

Low Light Camera  
Instruction Manual  
*Model i308*

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# Contents

Quick Operations Guide .....	3
Features .....	4
Unpacking Instructions .....	4
Connections .....	5
NTSC Output .....	5
B&W Output .....	5
S-Video Output (YC) .....	5
RGB .....	5
Connector Wiring Diagram .....	6
VCR Connections .....	6
NTSC .....	6
S-Video (YC) .....	6
Operating Instructions .....	7
Controls .....	7
Display Functions .....	7
Bars .....	7
Data .....	7
Live, Memory and Fade .....	7
Store .....	8
Menu Functions .....	8
Exposure .....	8
Exp Comp .....	8
White Bal .....	8
▲ and ▼ .....	9
Options .....	9
Select .....	10
Exposure Functions .....	10
Lock .....	10
Pk/Av .....	10
Escape .....	10
VCR Operation .....	11
Precautions .....	11
In Case of Difficulty .....	12
Technical Assistance .....	12
Specifications .....	13
Optional Items .....	14
Warranty .....	15

# i308 Low Light Integrating Camera

*with RGB, YC, NTSC, and B&W output*

## Quick Operations Guide

### # Full Auto Exposure

You can go from bright field to dark field to fluorescence or back again in Auto mode; it is not necessary to go to manual integration to attain the correct image in any type of fluorescence. The camera will expose to the different types of fluorescence automatically. Press **EXPOSURE**, then **SELECT** to choose.

### # White Balance Modes

There are several different White Balance modes available for different situations. Press the **WHITE BALANCE** button then the **SELECT** button to choose mode. Start in ATW for bright field and dark field. The camera will adjust automatically to White Balance changes. The camera will automatically switch to 3200° White Balance integration. Refer to page 7 for other modes.

### # Image Memory and Fade

Find an image you want to store in memory, whether in bright field, DIC or fluorescence. Push the **MEMORY** button, then the **STORE** button. Wait for **STORED** to appear on screen. Push the **LIVE** button and go to next image (this feature works well with dual and triple labeled specimens). Push the **LIVE** and **MEMORY** buttons together until both LEDs are on, then use **UP - DOWN** buttons to fade the two images over top of each other. You can A-B the two images by hitting the **LIVE** and **MEMORY** buttons alternately.

### # Exposure Compensation in Auto Exposure

If you want to change the exposure level in auto mode, press the exposure button so the on screen display shows **FULL AUTO EXPOSURE**. Then press the **UP - DOWN** buttons to brighten or darken the image. This works throughout the entire range of auto exposure. Refer to page 7 for details.

### # Internal Camera Functions

The **OPTIONS** button allows you to change internal functions of the camera such as Edge Enhancement, On-Screen Displays, AGC, and Shutter Speed. Press **OPTIONS** then **UP - DOWN** buttons to choose function, press **SELECT** then **UP - DOWN** to make the change, then **SELECT** again to return to normal camera image.

- ! Low light sensitivity through integration levels up to 4 seconds
- ! Provides RGB (2 outputs), S-Video (YC), NTSC and Monochrome signals simultaneously
- ! ½" HyperHAD™ High Density 768 (H) x 494 (V) Image Sensor
- ! Small remote head for minimum heat buildup on image sensor
- ! Wide exposure range - 4 to 1/125,000 seconds
- ! Auto exposure lock for image analysis work
- ! Escape feature to revert instantly from integration to real-time
- ! Two digital memories that allow image capture of one image to be compared to another image.
- ! Image Fade - a captured image and a real-time or currently integrating image may be displayed as an overlay
- ! On screen display with menus
- ! Manual override for any auto function
- ! Peak/Average detection switch
- ! SMPTE color bars
- ! Auto tracking white balance, push button, 3 color presets and manual white balance control

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## Unpacking Instructions

The MicroImage i308 camera system consists of:

- MicroImage i308 camera control unit
- MicroImage i308 camera head with attached cable
- CAB41205 - 5 foot RGBS cable
- CAB05006 - detachable 3 wire power cord
- CAB12006 -S-Video Cable
- This instruction manual

Unpack all items carefully.

Inspect Unit for any shipping damage. If there is damage from shipping, contact MicroImage Video Systems Immediately. Do NOT plug unit into power if damaged.

Connect the end of the camera head cable to the camera control unit Camera Head connector. Tighten the connector to secure the cable. **Do not connect or disconnect the camera head cable while the CCU power is on. Camera damage may result.**

The MicroImage i308 camera generates RGB (2 connections), S-Video(YC), NTSC video, and Black & White video. All signals from the CCU may be connected at the same time without any signal degradation.

### NTSC Output

Connect a BNC cable from the NTSC connector on the back of the CCU to the VIDEO IN connector on the monitor. If this is the only monitor being used, place the TERM switch in the 75 ohm TERM position.

If a second monitor is being used, please consult the monitor manual for proper looping and termination procedures. Not all monitors terminate the same way. Some monitors do not have looping capability, in this case a Video Distribution Amplifier will be required. An improperly terminated monitor will result in a degraded picture.

### B&W Output

Connect a BNC cable from the B&W Video Out connector on the back of the CCU to the VIDEO IN connector on the monitor. If this is the only monitor being used, place the TERM switch in the 75 ohm TERM position.

If a second monitor is being used, please consult the monitor manual for proper looping and termination procedures. Not all monitors terminate the same way. Some monitors do not have looping capability, in this case a Video Distribution Amplifier will be required. An improperly terminated monitor will result in a degraded picture.

### S-Video Output (YC)

Connect a YC (4 pin to 4 pin) cable from the S-Video connector on the CCU to the S-Video IN (YC in) connector on the monitor. If only one S-Video monitor is being used, place the YC TERM switch in TERM position if it has one.

If a second monitor is being used, please consult the monitor manual for proper looping and termination procedures. Not all monitors terminate the same way. Some monitors do not have looping capability, in this case a Video Distribution Amplifier will be required. An improperly terminated monitor will result in a degraded picture.

### RGB

The MicroImage i308 camera provides two RGB connections via 9 pin connectors. Either connector or both may be used at the same time without any signal degradation. This way a monitor and a frame grabber can easily be connected simultaneously.

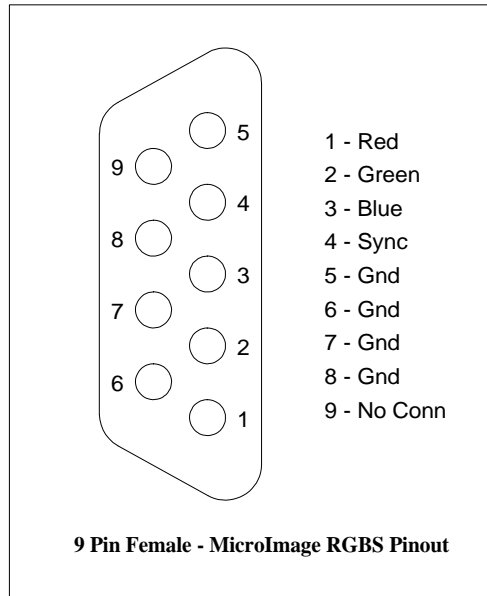
Connect the RGBS cable from the RGB out connector on the CCU to the appropriate connectors on the monitor. If only one RGB monitor is being used, place the RGB and SYNC TERM switches in the TERM or 75 position.

If a second monitor is being used, please consult the monitor manual for proper looping and termination

procedures. Not all monitors terminate the same way. Some monitors do not have looping capability, in this case a Video Distribution Amplifier will be required. An improperly terminated monitor will result in a degraded picture.

If both output connectors are used, each one must have a single termination at the end of it's line.

## Connector Wiring Diagram



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## VCR Connections

The NTSC and YC signals may be recorded on videotape. High resolution VCRs such as the S-VHS type will give higher quality recordings than standard VCRs. Use of the YC signal with these VCRs will provide the highest resolution.

### NTSC

Connect a cable from the NTSC connector of the CCU to the **VIDEO IN** connector on the VCR. Note that adapters or special cables may be required.

Connect a cable from the **VIDEO OUT** connector of the VCR to the Video or NTSC INPUT connector of an NTSC monitor as described in the VCR instruction manual.

DO NOT connect the above signals to the Antenna or ANT connectors on the VCR.

### S-Video (YC)

Connect a YC (S-Video) cable from the YC connector on the CCU to the S-Video INPUT connector on the VCR. Note that a VCR with YC capability such as an S-VHS VCR must be used.

Connect a YC (S-Video) cable from the S-Video OUTPUT connector on the VCR to the YC or S-Video INPUT connector on a YC monitor as described in the VCR instruction manual.

If the VCR has a switch to select NTSC(Video) or S-Video, place the switch in the S-Video position. See the VCR operation manual for more information.

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## Operating Instructions

Connect Unit as specified above in the **Connections** section of this manual.

Connect power cord to POWER connector on rear of unit.

Connect power cord to 120 VAC 60Hz AC power.

Turn on power switch. The green power indicator should come on.

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## Controls

The MicroImage i308 camera provides considerable flexibility. This section explains what each control does. There are 14 pushbutton switches on the front panel of the CCU. All camera functions are controlled by these switches. There are no internal or rear mounted switches. The controls are listed by section.

### Display Functions

There are four display switches as listed below.

#### Bars

Pressing the Bars switch will display SMPTE style color bars on all video outputs (B&W output will be monochrome). This can be used to adjust the monitors and other system equipment. The Color Bars can also be used to troubleshoot system connection problems such as crossed RGB cable connections. Pressing the color bar switch a second time returns the camera back to the camera mode.

#### Data

Pressing the Data switch will display the current camera modes for white balance, exposure mode, exposure comp and shutter response as well as the manual exposure setting if in manual mode. The Code (firmware) Version will also be displayed.

#### Live, Memory and Fade

Pressing the Live switch will display the current picture in the camera view. The LED above the switch will light.

Pressing the Memory switch will display the image currently in memory, if one is stored (see *Store* below)

Pressing both the Live and Memory switches will display an image that can be linearly faded from live to memory. This allows comparisons to be easily made between the two. Press the ▲ and ▼ keys to change the fade setting. An image must be stored in memory before you will see the effect.

## Store

Pressing the Store switch will write the video image into memory. This memory can be used by pressing the memory switch (see *memory* above). The image will be held in memory until the store switch is pressed again or power is turned off. The memory is always cleared at power on. The LED above the Store switch will light when an image is stored in memory. If the unit is in integration, you may have to wait up to four seconds until the image is stored.

## Menu Functions

There are six menu switches as listed below.

### Exposure

Pressing the Exposure switch once will display the current exposure mode. Pressing it again while the exposure mode display is on screen will allow you to cycle through each exposure mode per keypress. The three modes are described below.

Manual	If Manual exposure is selected, the exposure setting can be adjusted by pressing the ▲ and ▼ keys while Manual Exposure is displayed on the screen. Typically, the ▲ and ▼ keys will continue to change the manual exposure setting even after the display disappears until the Fade, white balance or Options switches are pressed, which will change their function.
Full Auto	Full auto allows the unit to span the full exposure range from 4 seconds of integration to a 1/125,000 second shutter.
Auto Shut	Auto Shut enables only the shutter part of the exposure control. It disables the Integration function to allow for faster bright field work.

### Exp Comp

When the camera is in Full Auto or Auto Shut, the exposure may be adjusted to compensate for varying image contrast levels. The compensation control will affect both the shutter and integration. The level can be adjusted +/- 1.0 stops. If the exposure compensation is used for one image, it may have to be readjusted for another image. The exposure compensation will be reset to 0 (no compensation) on power up as well as when the unit changes from shutter to integration or back.

### White Bal

Pressing the white balance switch once will display the current white balance mode. Pressing it again while the white balance mode display is on screen will allow you to cycle through each white balance mode per keypress. The white balance modes are listed below

ATW	Auto Tracking white balance. The unit will constantly adjust white balance to make the average value of the picture white. Not available during integration.
Push Button	To set push button white, press the white balance button until PB white is displayed on screen. While PB white is on screen, press the Select button. This will start the push button white balance sequence.



When the push button balance is completed, a message will be displayed indicating the outcome of the correction. If PBW not set - low level is displayed, you must increase the exposure. If PBW not set - high level is displayed, you must decrease the exposure. If White Bal cannot be set is displayed, the unit was unable to fully set white balance to it's precision level, although it may be fine for most people. WB set ok will be displayed if PB white is successful. This mode is not available during integration.

- |        |   |
|--------|---|
| Manual | Manual white balance can be adjusted by pressing the ▲ and ▼ keys while manual white balance is displayed on screen. Display manual white balance by pressing the white balance button. Typically, the ▲ and ▼ keys will continue to change manual white balance even after the display disappears until the Fade, Exposure or Options switches are pressed, which will change their function. During integration, you will have to wait for each update to see the amount changed. |
| 3200   | The 3200 degree white balance setting is typically used for Halogen light sources. During integration, you will have to wait for each update to see the change.   |
| 4400   | The 4400 degree white balance setting is for use with some of the newer light sources rated near this color temperature. During integration, you will have to wait for each update to see the change.   |
| 5600   | The 5600 degree white balance setting is typically used for Xenon light sources. During integration, you will have to wait for each update to see the change.   |
| Note:  | The camera will remember two different white balance modes, one for integration and one for shutter mode. All white balance modes are available during shutter operation while only Manual, 3200, 4400 and 5600 are available during integration.   |

## ▲ and ▼

The ▲ and ▼ switches are used to adjust several settings in the camera depending upon what function was selected just before pressing them. See the following switches for more information.

Fade  
Options  
White Balance  
Exposure

## Options

Pressing Options calls up the menu system used to set seldom changed camera parameters. The following options can be changed. Use the ▲ and ▼ keys to highlight the item and then press select to continue to the proper menu. Pressing Options a second time will exit the menu system.

- |      |   |
|------|---|
| Edge | The edge enhancement can be set to one of four levels - Off, Low, Med and High. This setting will be remembered even after the camera is powered down. Note that settings other than Off may provide a distorted picture on some video printers and frame grabber boards that cannot properly handle the sharpness increase. Use the ▲ and ▼ keys to highlight the item and then press select to save the setting and exit all menus. Pressing Options will enable the selection and exit to the main menu. |
|------|---|

Display	The length of time that the on screen display is active may be changed. The settings are Short, Med, Long and Always on. Use the ▲ and ▼ keys to highlight the item and then press select to save the setting and exit all menus. Pressing Options will enable the selection and exit to the main menu.
Gain	Gain may be turned off or on when the shutter is in manual. Use the ▲ and ▼ keys to highlight the item and then press select to save the setting and exit all menus. Pressing Options will enable the selection and exit to the main menu.
Response	The response of the shutter may be adjusted from fast to slow. The factory default is fast. Use the ▲ and ▼ keys to highlight the item and then press select to save the setting and exit all menus. Pressing Options will enable the selection and exit to the main menu.

## Select

The select button has two functions, to make menu selections in the menu system and to start a Push Button white balance sequence. See *Menu* and *White Balance, Manual* above.

## Exposure Functions

There are three switches which affect the exposure as listed below.

### Lock

Pressing the Lock button will lock the auto exposure to it's current setting. Pressing it a second time will unlock the exposure setting. This switch only functions in the auto exposure modes.

### Pk/Av

Shutter detection can be changed from Average to Peak. An LED as well as an on screen indication will change. Detection during integration is automatically set to an advanced peak mode designed just for integration applications.

### Escape

Press the escape button if you need to quickly exit from long integration periods. After pressing the escape button, the exposure will change to 1/60 seconds and then continue to auto adjust. This is handy when going from a dark field to a light field in full auto exposure. This button only functions in full auto mode.

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## VCR Operation

For normal use, the Camera and the VCR may be left connected. However, both the Camera and the VCR (along with any other connected equipment) must have their power turned on in order to view a proper camera image on the video monitor. If the VCR is connected properly, it should pass the camera image without degradation. If PLAY is pressed on the VCR, then you should see the video tape picture instead of the current camera image.

The exact procedure for recording and playing tapes on a VCR varies between different models. It is impossible to describe all the methods here. Please refer to your VCR operation manual BEFORE calling MicroImage Video Systems. If calling MicroImage Video Systems for assistance on VCR connection problems, please have the VCR operation manual handy. Manuals for other equipment are also good to have at hand.

You must find out from your VCR manual how to enable the video input function. Usually this will be a switch or you will have to enter a special channel number. Some VCRs switch automatically as soon as the video cable is connected.

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## Precautions

DO NOT open unit. Lethal voltages are present inside. Refer servicing to authorized personnel.

DO NOT connect the CCU unit to any other camera module. The signals are proprietary to this system and may result in damage to both units

DO NOT allow water or moisture to enter the units. Injury and/or damage may result.

DO NOT stress cable or bend tightly at connectors. DO NOT pull cable by connectors. Avoid twisting the cable near connectors.

Connect unit only to 110-125 VAC 50/60Hz power.

Clean with only a mild cleaner. Strong cleaners may damage the finish. When cleaning, dampen a soft cloth and then wipe unit. NEVER spray cleaner directly into any electronic product. Severe damage and/or a lethal or severe shock may result!

Please put all manuals for this system in a safe place where they are easily found if needed.

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## In Case of Difficulty

### 1 - No Picture:

Check all connections.

Make sure power is connected and unit is turned on. Power light should be illuminated.

Check camera and monitor for proper operation by connecting camera directly to monitor.

### 2 - Exposure Flashes between shutter and integration:

This can occur under certain circumstances. Usually when detection is set to Average and the exposure is right around 1/60 sec and there is a very bright spot in the field of view. Possible suggestions are:

1. Change detection from Average to Peak.
2. Lock the exposure with the lock switch
3. Add an ND filter to change the exposure range
4. Use the manual exposures

### 3- If the above steps do not solve the problem, contact MicroImage Video Systems. Many problems can be solved over the phone. See the *Technical Assistance* section of this manual for further information.

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## Technical Assistance

World Video Sales Co., Inc.  
P.O. Box 331  
Boyertown, PA 19512  
Attention: Customer Service  
Phone: (610) 754-6800  
Fax: (610) 754-9766  
Email: [microimg@microimagevideo.com](mailto:microimg@microimagevideo.com)  
[www.microimagevideo.com](http://www.microimagevideo.com)

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## Specifications

Horizontal Resolution	500 lines (Y channel)
Image Sensor	1/2" HyperHAD™ CCD 768 (H) x 494 (V) pixels
Scanning System	2:1 interlace RS-170
Scanning Frequency	15.734 Khz (H), 59.94 Hz (V)
Chroma Frequency	3.579545 Mhz
Sync System	Internal
Shutter System	Microprocessor based digital system
Auto Exposure Range	4 sec. - 1/125,000 sec.
Digital Auto Gain	0 to +16dB
Exposure Detection	Peak / Average reading
White Balance	2800°K to 6200°K
S/N Ratio	48 dB
Minimum Illumination	0.01 lux on image sensor surface (4 sec exposure)
Lens Mount	C-Mount
NTSC Output	1 Vpp Composite video
YC (S-Video) output	(Y) 1 Vpp, (C) 0.28 Vpp burst
RGB output	0.714Vpp non composite
Sync output	0.5 Vpp non composite
B&W output	1 Vpp
Connectors	Camera 12 pin screw lock NTSC / B&W BNC female YC 4 pin mini-DIN female (std. S-Video) RGB (2) 9 pin D-sub female
Power Requirements	120 VAC, 60 Hz, 25 W max.
Operating Range	-10° ~ +50° C, 95% RH max.
Dimensions (head)	2.4" (L) x 1.1" (W) - 61 x 28 mm
Dimensions (CCU)	12.15" x 10.2" 309mm x 260mm
Weight (CCU)	9lb, 8oz
Weight (Head)	1oz (excluding cable)
Manual shutter settings	1/90, 1/125, 1/187, 1/250, 1/375, 1/500, 1/750, 1/1000, 1/1500, 1/2000, 1/3000, 1/4000, 1/6000, 1/8000, 1/12000, 1/16000, 1/24000, 1/32000, 1/48000, 1/64000, 1/96000, 1/128000 seconds
Manual Integration settings	1/30, 1/15, 1/10, 1/8, 1/6, 1/4, 1/3, 1/2, 2/3, 1, 1.5, 2, 3, 4 seconds
WB Modes	ATW, Push Button, Manual, 3200°K, 4400°K, 5600°K
Exposure Detection	Peak / Average reading (Shutter), Advanced peak (Integration)
Auto Exposure Lock	On / Off
Color Bars	SMPTE style
RGB System	Microlmage Hi-Res Matrix

Specifications are subject to change without notice.  
HyperHAD™ is a trademark of Sony Corporation

MicroImage Video Pointers

MicroImage Video Timer / Titlers

MicroImage Video Distribution Amplifiers (VDA)

MicroImage Video Fixed Pattern Generators

MicroImage Split Screen Controllers

MicroImage Video Faders

MicroImage CrossLine Generators

### CABLES

CAB11001 1 ft. BNC to BNC cable

CAB11003 3 ft BNC to BNC cable

CAB11006 6 ft BNC to BNC cable

CAB11012 12 ft BNC to BNC cable

CAB11025 25 ft BNC to BNC cable

CAB11050 50 ft BNC to BNC cable

CAB12001 1 ft. S-Video (YC) cable

CAB12006 6 ft S-Video (YC) cable

CAB12012 12 ft S-Video (YC) cable

CAB12020 20 ft S-Video (YC) cable

CAB12030 30 ft S-Video (YC) cable

CAB12050 50 ft S-Video (YC) cable

CAB13006 6 ft RGBS BNC to BNC cable set

CAB13010 10 ft RGBS BNC to BNC cable set

CAB13015 15 ft RGBS BNC to BNC cable set

CAB41201 1 ft 9 pin to RGBS BNC cable set

CAB41205 5 ft 9 pin to RGBS BNC cable set

MicroImage Video Systems offers a wide variety of cables. Please call MicroImage Video Systems to check availability of cables not listed above.

All above items may be ordered from your MicroImage Video Systems Dealer.

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## Warranty

World Video Sales Co., Inc. warrants that each MicroImage Video Systems i308 video camera system is free of defects due to faulty materials or improper workmanship. World Video Sales Co., Inc. further warrants that any part which proves defective in materials or workmanship, within one 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 World Video Sales Co., Inc. prepaid, insured and properly packaged. Prior return authorization must be obtained from World Video Sales Co., Inc.

### **NOTE**

This warranty covers the MicroImage Video Systems i308 camera system 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 World Video Sales Co., Inc.

### **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. World Video Sales Co., Inc. 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 World Video Sales Co., Inc. be liable for any consequential or collateral damages.

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## Returns

Please call for a RMA number on all repairs. Units without an RMA number may be delayed in processing.

When sending unit back for repair, it **must** be properly packaged. Failure to package the unit properly may void the warranty or incur extra repair charges and additional delay in processing.

Send unit to the following address only. Do NOT send to the PO Box address.

WORLD VIDEO SALES CO., INC.  
625 Hoffmansville Road  
Suite 3  
Bechtelsville, PA 19505  
Attention: <RMA#>

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Phone: (610) 754-6800  
Fax: (610) 754-9766  
Email: [service@mivs.com](mailto:service@mivs.com)

[www.mivs.com](http://www.mivs.com)