Model CL5400
CrossLine Generator

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CONTENTS

UNPACKING

The CL5400 package includes the following items:

    CL5400 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 CL5400 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 CL5400 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 CL5400.

Connect the S-VIDEO OUT signal from the CL5400 to the monitor or other video display device.

The CL5400 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 CL5400.

Connect the VIDEO OUT signal from the CL5400 to the monitor or other video display device.

OPERATION

The CL5400 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. Two controls are for the X axis and two controls are for the Y axis. The exact functions of the controls are dependent on the settings of the Track and Mirror mode switches, and are described in those sections. Normally, the first control on the left will adjust the horizontal position of a vertical (X axis) line or pair, and the second control will adjust the vertical position of a horizontal (Y axis) line or pair. The third and fourth controls may be used either to adjust the second vertical and horizontal lines, or to set the spacing between the lines within a pair. 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 is accidently altered. An LED will light to indicate that the associated control is locked.

(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 (Horizontal Line 1),

X2 (Vertical 2), Y2 (Horizontal 2). Neither the Track LED nor the Mirror LED will light while Independent mode is enabled.

Track Track mode allows the lines to be repositioned without affecting the spacing between them. The left set of controls adjusts the positions of the vertical and horizontal pairs of lines. The right set of controls adjusts the spacing between the lines within a pair by moving the second line relative to the first. The functions of the controls will be: Position of vertical line pair, position of horizontal line pair, spacing of vertical lines, spacing of horizontal lines. 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. The right pair of controls 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 Pressing this switch enables the box mode. Pressing it again returns the unit to displaying full lines. When the CL5400 is placed into box mode, the lines will be truncated at their intersections, forming a box. The sides of the box may be positioned using any of the three line control modes above: Independent, Track, or Mirrored. The Box LED will light when the unit is in Box mode.

Setup In Setup Mode, the lines may be set either as solid, serrated, or off. Each rotary control will affect its corresponding line: X1, Y1, X2, and Y2. The lengths of the serrations may be varied through 16 steps. The Setup LED will light 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 CL5400 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 Y Origin Select - When the switch is in the OFF position (UP), turning the rotary controls clockwise will move the horizontal lines downward from an origin point in the upper left corner of the display. When the switch is in the ON (DOWN) position, turning the rotary controls clockwise will move the horizontal lines upward from an origin point in the lower left corner.

Dip Switch 4 Resolution - When the switch is in the OFF (UP) position, the CL5400 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 CL5400 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.

Additional features may be accessed by holding certain buttons while the CL5400 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.

All standard CL5400 units have RS232 remote & query capability. In order to use the RS232 port to control the CL5400, 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 CL5400 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 CL5400)
Pin 3 - RxD (data received by CL5400)
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	support@mivs.com
Web	www.mivs.com

SPECIFICATIONS

Front panel controls	Line position controls (2 X and 2 Y axis), multi turn, high precision optical encoders
Front panel switches	11 - Display on/off, Position locks (4), B/W, Track and Mirror modes, Box mode, Setup, and Power
Rear Panel Switches	(4) Resolution, Origin, 2 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-CL5400)
X axis line width	81.5 uS NTSC/RS170, 70nS PAL/CCIR (high res)
Y axis line width	2 scan lines (interlaced)
	1 scan line (non-interlaced)
Line resolution	640 x 480 NTSC, 768 x 576 PAL (high res)
	320 x 240, 384 x 288 PAL (low res)
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

WARRANTY

MicroImage Video Systems warrants that each CL5400 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 CL5400 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.

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	service@mivs.com