Operating Manual

High-Resolution Digital B&W Video Camera

EHD® kamPro03

Lieferung ohne Objektiv

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1 General

The *EHD®kamPro03* is a monochrom CCD video camera including a 1/3" Hyper HAD sensor with 470.000/410.000 picture elements. This unit is equipped with a newly developed DSP (Digital Signal Processor) for processing the video signal. A micro-controller is also included to provide high color reproduction, sharp, stable picture and most of the functions control.

2 Features

1. Extensive use of digital signal processing

2. 600 lines of horizontal resolution and high quality picture by utilizing processing LSI's

3. Minimum illumination of 0.02lx and signal-to-noise ratio of 48dB is realized by using a high sensitive image sensor with micro lenses and low-noise circuit design.

4. High quality picture - A digital signal processor performs digital horizontal and vertical aperture enhancement to produce a high resolution picture.

5. Smart digital control auto Back Light Compensation (BLC), the combination of histogram equalizer and central windows weighting BLC functions ensure for use against any unusual lighting conditions.

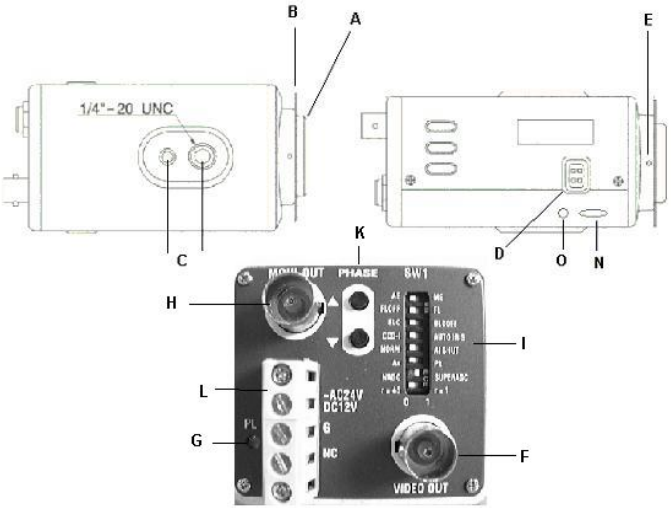
6. Advanced Auto Exposure (AE) system for both fix iris and auto iris lenses control the amount of light to ensure it is always optimized.

7. Internal or Gen-lock external sync.

8. Long life and high reliability

3 Name of parts and functions

A. C-Mount adapter
B. Flange focal distance adjuster
C. Holder screw hole
D. Auto-Iris lens connector
E. Flange focal lock screw
F. Video output terminal BNC
G. Power pilot LED
H. Extern sync. in terminal BNC
I. SW 1
K. Phase adjust buttons
L. 12VDC/24VAC power terminal
N. Video/DC lens selector
O. DC level adjuster



A. C (CS) -Mount adapter
If a CS-Mount lens shall be used, remove the C-Mount ring.

B. Flange focal distance adjuster
If back focus adjustment is necessary, unscrew the flange back lock screw. Optimize the focus by turning this ring.

C. Holder screw hole

D. Auto-Iris lens connector

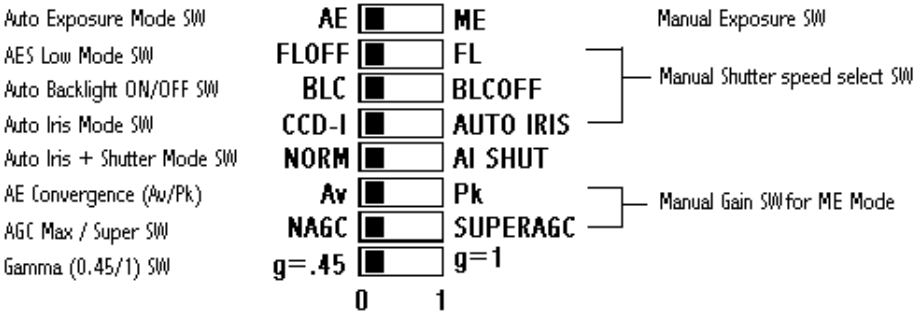
E. Flange back lock screw

F. Video output terminal (BNC)

G. Power pilot LED

H. VS external sync in terminal (BNC)
This input terminal (BNC) is used for the video signal, which serve as reverence for the external sync.

I. SW1



FL=Flickerless, CCD-I=CCD-IRIS, AI SHUT=Auto Iris + Shutter speed
Av=Average, Pk=Peak, AGC=30dB, Super=36dB

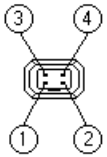
K. Gen-lock/Line-lock Phase adjust (only 24VAC)

L. Power input terminal
This terminal accepts both 24VAC and 12VDC **non-polarity**.

M. Video / DC Auto-Iris lens selector

O. DC level adjust (VR)
For DC drive Auto-Iris lens level adjustment, in order to obtain correct exposure light.

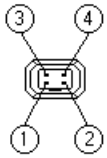
3.1 Auto-Iris lens connector
Use the accompanying Auto-Iris lens control connector plug.



1. Red for power
2. Not connected
3. White for video
4. Black for shield

For Auto-Iris lens without EE amp. set the lens selector switch to 'DC' position.

For Auto-Iris lens with build-in EE amp. set the lens selector switch to 'Video' position.



1. Damping coil (-)
2. Damping coil (+)
3. Driving coil (+)
4. Driving coil (-)

Connect the leads as shown above. refer to the instructions of the lens.

3.2 External sync. signal input terminal (Gen-Lock in)
This input terminal (BNC) is used for the video signal, which serve as reference for the external sync.
Note:
The external sync. signal is a composite video signal 1.0Vpp. Signals from a VCR or other equipment that causes jitter (irregular vertical and horizontal shaking on the screen) may disturb synchronization.

4 AE Setting (Auto Exposure)
AE/ME DIP-Switch = 0 (AE position)

AE MODE CONTROL

MODE SW1	AE/ME			
CCD Iris Mode (AES)	AE	FLOFF	BLC	CCD-I
CCD Iris Mode BLC Off	AE	FLOFF	BLCOFF	CCD-I
AES Low Mode	AE	FL	BLC	CCD-I
Auto Iris Mode	AE	FLOFF	BLC	AUTO IRIS
Auto Iris Mode BLC Off	AE	FLOFF	BLCOFF	AUTO IRIS

4.1 AES Mode (AE/ME=0, CCD-I=0) (CCD Iris Mode)

AES mode is performed by the electronic iris and AGC control. AES operation basically sets the AGC to the minimum necessary gain to control the exposure with the electronic iris, however when even the maximum exposure time (1/50, 1/60sec) result in insufficient exposure, AGC control is performed with the shutter speed set to the maximum exposure time. If exposure is excessive, the AGC gain will be lowered first, if exposure is still over even at the minimum gain, the electronic iris starts.

4.2 AES LOW Mode (AE/ME=0, FLOFF/FL=1)

In order to reduce the blurring under low light, in this mode the shutter is from 1/120s to 100.000s continuously.

4.3 Auto-Iris Mode (AE/ME=0, CCD-I/AUTO IRIS=1)

In this mode, the shutter speed is fixed to 1/50s, 1/60s. Auto exposure operation is performed by AGC through the microcontroller and mechanical iris of an external lens. The Back Light Compensation amount is calculated by the internal microcontroller, which drives the Auto-Iris lens.

4.4 Auto Iris with Shutter Speed Mode (AE/ME=0, NORM/AI SHUT=1)

This mode is the same as mechanical Auto-Iris mode with the additional function to select the shutter speed by the user. This function is very usefull for applications that allow shooting a fast moving object with a higher shutter speed in order to catch a more clear picture.

5 ME Setting (Manual Exposure) (AE/ME=1)

In ME mode, the shutter speed can be set by DIP-Switches from 1/50s (1/60s) to 1/10.000s. In addition the GAIN can be selected from 0 to 18dB.

SHUTTER SPEED SETTINGS

Shutter Speed	**AE/ME**			
1/50s	ME	FLOFF	BLC	CCD-I
1/100s	ME	FL	BLC	CCD-I
1/250s	ME	FLOFF	BLCOFF	CCD-I
1/500s	ME	FL	BLCOFF	CCD-I
1/1000s	ME	FLOFF	BLC	AUTOIRIS
1/2000s	ME	FL	BLC	AUTOIRIS
1/4000s	ME	FLOFF	BLCOFF	AUTOIRIS
1/10000s	ME	FL	BLCOFF	AUTOIRIS

GAIN CONTROL

AGC Gain	**AE/ME**		
0 dB	ME	Av	NAGC
6 dB	ME	Pk	NAGC
12 dB	ME	Av	SUPERAGC
18 dB	ME	Pk	SUPERAGC

6 Back Light Compensation Setting (BLC)

This intelligent Auto BLC is a newly developed digital light level control system. It is activated automatically by screen histagram (contrast) and 255 area window weighting integration to control iris gain and white balance simultaneous, so that the clear object with adequate level can always be optimized.

6.1 Central window weighted average backlight compensation
This metod is suited for cases where the main subject is fexed within the screen.

6.2 Histogram backlight compensation
This method is suited for cases where the main subject moves about within the screen.

6.3 The combination of the two backlight makes it easier to arrange backlight compensation operation to match the imaging conditions and installation location.

Compensation may be insufficient when the background is extremely bright.

7 Specifications

Image Device	1/3" Interline Transfer Hyper HAD CCD
Signal System	CCIR or EIA
Picture Elements	CCIR: 752 x 582, EIA: 768 x 494
Scanning System	CCIR: 625 lines, EIA: 525 lines, 2:1 interlace
Sync. System	internal / external
Horizontal Resolution	600 TV lines
Minimum Illumination	0.02lx at F1.2
Aperture Correction	H aperture and V aperture
Gain	Max. Gain 30dB, Super Gain 36dB
S/N Ratio	Better than 48dB
Auto Exposure System	4 modes selectable by DIP-Switches
AE electronic iris mode	1/50 (1/60) to 100.000s
AE AES low mode	CCIR: 1/100s, EIA: 1/120s – 1/100.000s
AE mechanical iris mode	1/50 (1/60)s
Manual exposure system	Shutter: 1/50, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000s Gain: 0, 6, 12, 18dB
Auto-Iris lens	Video or DC servo lens selectable
Gamma	0.45 / 1
Back Light Compensation	ON/OFF, Histogram + Windows Weight BLC
Video Output Signal	Composite: 1Vpp at 75Ω load
Lens Mount	C & CS-Mount
Operating Temperature	-10° to 50°C
Power Source	DC 12V
Power Consumption	3W
Dimensions	57 x 52 x 110 mm

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