SA1091

Auto Exposure Camera

Instruction Manual

Model SA1091
rev.# 02 October 15, 1996 JWS

Contents

Features

- UL544™ approved power supply
- Automatically selects the correct exposure by adjusting shutter speed or gain
- Auto Shutter speeds from 1/60 sec. to 1/125,000 sec.
- MicroImage 3rd Generation Super Smooth Auto Exposure Technology
- Auto White Balance optimized for Video Microscopy
- Provides S-Video (YC) and NTSC Video signals simultaneously
- High Resolution, Low Noise 1/2" HyperHAD™, Color CCD Image Sensor
- Includes all necessary cabling
- MicroImage Support

Unpacking Instructions

The MicroImage SA1091-30 camera for NTSC and YC or B&W consists of:

MicroImage A209 camera module
MicroImage PS1000 UL544™ power supply
CAB41310 and CAB40220 camera cables
CAB11006 BNC to BNC cable
CAB01006 Hospital Grade power cord
This instruction manual

An optional cable to convert YC to B&W is available for monochrome applications. See the *Optional Items for use with this camera* section for other MicroImage products that may enhance video operations.

Unpack all items carefully. Check each item against contents list above.

Inspect Unit to make sure that there is not any shipping damage. If there was shipping damage, Call MicroImage Video Systems Immediately. Do NOT plug unit in to power if damaged. Further destruction and/or injury may result.

Connections

Connect the camera cable large D-sub end to the 15 pin connector on the power supply. Connect the small D-sub end to the 15 pin HD connector on the rear of the camera. Connect the two round connectors of the cable together. Connect the power supply to 120VAC with the hospital grade power cord provided.

The MicroImage Model SA1091 Camera generates YC (S-Video) and NTSC Video. B&W is available with a special adapter cable which converts YC to B&W. NTSC and YC may be connected at the same time without any signal degradation. Contact your MicroImage Video Systems Dealer for the YC to B&W conversion cable.

NTSC

Connect the BNC cable from Power Supply 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 more than one monitor is being used, consult the monitor manual for connection and termination information.

B&W

Contact your MicroImage Video Systems Dealer for a special adapter cable to convert YC to B&W. B/W and YC cannot be used at the same time. If both YC & B&W are required, a YC Distribution Amplifier (DA) or CCU is needed. Contact MicroImage Video Systems for more information.

YC

Connect a YC (4 pin to 4 pin) cable from the YC connector on the camera power adapter to the YC IN (S-Video) Connector on the monitor. If only one YC monitor is being used, place the YC TERM switch in TERM position.

If a second YC monitor is being used, consult the operation manual for the monitor

NOTE : If the monitor does not have a second connector for attaching another monitor, a Distribution Amplifier or DA will be required. Many S-Video systems require this for operation with more than one monitor. Contact your MicroImage Video Systems Dealer for suitable units.

Shutter Operation

This camera incorporates MicroImage Video Systems Third Generation Auto Exposure system. This new system provides very smooth auto exposure while maintaining a fast response time. Digital gain control has been added for improved AGC functionality and to eliminate the negative interactions with the shutter control system that are common to conventional AGC controls. Peak and Average detection is selectable to allow the auto exposure to be used in virtually all situations.

Many operations can cause a change in light level to the video camera, the most common of which is changing the magnification of the optics. The change in light level usually results in loss of a usable picture. The auto exposure in the SA1091 automatically adjusts the shutter speed or gain after a light level change is detected. The system is designed to provide a fast and smooth response to light changes.

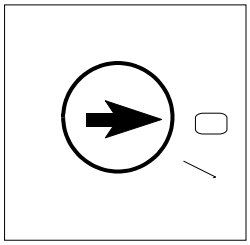
The auto exposure in MicroImage cameras is calibrated for maximum picture quality. When the camera determines that picture quality will be compromised, it will change to a new exposure.

Peak / Average

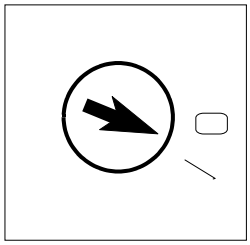
The peak / average detection switch selects how the light from the image sensor affects auto shutter and digital gain operation. Peak detection senses bright spots and adjusts the auto shutter and digital gain to correctly expose the bright areas. Most situations with compound microscopes work well with Peak mode. Average mode senses the overall picture contrast, so the auto shutter and digital gain don't respond to pinpoint or bright spots of light. Most stereo or surgical scopes work best in this mode. There are exceptions in both cases, however, and you may need to try both to find the best mode. Once it is determined which mode works best for your application, set it and the camera responds automatically to the lighting situation.

Changing Detection

Access to the switch is through a hole on the side the camera. The switch is set to the AVERAGE position at the factory. It has 16 positions, Peak is at the 3 o'clock position and Average is at the 4 o'clock position (1 click clockwise from Peak). Other positions are reserved for future use by MicroImage Video Systems. Note that power must be turned off (for about 10 seconds) and then back on after the switch is changed for the new setting to take affect.



Peak is at 3 o'clock position



Average is one position down, roughly 4 o'clock

VCR or Printer Connection

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

NTSC

Connect a cable from the Video Out connector of the camera to the VIDEO IN connector on the VCR. Note that adapters or special cables may be required.

Connect a cable 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.

YC

Connect a YC (S-Video) cable from the YC connector on the camera power adapter 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.

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 see a proper camera image on the video monitor. If the VCR is connected properly, it should pass the camera image through if the VCR is stopped. If PLAY is pressed on the VCR, then of course 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. Not all VCR related problems are the VCR.

Precautions

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

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

DO NOT connect any other power supply to camera.

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

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

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

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.

In case of difficulty

1 - No Picture:

1) Check all connections.

2) Make sure power is connected and unit is turned on. Power light should be illuminated. If power lamp does not come on and power is applied, call MicroImage Video Systems for assistance.

3) Check Beam Splitter on head of microscope. Not enough light may be going to the camera.

4) If other equipment is installed between camera and monitor, check the camera and monitor for proper operation by connecting camera directly to monitor.

2 -Auto Shutter appears not to be working/Auto White Balance not working:

1) Turn unit off for 30 seconds and then back on to reset the Camera.

2) If the above does not solve the problem, contact MicroImage Video Systems for assistance.

3 - Picture appears bright and washed out with high light level:

1) Auto exposure may be at the end of the range. Try using a Neutral Density (ND) filter.

2) Change the Peak/Average switch, turn unit off for 30 seconds, then turn on.

3) Check for proper Termination of video signal on monitor (See Connections)

4) Check monitor BRIGHTNESS control.

4 - Picture appears dark:

1) There may not be enough light reaching the camera.

2) There may be a bright spot (such as a reflection) causing the auto shutter to increase speed. Note that the camera will sense a bright spot even at the very edge or beyond the edge of the monitor screen. Setting the camera to AVERAGE mode will help this problem.

3) Check Beam Splitter on head of microscope. Not enough light may be going to the camera.

Technical Assistance

For Technical Assistance Contact:

WORLD VIDEO SALES CO., INC.
P.O. Box 331
Boyertown, PA 19512
Attention: Customer Service
Phone: (610) 754-6800
Email: microimg@microimagevideo.com

Specifications

Output Levels:	
NTSC	1.0 Vpp Composite, 75 Ω
YC	1.0 Vpp (Y), 75 Ω
	0.286 Vpp Burst Level (C), 75 Ω
B&W (with adapter cable)	1.0 Vpp, 75 Ω
Connectors:	
NTSC	BNC Male cable end
YC	4 pin mini-DIN Female (Std. S-Video conn.)
Camera Connector (PS)	15 pin D-sub female
Camera Connector (camera)	15 pin D-sub high density female
Horizontal Resolution	470 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
CCU to camera communication	EIA-232D, 4800 baud 7E1
	MicroImage Camera Control Format (CCF)
Exposure System	MicroImage 3rd Generation DELTA™ system
	Microprocessor based digital system
Exposure Response Time	0.4 sec. max (fast mode A)
Auto Shutter Range	Off - 1/125,000 sec.
Auto Gain	0 to +16 dB, digitally controlled
White Balance	Auto: 2800EK to 6200EK
S/N Ratio	48 dB
Minimum Illumination	0.3 lux (0.03fc) on CCD surface (gain on)
Lens Mount	C-Mount
Temperature:	
Operating	0E - 40E C (32E - 104E F)
Storage	-40E - 60E C (-40E - 140E F)
Humidity:	
Operating	10% - 90% (non-condensing)
Storage	0% - 95% (non-condensing)
Power:	
Voltage	110 - 125 VAC 50/60 Hz
Consumption	40W max.
Size (power supply)	70 (H) x 80 (W) x 120 (L)
	2.75 (H) x 3.15 (W) x 4.75 (L)
Weight (power supply)	3.5 lbs
Size (camera)	43 (H) x 50 (W) x 130 (L) mm
	1.7 (H) x 2.0 (W) x 5.125 (L) inches
Weight (camera)	12.4 oz.

Optional items

MicroImage Video Pointers

MicroImage Timer /Titlers

MicroImage Split Screen Controllers & Video Faders

MicroImage Fixed Pattern Generators

MicroImage CrossLine Generators

MicroImage Video Distribution Amplifiers (VDA)

CABLES

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
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

MicroImage custom camera cables. Call MicroImage Video Systems for information regarding specific part numbers for different MicroImage cameras.

MicroImage Video Systems offers many more cables than listed above including longer versions. Please contact MicroImage Video Systems to check availability of cables not listed.

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

Warranty

World Video Sales Co., Inc. warrants that each MicroImage SA1091 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 SA1091 camera and power supply 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.

MicroImage Video Systems is a division of World Video Sales Co., Inc.

Please call for a RMA Number and shipping address on all repairs.

WORLD VIDEO SALES CO., INC.
625 Hoffmansville Road, Suite 3
Bechtelsville, PA 19505
Attention: [RMA Number]
Phone: (610) 754-6800
Email: microimg@microimagevideo.com

Note: You MUST have an RMA number for returns & repairs