -
Firmware
System Status
Source

Info
Firmware

Brings up a menu displaying:

Firmware version: 020913-10254
Serialnumber: 00100A-01F623-02
www.cyviz.com

Info
System

Pressing › brings up a screen displaying

Signal status = Showing

B On Screen Display

.5 Info

Active location = 49
Search mode = Auto
Resolution = 1280x1024p
Pixelrate = 191 MHz
Stereo mode in = FSS
Stereo sync present = none

Press ‹ to return to previous menu.

Info

Source

Pressing › brings up a screen displaying

Hsync is active low
Period = 9.20 us
Frequency = 108.70 KHz
Width = 8.3 %
Vsync is active high
Period = 9.98 ms
Frequency = 100.18Hz
Lines = 1085
Width = 3
Synctype = SEP

B On Screen Display

.5 Info

The Active image synctype shows which picturesync the xpo currently works with.

The stereo sync present lists all the stereo syncs the xpo can detect. At least one should be present when viewing stereo.

The pixelrate shows the rate at which the xpo samples the incoming signal.

The resolution shows what the converter found the resolution to be. In case the converter interprets the resolution wrong, you may force the converter to interpret it as a different resolution by using the Force Odd Res menu under Source Setup.

Press ‹ to return to previous menu.

.6 Changes Done

When exiting from the main menu after having done changes, the following menu appears:

The menu will not be displayed if you haven't modified any settings.

Changes Done
\- - - - - - - - - -
Store

B On Screen Display

.6 Changes Done

Leave As Is
Restore

Changes Done
Store

Pressing › stores the new settings in the current position.

Note that pressing ‹ will leave the settings as is. If you accidentially press ‹, you may re-enter the menu, and exit once more. The store request will then re-appear.

Changes Done
Leave As Is

Pressing › exits the menu without saving.

Changes Done
Restore

Pressing › restore will recall the settings from the stored position. If the source is not stored the “restore” option will not be displayed.

B On Screen Display

When leaving the OSD you might get the following warning if you are not using a stereo sync cable.

- - - - - Warning - - - - -
No stereo sync detected!
Outsignal is asynchronous!

If you are using a stereo sync cable and you still get this warning, make sure to check your cabling, as the xpo is not recieveing the incoming sync-signal, or it might not be active.

If the xpo converter is having problems setting up the source, you might the following message.

- - - - - Warning - - - - -
Autosetup failed

In this case you should manually set up the source to get the best image.

C Serial commands

.1 Summary

The commands have been grouped by the following types with corresponding initial letters;

Initial letter	*Type of command*
I	Commands directly controlling the input
O	Commands controlling the outputs
SS	Commands controlling the stereo sync
Q	All query commands

Furthermore, the commands follow these general guidelines;

- All commands need to be ended with the ASCII code CR, (which is what happens when you type ***enter*** on the keyboard). The LF (Hex OA) will be ignored.
- All accepted incoming characters will be echoed.
- Line feed from the xpo will be of type CR only.
- There is no need for a ***space*** between a command and it's arguments.
- Multiple commands may be entered with the character "|" in between. For example the command "XPO2>sst|ssp" typically will output "Stereo sync type (SST) = Auto" and "Stereo sync polarity (SSP) = Normal".
- All text after the characters ";" or "#" until CR will be ignored.

The commands are grouped by type with corresponding initial letter(s).

The commands follow a set of general guidelines.

You get the ACSII code CR when you press ***enter*** on the keyboard.

.2 The help command

The help command is useful for getting more help on each command. You may use “help” or “?” to get help.

To list all commands, use “? allcmds”.

To see all commands without explanation, use “? %allcmds”.

Also see ***Command: ?/Help*** in ***chapter C.4 (Serial commands/Commands)*** for further information on using the help command.

.3 Topics

The xpo help commands also have a short explanation of some used topics.

Use the command “? alltopics” to list.

You may use “help” or “?” to get help.

For an explanation of frequently used topics, use “? alltopics”

C Serial commands

.4 Commands

Command: ?/HELP [%][command/topic/wildcard/allcmds/alltopics]
Function: Shows help on all or specific command.

% shows short format
[] are optional arguments
() are required arguments
{} is the default argument

No argument will show the current setting.

Command: .[new arguments]
Function: Repeats last command with new arguments.

This is very useful for manual search of correct values for commands like ISPL and IPHA.

A typical output will show:
XP02>ispl
Horizontal rate (ISPL) = 1408 pixel/hsync

XP02>.+
Horizontal rate (ISPL) = 1410 pixel/hsync

C Serial commands

.4 Commands

Command: ,
Function: Repeats last command with the same arguments.

Command: **QI [location]**
Function: Shows settings for parameters controlling the picture, ISPL, IPHA, IST, SMI, IBR, ICO, DVIHPOS, DVIVPOS, NAMESRC for selected stored location.

If location is empty, the current settings will be shown.

A typical output will show:

XPO2>qi
Current settings (location 103)
Horizontal rate (ISPL) = 1408 pixel/hsync
Hsync phase (IPHA) = 0
Image synctype (IST) = AUTO
Stereo mode in (SMI) = Frame sequential (FSS)
Brightness (IBR) = 60
Contrast (ICO) = 190
DVI horizontal pos (DVIHPOS) = 276
DVI vertical pos (DVIVPOS) = 52
Name (NAMESRC) = 'VESA 1024x768@120Hz GTF TIMING'

C Serial commands

.4 Commands

Command: QS [location]

Function: Show settings for global system parameters SST, SSP, SSEP, NAMESRC forselected stored location..

If location is empty, the current settings will be shown.

Typical outputs will show:

XP02>qs
Stereo sync type (SST) = Auto (not present)
Stereo sync polarity (SSP) = 0, Left frame on long/even/high
Eye priority (SSEP) = Left first
Name (NAMESRC) = 'VESA 1024x768@120Hz GTF TIMING'

Command: QINFO [SO/SY]

Function: Show system- and basic source-information.

SO - source information
SY - system information

Typical outputs will show:

XP02>qinfo so
Hsync is active high
Period = 18.42us

.4 Commands

Frequency = 54.29KHz
Width = 8.3 %
Vsync is active high
Period = 19.99ms
Frequency = 50.04Hz
Lines = 1085
Width = 3
Synctype = SEP

XP02>qinfo sy
Signal status = Showing
Active location = 103
Search mode = Auto

Resolution = 1280x1024p
Pixelrate = 95 MHz
Stereo mode in = SEP
Stereo syncs present = none

Command: **ISPL (+/-/pixels pr line)**

Function: Reads/sets, increases or decreases the active samples per scanline including sync and blank.

C Serial commands

.4 Commands

+/- will increase or decrease by 1 or 2 (depending on full or halfrate). Entering a number will set the number entered.

A typical output will show:

XP02>ispl
Pixcel tracking (ISPL) = 1408 pixel/hsync

Command: IPHA (+/-/sampling phase)

Function: Reads/sets the phase of the sampled pixel clock in relation to the hsync edge.

A typical output will show:

XP02>ipha
Pixcel phase (IPHA) = 0

Command: IST (0-3/{AUTO}/SEP/COMP/SOG)

Function: Reads/sets the synctype of the source signal.

0 = AUTO
1 = SEP (Separate)
2 = COMP (Composite)
3 = SOG (Sync on green)

C Serial commands

.4 Commands

A typical output will show:

XPO2>ist
Image synctype (IST) = AUTO

Command: ISOGT (0-31)
Function: Reads/sets the threshold level of SOG slicer.

A typical output will show:

XPO2>isogt
SOG threshold (ISOGT) = 15 (160mV)

Command: IBR (0-127)
Function: Reads/sets the offset/brightness. The default value is 60.

Higher values give higher brightness.

The xpo clamps at the hsync period, and samples the black area of the incoming signal. The displaying device connected to the outputs of the xpo may clamp elsewhere, and therefore the brightness level may not have the desired effect.

C Serial commands

.4 Commands

A typical output will show:
XP02>ibr
Brightness (IBR) = 60

Command: ICO (0-255)
Function: Reads/sets the gain/contrast. The default value is 190.

A typical output will show:
XP02>ico
Contrast (ICO) = 190

Command: DVIHPOS (0-..)
Function: Reads/sets horizontal placement of DVI area.

This command also affects the edge-blending area when using the VGA outputs.

A typical output will show:
XP02>dvihpos
DVI horizontal pos (DVIHPOS) = 276

C Serial commands

.4 Commands

Command: **DVIVPOS (0-..)**
Function: Reads/sets vertical placement of DVI area.

This command also affects the edge-blending area when using the VGA outputs.

A typical output will show:
XP02>dvivpos
DVI vertical pos (DVIVPOS) = 52

Command: **ISI (0/1/disable/enable)**
Function: The "sync improvement" feature enables free running horizontal scan during vertical blanking and is needed where your source has a synctype where horizontal sync is not present during vertical blanking.

The sync coming out of the xpo is half of the incoming, and therefore, on the output, this lack of sync will give a very disturbing effect at the middle of the screen. Use "sync improvement" to correct this problem. For non-technical users, leave this disabled if the picture looks ok.

The default setting for this is enabled for SOG and COMP synctypes, and disabled for SEP synctypes.

C Serial commands

.4 Commands

Command: **IAUTO [!][hres[,vres]]**
Function: Tries to find settings automatically.

It does NOT save these settings into memory. If argument ! is given, the list of stored sources will be checked first, and if found, it will recall the settings from there.

Command: **OBL [L/R/B/{N}]**
Function: Show black on Left/Right/Both/None of the outputs. Defaults to none.

Command: **OSP [(+/-,+/-)/I]**
Function: Set polarity of H and V output sync.

Default is the same as the input syncs. Parameter I copies input sync polarity.

Command: **OSM (0-2/SYNCLO/SYNCHI/ASYNC)**
Function: Sets the output scan mode.

At full rate the out signal will have the same vertical refresh rate as the output, with every frame input twice.

C Serial commands

.4 Commands

0=Synclo:
The output rate will be within 43-85Hz. The unit will try to half the framerate to get the output within this range.

1=Synchi:
The output rate will be within 90-140Hz. The unit will try to double the framerate to get the output within this range.

2=Async:
The output rate will be within 60-75Hz regardless of input rate. Frame tearing will occur in this mode. This mode should only be used when no other mode will make reasonable output.

Command: **OTST [testnumber]**
Function: Shows specified testsignal.

If the parameter is omitted, the testsignal is switched off.

A typical output will show:
->TESTNUMBER<-
0/no number/default=off
1=Grid for alignment. When aligned, it will become white.
2=Horizontally moving vertical bar. For v-sync test.

.4 Commands

3=Black/White vertical lines
4=White
5=Black
6=Red
7=Green
8=Blue
9=Left/Right text

Command: **OSW (0/1/ON/OFF/TOG)**
Function: Swaps left and right output channels.

Command: **UNDO**
Function: Reloads all parameters from stored settings (if exists).

Command: **RS**
Function: Soft-resets the xpo.

Command: **SEARCH [{ON}/OFF]**
Function: Enables or disables automatic search for new sources.

C Serial commands

.4 Commands

When no parameter is given, the search is enabled. When on, the unit will, as soon as it sees a different source, look for it in the table of known sources. If it is found, the settings will be loaded from the list. If not found the IAUTO command will be run. When off, no changes will be made to any parameters when a new source is found. This is for debugging only.

A typical output will show:

XP02>search off
Manual mode.
Forced location 103.

Command: **SMI[0-3/MON/FSS/TBH/LSS]**
Function: Set the input stereomode.

0/MON = Mono
1/FSS = Frame sequential
2/TBH = Top/bottom halves
3/LSS = Line interleaved/Line sequential

Command: **SST (0-4/AUTO/INT/DIN/VGA/CYV/ILA)**
Function: Selects incoming stereo sync type.

0 = Auto. Search order:SSCYVIZ,SSILA,SSEXTV,SSEXTD,SSINT.

C Serial commands

.4 Commands

1 = Cyvizync (SSCYVIZ). Length of Vsync (short=right, long=left).
2 = Interlace fields (SSILA). odd/even fields becomes left/right.
3 = External VGA connector (SSEXTV).
4 = External DIN connector (SSEXTD).
5 = Internal/toggle-able free running sync (SSINT).

When a sync is selected, but not present, the internal will be used.
You may map these syncs correctly using SSP and SSEP.

Command: **SSEP (0-1/LF/RF)**

Function: Selects eye priority. Used to tell which image appears first (on the in signal) of a pair of images.

0 = left+following right belongs together (Normal on FSS).
1 = right+following left.

This must be set correctly in order to reduce eyestrain on moving stereo-images. See ***Part I (Setting up the xpo), chapter C.1 (Eye strain/Checking left and right image)***.

A typical output will show:

XP02>ssep
Eye priority (SSEP) = Left first

C Serial commands

.4 Commands

Command: **SSP [0-1/NORM/INV/TOG]**
Function: Toggles or sets the polarity of outgoing stereo sync signal

0/NORM is Left frame on high(DIN)/long(SSCYVIZ)
1/INV is Right frame on high(DIN)/long(SSCYVIZ)

A typical output will show:
XP02>ssp
Stereo sync polarity (SSP) = Normal

Command: **TG**
Function: Toggles internal stereo sync polarity. Use SSP to change the external sync polarity.

Command: **CLEANUPSRC**
Function: Clean up the storage area.

Because of the way things are stored, a cleanup is needed if you have done a lot of changes and storing of sources.

If you use the STORE function and a cleanup is needed, the xpo will tell you. Use the parameter F only if you want to manually force the converter to perform a cleanup.

C Serial commands

.4 Commands

Command: NAMESRC (name)
Function: Sets the name of the current source.

This name will be stored when the store command is used.

A typical output will show:
XP02>namesrc
Name (NAMESRC) = 'VESA 1024x768@120Hz GTF TIMING'

Command: STORE [SYSTEM/(location)]
Function: Stores the source settings.

Stores the settings at the active location (if already stored), at the first free location, or at the location specified (if not stored). You will get an error message if you try to store a source wich already exists into a different location. Two identical sources can not be stored twice.

See ***Part III (Appendixes), chapter D.6 (Technical Information/Handling of sources)***, for more information on this subject.

If parameter is omitted, the active location (if any) will be overwritten.

If no location is active, the next free location is selected and activated.

C Serial commands

.4 Commands

If the parameter is 'SYSTEM' then the current system settings will be stored and used at next power up.

Command: **SYSSTORE**
Function: Stores global settings like serial baudrate, unit id and user button mapping.

Command: **DELSRC (location)**
Function: Deletes the source settings at the specified location.

Command: **LISTSRC @[loc[,toloc]]**
Function: Lists the stored sources.

If no argument is given, the active location is listed. If only loc is given, only this is listed. If also the toloc is given, all locations between loc and toloc are listed. Use @ to list as detailed mode.

The list shows all the parameters used to recognize the source, together with its settings stored at the position.

A typical output will show:
XP02>listsrc

C Serial commands

.4 Commands

Listing active location (103):
103 >1068 3 1868 331 1 1 1 0: 'TEST',
1640,24,15,0,0,0,0,0,0,1,1,190,60,278,41,1280,1024;

This is the function of the numbers;

103	*= The location for this source*
>	*= Separator*
1068	*= Number of lines between each vertical sync*
3	*= Duration of vertical sync (number of lines)*
1868	*= Duration (in 100Mhz cycles) between the horizontal syncs*
331	*= Duration (in 100Mhz cycles) of the horizontal sync width*
1	*= Positive (active high) vertical sync polarity (0=neg, 1=pos, 3=don't care)*
1	*= Positive (active high) horizontal sync polarity (0=neg, 1=pos, 3=don't care)*
1	*= SEP sync type (0=any, 1=separate, 2=composite, 3=SOG)*
0	*= Progressive scan type (0=progressive, 1=interlaced)*
:	*= Separator between the identity parameters and the settings*
'TEST'	*= Name of the stored source (NAMESRC)*
1640	*= Pixel tracking value (ISPL)*
24	*= Pixel phase (IPHA)*
15	*= SOG threshold (160mV) (ISOGT)*
0	*= Image synctype to be used (IST) (0=auto, 1=separate, 2=composite, 3=SOG)*
0	*= Input stereomode (SMI) (0=MON (Mono), 1=FSS (Frame Sequential), 2=TBH (Top Below Halves), 3=LSS (Line Interleaved/Line sequential)*

C Serial commands

.4 Commands

0	*= Stereo sync type used (SST) (0=Auto, 1=Cyvizync (SSCYVIZ), 2=Interlace fields, 3=External VGA, 4=External DIN, 5=Internal)*
0	*= Output swap (OSW) (0=off/normal, 1=on/swapped)*
0	*= Output sync mode (OSM) (0=vrate synchronous low, 1=vrate synchronous high, 2=asynchronous tear)*
1	*= Output horizontal sync polarity (0=active low, or negative, 1=active high or positive)*
1	*= Output vertical sync polarity (0=active low, or negative, 1=active high or positive)*
190	*= Contrast (ICO)*
60	*= Brightness (IBR)*
278	*= DVI horizontal position (DVIHPOS)*
41	*= DVI vertical position (DVIVPOS)*
1280	*= Horizontal resolution (1280 pixels)*
1024	*= Vertical resolution (1024 pixels)*

Command: **KEY (MENU/MODE/RBLACK/TGL/ENTER/BACK/UP/DOWN/LEFT/RIGHT/POWERON/POWEROFF)**

Function: Simulates a keypress.

The KEY command brings up the OSD display, and simulates pressing the buttons on the the keypad.

C Serial commands

.4 Commands

Command: **RESTOREFACTORYSETTINGS**
Function: Restores the factory settings. Will NOT ask for confirmation.

A typical output will show:

XP02>restorefactorysettings
Restoring factorysettings.
Erasing old data..ok.
Programming sources.. Ok - Resetting.

Cyviz AS
Firmware version:020913-10254
Serialnumber:00100A-01F623-02
www.cyviz.com

Command: **COMSET (@baudrate/preset)**
Function: This command sets the serialport baudrate.

Use @ to set a non-standard baudrate. The device will report the real baudrate it sets before switcing to the new rate.

Presets:
0 = 300 baud
1 = 1200 baud

C Serial commands

.4 Commands

2 = 2400 baud
3 = 4800 baud
4 = 9600 baud
5 = 19200 baud
6 = 38400 baud
7 = 57600 baud
8 = 115200 baud

A typical output will show:
XP02>comset @57600
Actual rate set to 57600 bps.

Command: **FRZ 0/1/ON/OFF/TOG**
Function: Sets/resets freeze of a picture pair.

The freeze is synchronized at the end of a picture pair, so you will always see 2 complete pictures as they appear from the source.

A typical output will show:
XP02>frz tog
Freeze is now on.

C Serial commands

.4 Commands

Command: **USERB (0-4/NONE/TBH/LSS/RBL/SSP)**
Function: Set the function of the userbutton on the keyboard.

0/NONE = no function
1/TBH = Toggle between SEP and TBH stereomode
2/LSS = Toggle between SEP and LSS stereomode
3/LBL = Toggle left output black
4/SSP = Toggle stereo sync polarity

Command: **SV**
Function: Shows software version and serialnumber.

A typical output will show:
Firmware version:020913-10254
Serialnumber:00100A-01F623-04
www.cyviz.com

Command: **UNITID id[,SNR]**
Function: Set the identity-number of the unit having the specified serialnumber.

SNR may only be omitted if hooked to the unit via the RS232. The format of snr is the

same format as found at the label of the box, or from the SV command. If you enter the wrong serialnumber and get no response from the xpo, type atn0 and press enter to bring back the prompt (characters might not be displayed while typing).

Command ATN id

Function: Sets the attention of the unit having the selected id.

When linking, it sets the attention of the device having UNITID = id. All commands after this will go to this unit. This command is silent.

Command: QATN

Function: Query the attention status, shows id and master/slave of selected unit.

Used for debugging to view the device' attention status.

Command: MASTER

Function: Set unit to master

When linking 2 units or more, one device needs to be the master. Using this command enables the master. This command only works on the RS232 port, not on the linkport. The master status will be stored when using the SYSSTORE command. This command is silent.

C Serial commands

.5 Linking of units

Several xpo units may be linked together and controlled from a single RS232 port. This is particularly useful when you have large setups, e.g for edgeblending.

Use the RS232 serial cable that comes with the xpo to connect to serial port 1 on the first unit. Then use a regular UTP network cable (RJ45) from port 2 on the first unit and connect this to port 1 on the next unit, and repeat this for every unit you want to connect.

To enable linking, there must be a master unit, and all units must have their own unique unitid code. This must be set on the osd menu (global settings) or if you know the serialnumber of the unit, you may set it using the serial terminal and the unitid command.

First, after powerup, make sure the unit hooked to the RS232 is master by typing “master”.

Note that this command is silent, and will not promt or answer. Press enter again to get a prompt.

You may set the unitid’s by using the “unitid id,snr” where the snr is the serialnumber of the unit. Press enter to get prompt. If no prompt is shown, there is a problem communicating with the unit. If you loose the prompt completely, type “atn0” to get back to the master.

The master mode may be stored for next powerup by using the command “sysstore”.

To talk to a specific unit, use “atn id” where id is the unit with unitid=id. If everything is working, pressing enter should give you a prompt with the unitid of the answering unit (for example, “atn 5” should say “5:XP02>”) All commands sent will now go to this unit only.

D Technical information

.1 Different types of picture signal

There are 3 main sync types used in computer video signals, (separate sync, composite sync, and sync on green) which are all supported by the xpo.

.2 Different types of stereo sync

! The xpo needs to know which part of the signal belongs to the left and right image.

There are 4 main methods of obtaining correct stereo sync for the xpo:

VESA 3pin mini DSUB connector (SSEXTD)
Separate stereo sync through a standard VESA 3pin mini DSUB connector.

See ***3pin mini din***, ***chapter D.3 (Different types of stereo sync connectors)*** .

VGA pin12 plug (SSEXTV)
Cheaper graphics cards use VGA pin12 plug (which originally is used for VESA DDC communication).

See ***VGA pin 12***, ***chapter D.3 (Different types of stereo sync connectors)***.

i The xpo support all main sync types.

i There are 3 main methods of stereo sync for the xpo.

D Technical information

.2 Different types of stereo sync

CyvizSync (SSCYVIZ)
This sync uses the length of the vertical sync for the stereo sync. It is defined by Cyviz at ***http://www.cyviz.com***.

Interlace (SSILA)
The phase between the vsync and hsync.

.3 Different types of stereo sync connectors

3pin mini din
This plug is defined by StereoGraphics at http://www.stereographics.com

7pin mini din (SUN)
To use this you need a 3pin mini-din adapter.

8pin mini din (SGI)
To use this you need a 3pin mini-din adapter.

9pin DSUB (SGI)
To use this you need a 3pin mini-din adapter.

D Technical information

.3 Different types of stereo sync connectors

VGA pin 12
Some graphics cards use pin 12 of the VGA connector (which originally is used for transferring DDC data during monitor identification) as stereo sync.

i At the time of writing this, most ELSA cards using the revelator drivers use this type of stereo sync. The xpo may use this if selected using "SST" command.

.4 Left/right sequence in frame sequential stereo

The left and right frame coming from a frame-sequential source needs to be output correctly to get an optimal viewing condition.

! When you have moving objects on the screen, it is especially important that the left and right frames are output correctly.

Usually the frames come out in pairs, where the left and the next right frame were rendered at the same point of time. These need to be output at the same time. To make sure this is happening, you need to know how the computer does this. You may change this sequence by using the SSEP and SSP commands on the serial interface.

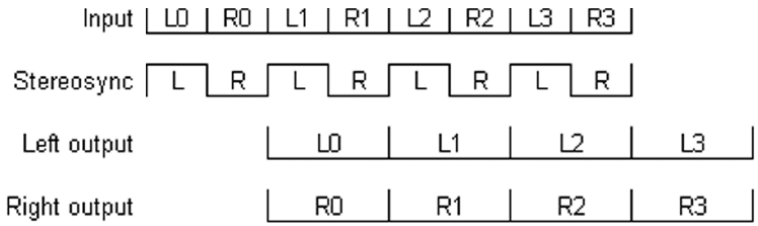
D Technical information

.4 Left/right sequence in frame sequential stereo

! It is recommended that you use one of the stereo sync methods described in ***chapter D.2 (Different types of stereo sync)***.

To illustrate this, some drawings follow below. The difference is clearly visible when objects on the screen are moving, even if the frames are changing slowly due to complex objects.

Correct stereo sync at half rate:

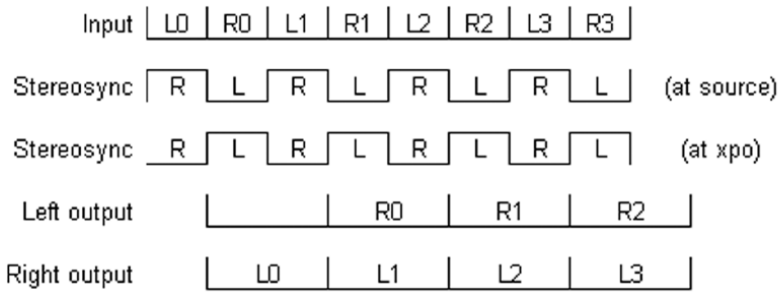


i Note: There is 1 frameset delay.

D Technical information

.4 Left/right sequence in frame sequential stereo

Wrong stereo sync polarity at half rate:



Coming from an unstandard source claiming High to be right.

The way the XPO interprets it.

Wrong sequence out. Note that swapping the channels may look like it solved the problem, but you get a delay between the eyes which causes eye-strain when objects are moving.

i There will be a 1 frame delay between left and right eye if stereo sync is inverted and outputs are swapped.

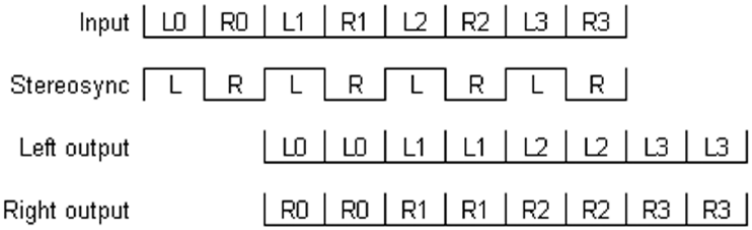
i If the source sends a stereo sync signal with settings “right frame high”, the xpo detects this as “left frame high” because of it’s default settings. To change this, change the stereo sync polarity in the menu, or by using the command ssp.

! If you have this problem you might think you have the correct setting after swapping left and right channels, but you will actually get a delay on the left channel causing eye-strain, when things on the screen are moving. Therefore, do the setup procedure exactly as described in ***chapter B (Setup procedure)*** of ***Part I (Setting up the xpo)***.

D Technical information

.4 Left/right sequence in frame sequential stereo

Correct stereo sync at equal rate:



.5 Handling of sources

The xpo continously looks for a signal on the input. When a stable input is found, it measures these parameters:

- horizontal and vertical sync lengths
- horizontal and vertical scan-frequencies
- horizontal and vertical sync polarity (for separate sync only)
- the type of sync (separate sync, composite sync or sync on green)

! Similar effects will occur in all output formats.

D Technical information

.5 Handling of sources

These values are compared with a list of pre-programmed sources. If the parameters match, all settings (also stored in the table) for this match will be loaded and activated.

If the souce is not found in the table of pre-programmed sources, the xpo will guess the resolution based on the picture contents and the number of vertical lines in the picture. It will then try to auto-setup all necessary settings on its own. Sometimes the xpo will not be able to set the best settings (especially if the desktop background is dark, or if it's an odd resolution), and may need manual help from the user. See ***Pixel tracking*** in ***Part II (Using the xpo), chapter B.1 (On Screen Display/Source setup)***.

The xpo will NOT store new source settings automatically. When you are pleased with the settings, you should store the source in the list of pre-programmed sources (the OSD menu will ask if you want to store when leaving the menu). This makes it easy for the xpo to load the correct settings the next time it detects this source.

Part I

Setting up the xpo

Part II

Using the xpo

Part III

Appendixes

more information on previous page
more information on next page
more information on both previous and next page
highly important information
note
more information available elsewhere

A Serial interface

The xpo is prepared for serial (RS-232) controlling and firmware upgrading. To use this serial interface you need a terminal-software like the ***HyperTerminal*** found in most Windows installations and a serial cable connection.

In Windows OS, the ***HyperTerminal*** can normally be found in the ***start menu/programs/accessories/communications***.

.1 Connection

Connect the xpo serial cable between one of the RS-232 ports (COM1, 2...) on the computer and the serial port #1 (IOIO[1]) on the xpo.

If your computer have a 25pin serial port you need an adapter from 25pin male to 9pin female.

See chapter C.8 (Serial RS-232 cable) for pin configuration on xpo serial cable.

.2 Setting up HyperTerminal

To set-up serial control with HyperTerminal, do the following:

- Start the HyperTerminal program.
- A window will appear asking for a name on your new connection.

.2 Setting up HyperTerminal

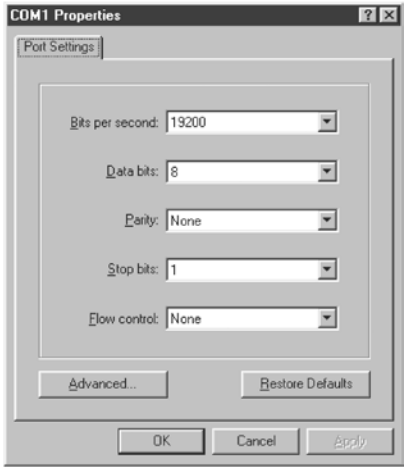
On NT, the computer may ask for modem/dial properties first. If so, just enter some random nombers until you get to this window.

- Type “Cyviz xpo” and click ***OK***.

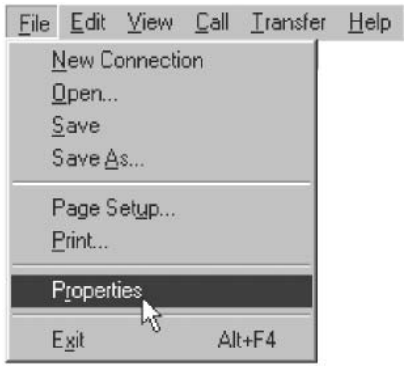
- Select ***Direct to ComX*** where X is the COM port you have plugged the xpo into. (Normally this is COM1 or COM2).
- Click ***OK***.

A Serial interface

.2 Setting up HyperTerminal

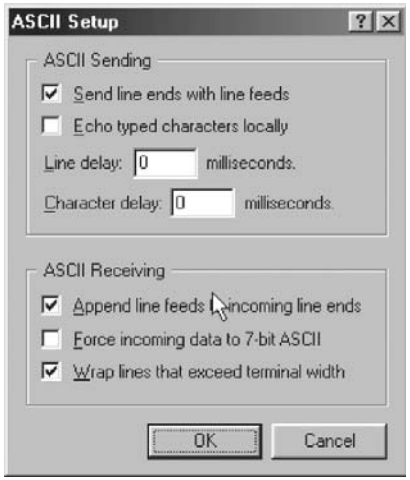


- Set the parameters as follows:
  Bits per second to 19200/38400/57600/115200
  Data bits to "8"
  Parity to "None"
  Stop bits to "1"
  Flow control to "None"
- Click ***OK***.



- Select ***Properties*** in the ***File*** menu.
- In the menu window that appears, select ***ASCII Set up...*** under ***Settings***.

.2 Setting up HyperTerminal



- Check all boxes, except the ***Echo typed charters locally*** and ***Force incoming data to 7-bit ASCII***.

! Do not check ***Echo typed charters locally*** and ***Force incoming data to 7-bit ASCII***.

- Set the ***Line delay*** to "0" and the ***Character delay*** to "0".
- Click ***OK***.

- Ensure that both serial and power cable is properly connected to the xpo.
- Press enter in the terminal window.

i The xpo should respond with "XPO2>".

- Use the command "? ALLCMDS" and press enter to get a complete list of all the available commands.

A Serial interface

.3 Setting up other systems

The xpo communicates through a normal RS-232 using the following parameters:

- baudrate (selectable)
- parity: none
- 8 bits
- 1 startbit
- no handshake
- no echo
- Tx linefeed: CR only
- Rx linefeed: CR only

! Your serial port must be set up according to the above listed parameters.

B Firmware upgrade

.1 Using windows

The internal control software (firmware) in the xpo can be upgraded through the serial communication.

New firmware files (*.bin) can be downloaded from the ***technical support*** pages at ***www.cyviz.com***

When you have downloaded and are ready to upgrade, please do the following:

- Start the "xpo" session in HyperTerminal
- Press enter in the terminal window to confirm the connection. The xpo should respond with "XP02>".
- Unplug power to xpo.
- Press and hold the button that corresponds to your transfer speed. This setting has to match the setting in your terminal program. (See ***figure B.1-1*** on the right). (For older units without the monitor redraw, only 19200 is possible. Press and hold the power button to enable this mode).

- Reconnect the power plug while still pressing the button down.
- Release the button when ***HyperTerminal*** prompt with ***BOOT>***. If your output is garbled, the transfer rate of the xpo and the terminal program doesn't match.
- Write the command "ERASEFIRM" and press ***enter***, confirm with "ERASEFIRM YES" and press ***enter*** again.

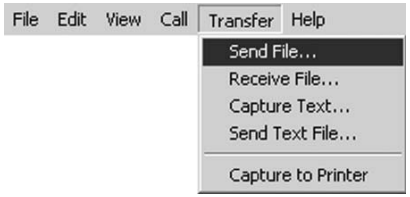
In Windows OS, the ***HyperTerminal*** can normally be found in the ***start menu/programs/accessories/communications***.

To find the latest available firmware upgrades please visit our ***technical support*** pages at ***www.cyviz.com***

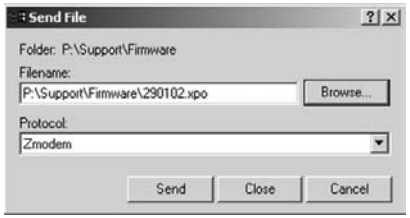
B Firmware upgrade

.1 Using windows

- Wait until the firmware is erased and then write the command "LOADFIRM" and press ***enter***. You now have to start sending the file within 40 seconds, or the xpo converter will timeout.
- A similar text will be displayed at the prompt repeatedly: <**B000000023be50



- Select ***Send file...*** in the "***Transfer***" menu in ***HyperTerminal***.



- Use the ***Browse...*** button to locate the ***xpo firmware file***.
- Select ***ZModem*** as protocol and click ***Send*** to start the transfer. Older units without the monitor redraw uses XModem. On these units, please allow up to 60 seconds before transfer starts.

! If you use more than 40 seconds, the xpo will timeout and you may have to go back and retry "loadfirm"

i If you experience timeout, locate the firmware file and press ***Close***. This will remember the current directory path, and you don't have to spend time locating the file again.

Appendixes

B Firmware upgrade

.1 Using windows

If the unit times out, the following will be displayed:

*<**BOOOOOOO23be50*

<BBOBBOBBOBBOBBO

Init failed: timeout

- If the transfer completes without error, write the command “HR” and press ***enter*** to restart the xpo with the new firmware.
- If the transfer fails, erase the firmware and try to load again.

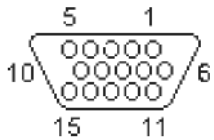
.2 Using non-windows terminal

You need a serial communication terminal program for your operating system to do this.

Transfer time is typically 1 min per 100k in 19200 mode, and 1 minute per 300k in 57600 mode.

C Connectors

.1 VGA input



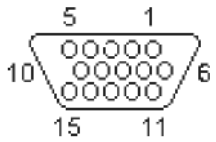
15 pin high density D-SUB female

Pin	Name	Function
1	RED	Red Video in
2	GREEN	Green Video in
3	BLUE	Blue Video in
4	RESERVED	Not connected
5	GND	Ground
6	RGND	Red Ground
7	GGND	Green Ground
8	BGND	Blue Ground
9	+5V DC	Not connected
10	SGND	Sync Ground
11	IDO	Grounded
12	SDA	DDC Serial Data Line
13	HSYNC/CSYNC	Horizontal Sync or Composite Sync
14	VSYNC	Vertical Sync
15	SCL	DDC Data Clock Line

Appendixes

C Connectors

.2 Monitor redraw



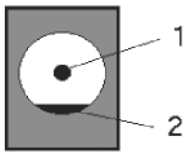
15 pin high density D-SUB female

Pin	Name	Function
1	RED	Red Video in
2	GREEN	Green Video in
3	BLUE	Blue Video in
4	RESERVED	Not connected
5	GND	Ground
6	RGND	Red Ground
7	GGND	Green Ground
8	BGND	Blue Ground
9	+5V DC	Not connected
10	SGND	Sync Ground
11	IDO	Not connected
12	SDA	DDC Serial Data Line
13	HSYNC/CSYNC	Horizontal Sync or Composite Sync
14	VSYNC	Vertical Sync
15	SCL	DDC Data Clock Line

Some older units does not have this port.

C Connectors

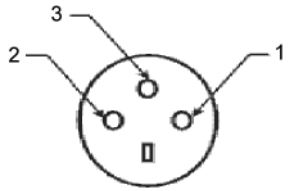
.3 Power input



5.5/2.5mm diameter power jack

Pin	Name	Function
1	+V	12-24V DC 20W (max) input
2	GND	Ground

.4 Stereo sync input

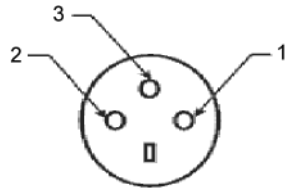


3pin MINI-DIN female

Pin	Name	Function
1	+5V	Not connected
2	GND	Ground
3	Sync	Stereo sync in

C Connectors

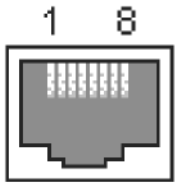
.5 Stereo sync output



3pin MINI-DIN female

Pin	Name	Function
1	+5V	300mA
2	GND	Ground
3	Sync	Stereo sync out

.6 Serial plug 1



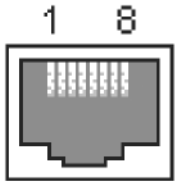
RJ45 female socket

Pin	Name	Function
1	TxA+	Transmit ch A +
2	TxA-	Transmit ch A -
3	RxB/TxB+	Transmit or Receive ch B +
4	GND	Ground
5	GND	Ground
6	RxB/TxB-	Transmit or Receive ch B +
7	Tx	RS-232 Transmit
8	Rx	RS-232 Receive

Appendixes

C Connectors

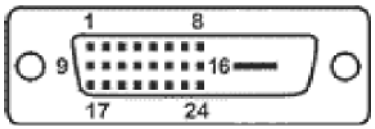
.7 Serial plug 2



RJ45 female socket

Pin	Name	Function
1	TxA+	Transmit ch A +
2	TxA-	Transmit ch A -
3	RxB/TxB+	Transmit or Receive ch B +
4	GND	Ground
5	GND	Ground
6	RxB/TxB-	Transmit or Receive ch B +
7	NC	Not connected
8	NC	Not connected

.8 DVI-D left and right output



DVI-D female

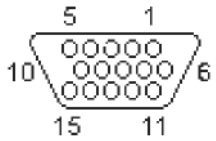
Pin	Name
1	TMDS Data2-
2	TMDS Data2+
3	TMDS Data2 Shield
4	No Connection
5	No Connection
6	DDC Clock
7	DDC Data

.8 DVI-D left and right output

8	No Connection
9	TMDS Data1-
10	TMDS Data2+
11	TMDS Data1 Shield
12	No Connection
13	No Connection
14	+5 V Power has a 300mA auto reset table fuse
15	Ground (for +5 V)
16	Hot Plug Detect
17	TMDS Data0-
18	TMDS Data0+
19	TMDS Data0Shield
20	No Connection
21	No Connection
22	TMDS Clock Shield
23	TMDS Clock +
24	TMDS Clock -

C Connectors

.10 VGA left and right output

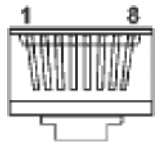


15 pin high density D-SUB female

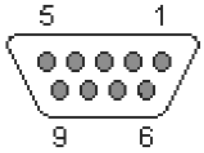
Pin	Name	Function
1	RED	Red Video out (75 ohm, 0.7 V p-p)
2	GREEN	Green Video out (75 ohm, 0.7 V p-p)
3	BLUE	Blue Video out (75 ohm, 0.7 V p-p)
4	RESERVED	Not connected
5	GND	Ground
6	RGND	Red Ground
7	GGND	Green Ground
8	BGND	Blue Ground
9	+5V DC	Not connected
10	SGND	Sync Ground
11	IDO	Grounded
12	SDA	DDC Serial Data Line
13	HSYNC	Horizontal Sync out
14	VSYNC	Vertical Sync out
15	SCL	DDC Data Clock Line

Appendixes

.10 Serial RS-232 cable



RJ45 male plug



9pin DSUB female

xpo RJ45 male	Computer DB9 female
1	N/C
2	N/C
3	N/C
4	Shield
5	5
6	N/C
7	2
8	3

D Technical specification

.1 Functions

- Multisync input, any format with pixelrate between 20 and 240 Mhz
- 3 different output vertical refresh modes (half rate, same rate and asynchronous)
- 5 different types of stereo sync
- Automatic or manual control of stereo sync
- DVI (digital only) and VGA Left/Right channel outputs
- On Screen Display (OSD) menu
- RS-232 control using readable commands and answers (even with a help command)
- Link output for connecting many units to the same RS232 port
- Programmable custom modes
- Standby mode
- Keyboard for meny control and easy setup
- `Right black button´ for setup and 2d viewing
- `Toggle button´ for internal stereo sync

D Technical specification

.2 Dimensions

- Size: 7 x 19 x 25 cm (HxWxD)
- Weight: approx. 1,5 kg

.3 Compatibility

- Resolution, xpo.1: 640 x 480
- Resolution, xpo.2: 640 x 480 to 1280 x 1024
- HV (separate sync), CS (composite sync), SOG (sync on green)
- PC compatibles, workstations, SUN, SGI, HP machines
- Frame sequential stereo3d, above-below stereo
- Vertical Scan: 60 - 120 Hz

.4 Inputs

- 15 - 25 VDC, 20W

D Technical specification

.4 Inputs

- VGA 15-pin DSUB female
- 3-pin mini DIN stereo sync connector
- RJ45 port with RS-232
- 1 x mini-DIN stereo sync

.5 Outputs

- 2 x VGA 15-pin DSUB female, left and right channel
- 2 x digital DVI, left and right channel
- 1 x VGA 15-pin DSUB female, monitor redraw (some older units does not have this)

.6 Supplied materials

- 1 Power adapter 100/240 VAC – 18VDC 2.2 A (or 19VDC@ 2.36 A)
- 1 Power cable (110V - US style)

D Technical specification

.6 Supplied materials

- 1 Power cable (220V - European style)
- 1 RGB computer cable (15 pin DSUB male/male)
- 1 Serial RS-232 cable, RJ45 to 9-pin DSUB female
- 1 3-pin mini DIN stereo sync cable
- 1 pair of linear polarized acrylic filters (75 mm x 75 mm)
- 1 filter stand
- 10 pairs of linear polarized glasses
- 1 User's manual
- 1 Warranty card

FCC STATEMENT

This equipment complies with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of FCC rules. It generates and uses radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio and television reception. Only peripherals (computer input/output devices, terminals, printers, power adapters etc.) certified to comply with the Class A limits may be attached to a computer that complies with Class A limits. Operation with noncertified peripherals or non-shielded cables is likely to result in interference to radio and TV reception.

CE Declaration of conformity

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022 class A for IE.

Safety

CSA C22.2 No. 950, UL 1950, EN60950 European Norm "Safety of Information Technology Equipment"

Trademarks

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