CrossLine Generator
Operation Manual

Four Vertical Line

Model CL5404A

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UNPACKING

The CL5404A package includes the following items:

> CL5404A CrossLine Unit
> 12Volt Universal Power Supply or equivalent
> This operation manual

Please inspect all items carefully and report damaged or missing items to your dealer or MicroImage Video Systems.

CONNECTIONS

Power

The CL5404A will operate from +12VDC power. A 120-240V universal power adapter is included. For medical applications, consult the factory for the availability of a very low leakage power adapter.

Video Connections

The MicroImage CL5404A Video CrossLine Generator will operate with either S-Video, composite video, or B&W video signals. It will automatically detect which type is connected. S-video and composite/B&W should NOT be connected at the same time or a degraded picture will result.

S-Video (YC)

Connect the video source (i.e. a video camera) to the S-VIDEO IN connector on the CL5404A.

Connect the S-VIDEO OUT signal from the CL5404A to the monitor or other video display device.

The CL5404A uses industry standard mini-DIN connectors for S-Video

Video (composite or B&W video)

Connect the video source (i.e. camera) to the VIDEO IN connector on the CL5404A.

Connect the VIDEO OUT signal from the CL5404A to the monitor or other video display device.

RETURNS

All returns MUST have an RMA number. Please call, fax or email for an RMA form. The RMA form will have the proper shipping address for returns.

Phone	610-754-6800
Fax	610-754-9766
Email	techsupport@mivs.com

OPERATION

The CL5404A is designed to be easy to operate while also providing maximum flexibility. All the controls are listed below.

Power   The Power Switch and power indicator LED are located on the right side of the front panel. The power switch is a "soft touch" switch but it will remember its setting even when power is removed.

Position Controls   The four rotary controls adjust the position of the lines. All four lines are vertical in the CL5404A unit. The exact functions of the controls are dependent on the settings of the Track and Mirror mode switches, and are described in those sections. The four controls are divided into line pairs. With Track and Mirror modes turned off, each control will move a single line. Due to the use of precision optical encoders, the unit can be powered down and will restore the last line positions on power up, even if the controls have been moved in the mean time.

Lock (1 thru 4)   There is a lock switch for each control (4 total). Press the lock switch to lock the controls so the associated lines will not be moved in case a control

WARRANTY

MicroImage Video Systems warrants that each CL5404A is free from defects due to faulty materials or improper workmanship for a period of one (1) year. MicroImage Video Systems further warrants that any part which proves defective in materials or workmanship within one (1) year, will be replaced or repaired at no cost to the user. Labor to replace defective parts will be done without charge, provided the equipment is returned to MicroImage Video Systems prepaid, insured and properly packaged. Prior return authorization must be obtained from MicroImage Video Systems.

NOTE

This warranty covers the MicroImage CL5404A Video CrossLine Generator only.

CONDITIONS

This warranty is void if the warranted part has been altered or subjected to abuse or misuse. Defective parts must be returned to MicroImage Video Systems.

SOLE WARRANTY

This Warranty is in lieu of all other warranties expressed or implied including, without limitation, any implied warranty or any implied warranty of fitness for a particular purpose. MicroImage Video Systems shall have the final right to determination as to the existence and cause of any defect and its appropriate adjustment in accordance with the terms of this warranty. In no event shall MicroImage Video Systems be liable for any consequential or collateral damages.

is accidentally altered. An LED will light to indicate that the associated control is locked. Controls and locks are numbered 1 through 4.

(Independent) When both the Track and Mirror modes are off, the unit will be in Independent mode. In independent mode, each of the four lines may be adjusted by its own control. The functions of the position controls will be: X1 (Vertical Line 1), Y1 (Vertical Line 2), X2 (Vertical 1), Y2 (Vertical 2). Neither the Track LED nor the Mirror LED will light while Independent mode is enabled.

Track Track mode allows each line pair to be repositioned without affecting the spacing between them. The left control of each set adjusts the position of both lines. The right control adjusts the spacing between the lines within a pair by moving the second line relative to the first. The Track LED will light to indicate that Track mode is enabled.

Mirror Mirror mode allows the lines to be repositioned without affecting the spacing between them, exactly as per Track mode. However, in mirror mode the right control sets the spacing between the lines of a pair by moving both lines relative to a point centered between them. The Mirror LED will light to indicate that Mirror mode is enabled.

Box This switch is not used in this unit.

Setup In Setup Mode, the lines may be set either as solid, serrated, or off. Each rotary control will affect its corresponding line. The lengths of the serrations may be varied through 15 steps. The Setup LED will blink while Setup is enabled.

Display The Display switch will turn all lines on or off. Note that individual lines may be rendered transparent through other functions, and may not be visible regardless of the Display setting. The Display LED will light to indicate that the display is turned on.

B/W   The Black/White switch selects the brightness of the lines (black or white).   The brightness levels for both black and white may be adjusted from a special mode on power up.

In addition to the front panel controls, the CL5404A has four DIP switches on the rear panel. These switches are used to enable additional features on the unit. They are numbered 1 through 4.

Dip Switch 1   Reserved for future use

Dip Switch 2   Reserved for future use

Dip Switch 3   Reserved for future use

Dip Switch 4   Resolution - When the switch is in the OFF (UP) position, the CL5404A will be in Low Resolution mode. The lines will be heavier and may show less "flicker" on some monitors. When the switch is in the ON (DOWN) position, the CL5404A will be in High Resolution mode. The lines will be finer, but will require more rotation of the controls to move.   Note that changing resolution may shift the lines off the right or bottom of the display, and may require several turns of the controls to bring them back into the field of view.

SPECIFICATIONS

Front panel controls	Line position controls (4), multi turn, high precision optical encoders
Front panel switches	11 - Display on/off, Position locks (4), B/W, Track and Mirror modes, Setup, and Power. Box switch not used
Rear Panel Switches	(4) Resolution, 3 reserved
Remote port	RS-232 - 9 pin female D-sub connector
Data rate	9600 baud, 8 data bits, no parity, 1 stop bit
Data format	MicroImage Control Language (MICL-CL5404A)
X axis line width	81.5 uS NTSC/RS170, 70nS PAL/CCIR (high res)
Y axis line width	2 scan lines (interlaced) Low Res Mode
	1 scan line (non-interlaced) High Res Mode
Line resolution	640 x 480 NTSC, 768 x 576 PAL (High Res Mode)
	320 x 240, 384 x 288 PAL (Low Res Mode)
Adjustment range	98% of raster typical
Sync system	NTSC/RS170A or PAL/CCIR
Genlock	Precision Phase Locked Loop (PLL)
Input levels	
NTSC	1.0 Vpp composite, 75 Ω
S-Video	NTSC - 1.0 Vpp (Y), 0.286 Vpp burst (C), 75 Ω
	PAL - 1.0 Vpp (Y), 0.300 Vpp burst (C), 75 Ω
Output levels	Same as respective input ±5% into 75 Ω
Bandwidth	Greater than 30 MHz
Connectors	
NTSC / SYNC	BNC Female
S-Video	4 pin mini-DIN Female (std. S-Video conn.)
Temperature	
Operating	0° ~ 40° C (32° ~ 104° F)
Storage	-40° ~ 60° C (-40° ~ 140° F)
Humidity	
Operating	10% ~ 90% (noncondensing)
Storage	5% ~ 95% (noncondensing)
Power	
Voltage	+10 to +20VDC (+12VDC typical), neg ground
Consumption	130mA at 12VDC typical (LEDs on), 180mA max.
	3mA standby
Size	7.5" (W) x 5.6" (D) x 2.6" (H)
	190 mm (W) x 142 mm (D) x 66 mm (H)
Weight	1 lb 6oz. (625g)

Manufactured in Pennsylvania, USA by MicroImage Video Systems

Additional features may be accessed by holding certain buttons while the CL5404A powers up. The buttons may be released once the text or line display appears.

Reset   To restore the unit to its factory default settings, switch the unit off, hold in Lock buttons 1 and 3, and switch the unit back on while keeping Lock buttons 1 and 3 depressed. Once the display is stable, you may release the Lock buttons. This will return the unit to normal functionality in the event that the controls or display are in an unusable state.

Note: this will overwrite all existing user settings

B/W Setup   The B/W switch alternates between two brightness settings. The user can modify the brightness of either setting, which can be black, white, or any of 62 intermediate shades of gray. To enter the special B/W setup mode, switch the unit off, hold in the Setup button, and switch the unit back on while keeping the Setup button depressed. Once the display becomes stable, you may release the Setup button. A text box will appear on the screen, showing numeric values for the black and white levels. Rotating the first or third rotary control will adjust the black level, and rotating the second or fourth control will adjust the white level. The lines on the display will change to the current value of the last control used. Values may be set within a range of 0 through 63. Press the B/W button to save the selected brightness levels and return the unit to normal operation. Switching the unit off will exit the B/W Setup mode without saving the changes. The factory default values are 2 for black and 56 for white.

RS232 REMOTE CONTROL

All standard CL5404A units have RS232 remote & query capability. In order to use the RS232 port to control the CL5404A, a remote terminal or custom software must be used. A manual describing how to control the unit is available from MicroImage Video Systems. This information is also available on the MicroImage web site at www.mivs.com.

When RS232 control is used, it may affect the operation of the front panel switches and controls depending on how the modes are set by the remote software.

The RS232 port on the CL5400A uses a 9 pin female D-Sub connector. For a normal PC, it is wired as a straight through connection. The functions of the pins are as follows:

Pin 2 - TxD (data transmitted to CL5404A)
Pin 3 - RxD (data received by CL5404A)
Pin 5 - Ground

Baud rate is 9600 and the data is 8N1 with no flow control.

IN CASE OF DIFFICULTY

If you are experiencing problems with any MicroImage product, you can contact MicroImage Support using the following methods:

Phone	610-754-6800
Fax	610-754-9766
Email	techsupport@mivs.com
Web	www.mivs.com