



Model : IS-100

Video Image Stabiliser

Instruction Guide



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Introduction ■

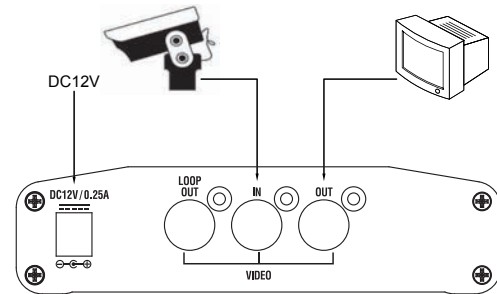
The Video Stabiliser utilises advanced Digital Image Stabilising algorithms to minimise the effects of camera shake. These algorithms have been optimised to run in real-time on a dedicated digital media processor that fits inside a box that can rest on the palm of your hand.

The video stabiliser has been designed to be totally plug-and-play, meaning you can get started simply by plugging in and switching on.

This quick-start guide will help you get your video stabiliser up and running quickly, as well as lead you through some of the advanced options provided by this unit.

Connecting Up ■

Connect the video stabiliser as shown in the diagram:



The video stabiliser is intended to be connected in-line between the video source and the video display.

Your video stabiliser should now be operational and stabilising video. There is no need to perform any other set up. (Note the Stabiliser takes about 1 minute to start operating. This is caused by the internal Linux operating system booting-up. During the start-up time the stabiliser remains in loop-through mode).

In the event of a power failure to the video stabiliser unit, the video will pass through the unit un-stabilised.

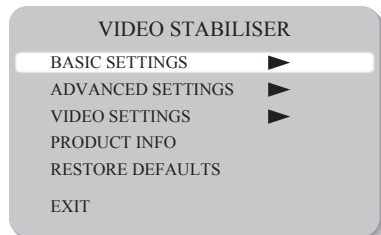
■ Configuration

Your stabiliser unit is shipped with the default options configured at the factory. The default options are suitable for most applications, but some installations may warrant slightly different configuration. The following section details how to change the parameters from the default settings, and the effect they have.

■ Configuration Page

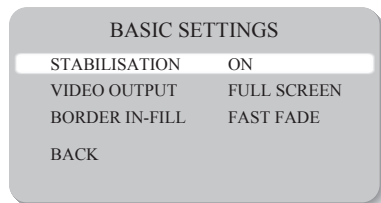
Settings can be made using the 3 buttons located on the front of the unit.

1. Press the SET button.
 - The Setup menu is displayed on the monitor screen.



2. Select a menu item using the Up and Down buttons.
 - Place the cursor over a desired item and press Set.

BASIC SETTINGS



Names and Functions of Parts ■

● STABILISATION Mode

The stabilisation mode has two options:

- On : [Default] Stabilisation is enabled.
- Off : Stabilisation is disabled (video pass through).

● VIDEO OUTPUT

The video output mode has two options:

- Full Screen : [Default] The output signal is the full-screen stabilised version of the input signal.
- Split Screen Demo : The output signal consists of 50% un-stabilised, and 50% stabilised versions of the input signal, split vertically down the middle of the output. This mode is primarily used for demonstrating the effectiveness of the stabilisation unit on a single monitor and would not normally be used in day-to-day operation.

● BORDER IN-FILL

In order to keep the output frames steady and aligned to a reference frame, the output frames are shifted with respect to the input frames. As the camera moves around, so the output frames are shifted to keep the image features aligned to previous frames. This results in areas for which there is no image data available:



The Border In-fill mode controls what happens to those areas that do not contain any image data. There are four options available:

- Fast Fade : [Default] Newer frames are composited on top of older frames. The old frames are faded away to black quickly (see diagram). This mode is most suited to PTZ and fixed cameras.
- Slow Fade : Newer frames are composited on top of older frames. The old frames are faded away to black slowly (see diagram).
- No Fade : Newer frames are composited on top of older frames. The old frames are not faded away (see diagram). Suitable for fixed cameras where there is minimal movement by people and cars around the edge of the scene.

■ Configuration

- **Fixed** : A fixed size black border is present on all sides which blanks out the moving edges of the image (see diagram). The size of the borders is equal to the maximum frame shift. See Advanced Configuration.
- **None** : Old frames are not displayed. Regions of the output image for which there is no available data are filled with black (see diagram).



Fast / Slow Fade



No Fade



Fixed



None

Configuration ■

ADVANCED SETTINGS

ADVANCED SETTINGS

FREQUENCY RESPONSE	NORMAL
AUTO DISABLE	▶
OSD	OFF
MAX HORZ SHIFT	128
MAX VERT SHIFT	128
BACK	

● Frequency Response Mode

The Camera Installation Mode has three options :

- **Normal** : [Default] The stabilisation algorithm parameters are optimised to give the best stabilisation results for fixed/PTZ cameras.
- **Low Freq** : The above two stabilisation modes are designed to allow tracking of intentional camera panning by not stabilising low frequency movements (< 1Hz). The Low Frequency mode has a lower cut-off frequency to allow better low frequency stabilisation at the expense of worse tracking of intentional movement (see Attenuation vs Frequency graph on the last page). This mode will automatically switch to the higher frequency mode, when excessive movement in one direction is detected, in order to allow better tracking of intentional movement. Once this movement has stopped it will revert back to the low frequency mode.

● Auto Disable Mode

There are two options for Auto Disable - neither is selected by default :

- **Pan / Tilt** : This option disables the stabilisation when excessive pan or tilt motion is detected. This makes it easier to control pan/tilt cameras because the Stabiliser ceases to oppose operator pan/tilt commands above the threshold. Once panning stops, there is a 3 sec timeout period before stabilisation is reactivated.

- **Low Detail** : When this option is enabled, the algorithm is disabled when a scene with insufficient detail for reliable stabilisation is detected. This prevents the image position 'hunting' when there is very little scene detail or features. For example, when the camera is pointed at a completely blank wall the stabilised image will jump around slightly because it is locking on to the random video noise. Similar hunting problems can occur in other situations where a large part of the scene lacks suitable detail for Stabiliser lock:
 - Other low contrast situations, such as at night scenes.
 - Scenes with an absence of detail in one direction, such as venetian blinds.
 - Scenes with a repeated pattern, such as a brick wall.

Note : enabling the Low Detail mode can result in the stabilisation being disabled prematurely on low contrast or noisy video, which is why this mode is not enabled by default.

● OSD Mode

When this option is enabled, a message will appear on the screen whenever stabilisation is disabled. It is not intended that On-Screen Annotation is permanently enabled. Generally, it should be used to help set up the Stabiliser in the following configuration situations:

- To see the effect of the Auto Disable pan/tilt and Auto Disable Low Detail functions.
- To see if the stabilisation is being disabled because the camera motion is too fast.

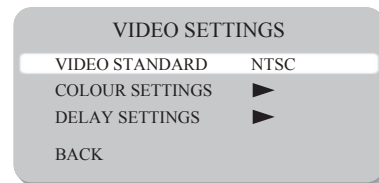
● MAX HORZ SHIFT / MAX VERT SHIFT

This is the maximum amount, in image pixels, that the algorithm shifts the frame horizontally and vertically in either direction from the normal position. Both horizontal and vertical shifts are settable in the range [24 . 256], the default is 128.

Usually the only reason to select low Frame Shift values is when the Border In-Fill is in Fixed mode because, as the borders are increased in size, the viewable image area gets smaller by the same amount.

Warning : Setting these values too low will prevent the algorithm from stabilising properly. The lower the setting the less stabilisation range is possible.

VIDEO SETTINGS



● Video Standard Mode

Select between NTSC and PAL video standards.

● Colour Settings Mode

Change the Brightness, Contrast, Hue, Saturation and Sharpness of the video.

● Delay Settings Mode

Change the vertical and horizontal capture delay of the video. These settings affect the vertical and horizontal position of the displayed image, allowing the black borders to be equalised on either side and top and bottom of the image (this adjustment may be necessary because some analogue video signals do not conform exactly to the blanking timing of the video standard and consequently a black stripe may be visible on one side of the image).

NOTE : set Border in-fill to 'none' when adjusting the Delay Settings so the effects of the horizontal and vertical delays can be clearly seen.

PRODUCT INFO

This program represents the version.

RESTORE DEFAULTS

Restoring the factory default settings is done by first removing the power and then restoring power while holding down the reset button on the front of the unit. The reset must be held down for at least 10 seconds after power has been restored.

■ Troubleshooting

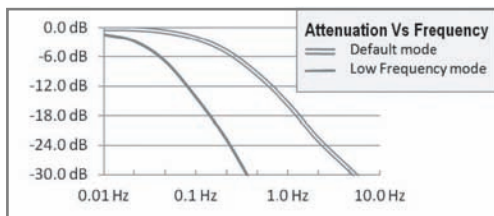
Problem	Solution
The video output is not stabilised for about 1 minute after connecting the power supply.	<ul style="list-style-type: none"> This is quite normal - the unit remains in loop-through mode while the internal Linux Operating System boots-up. The loop-through mode ensures that no video loss is incurred during this time.
The video is not synchronising	<ul style="list-style-type: none"> Make sure the correct video standard is selected (NTSC or PAL) on the Video Settings menu selection.
Sometimes the image jumps about and does not 'lock on properly'	<ul style="list-style-type: none"> The stabiliser cannot find any features in the image to lock on to, or the features repeat (brick wall) or lack detail in a particular direction (venetian blinds). Stabilisation can be suppressed in these cases by selecting the Auto Disable - Low Detail option on the Advanced Configuration page.
The stabilisation is not very good with slow camera sway	<ul style="list-style-type: none"> The default stabilisation algorithm does not suppress slow movement to allow tracking of intentional PTZ (Pan/Tilt/Zoom) movements (see frequency response graph in the specification). Selecting 'Slow Stabilisation' mode in the Camera Installation settings on the Advanced Configuration page will improve low frequency stabilisation but will make PTZ tracking performance worse.
Sometimes incorrect data can be seen in the border area	<ul style="list-style-type: none"> When border infill is enabled, blank areas of the image left by the stabiliser shifting the image are filled in with old image data. Sometimes this does not match well with the live part of the image. This is especially apparent when the camera is panning and old data is left for a long time. Disable border infill if this is causing distraction by selecting 'None' or 'Fixed' from the Border Infill setting on the Basic Configuration page.

Problem	Solution
The image is not being stabilised properly	<ul style="list-style-type: none"> Make sure the Maximum Frame Shift settings are not set too small. For example, if the camera shake is causing the image to move up and down by 50 pixels but the Maximum Vertical Frame Shift is set to 32 pixels, the algorithm will not be able to stabilise the image properly.
The picture jumps around during fast panning	<ul style="list-style-type: none"> Try enabling Auto Disable - Pan/Tilt on the Advanced Configuration page. This will suppress stabilisation when fast Pan/Tilt motion is detected.
The unit is exhibiting strange behavior	<ul style="list-style-type: none"> Try restoring the factory defaults.

■ Specification

MEMO ■

ITEM	NTSC	PAL
Stabilisation Tracking Rate	Approx ± 3000 pixels/sec.	
Stabilisation Range	Variable up to ± 256 pixels	
Stabilisation Frequency	0.1-30Hz (see graph)	
Video Delay	< 80 ms.	
Stabilisation	X-Y movement at sub-pixel accuracy.	
Automatic Algorithm	Locks on to background features.	
Border	Ignores moving objects and burnt-in text. Image in-fill. Removes distracting image border movement by using in-filling data from previous frames.	
Lock-On Time	< 80ms from change of image.	
Video Input & Output	Composite, 1V, 75 Ω , BNC connector.	
Video Standards	PAL/NTSC selectable via the web-browser interface	
Video Loop-Through	Automatic loop-through when power is off and during start-up	
D1 Resolution Digitisation	720 x 576	720 x 480
Plug and Play	Works straight out of the box. Simply connect it in-line between camera & monitor	
Start-Up Time	About 1 minute - Stabiliser remains in loop-through mode while the Linux Operating System starts	
Configuration	Web browser interface for configuration of advanced modes	
Network	Ethernet 10/100 Mbps	
Environmental	0-60°C, <85% RH	
Power Consumption	2.5W (~210mA at 12V DC).	
Weight	145g	
Size	L = 130.0mm, W = 124.5mm, H = 34.0mm	



MEMO

A large rectangular area defined by a dotted line, intended for writing a memo.