

1 YEAR
WARRANTYMADE IN
TAIWAN

HHB 1600

High-Performance Data Logging Video Borescope System

User's Guide

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Toll-Free: 1-800-826-6342

TEL: (203) 359-1660

FAX: (203) 359-7700

e-mail: info@omega.com

Canada:

976 Bergar

Laval (Quebec), Canada H7L 5A1

Toll-Free: 1-800-826-6342

TEL: (514) 856-6928

FAX: (514) 856-6886

e-mail: info@omega.ca**For immediate technical or
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Czech Republic:

Frystatska 184, 733 01 Karviná, Czech Republic
Toll-Free: 0800-1-66342 TEL: +420-59-6311899
FAX: +420-59-6311114
e-mail: info@omegashop.cz

France:

Managed by the United Kingdom Office
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FAX: +33 (0) 130 57 54 27 e-mail: sales@omega.fr

Germany/Austria:

Daimlerstrasse 26
D-75392 Deckenpfronn, Germany
Toll-Free: 0 800 6397678 TEL: +49 (0) 7059 9398-0
FAX: +49 (0) 7056 9398-29 e-mail: info@omega.de

United Kingdom: ISO 9001 Certified

OMEGA Engineering Ltd.
One Omega Drive, River Bend Technology
Centre, Northbank, Irlam, Manchester
M44 5BD England
Toll-Free: 0800-488-488
TEL: +44 (0)161 777-6611
FAX: +44 (0)161 777-6622
e-mail: sales@omega.co.uk

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2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

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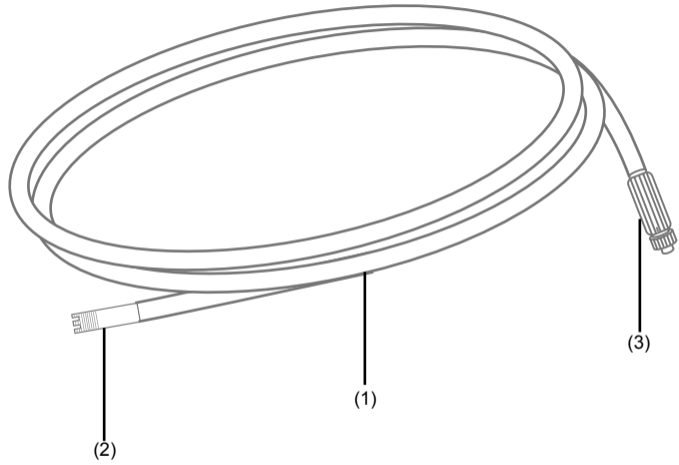
NOTES:

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Product Features

INSERT TUBE

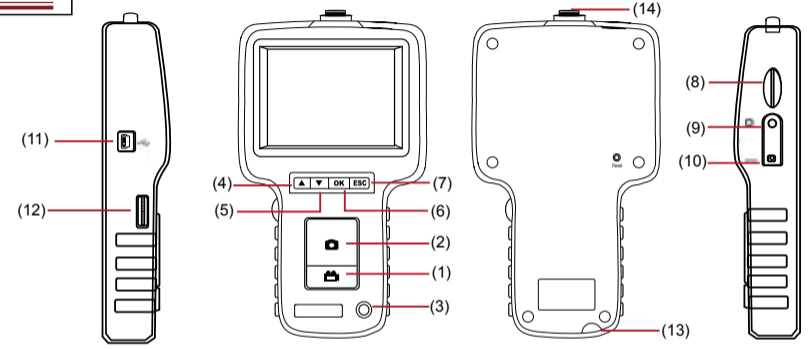


1-Insert Tube

- (1) Insert tube
- (2) Camera and lens
- (3) Insert tube connector

(Please read the entire instruction manual before usage)

HHB1600



2-CONSOLE

- (1) RECORD
- (2) SNAP
- (3) POWER
- (4) PREVIOUS

- (5) NEXT
- (6) **OK**
- (7) **ESC**
- (8) SD Port
- (9) TV out

- (10) AC Jack
- (11) USB port
- (12) Light adjustment
- (13) Hanger Hole
- (14) Console Connector

First Time Use

STEP 1-Insert the insert tube into the connector according to the direction of the arrow and tighten the screw nut.

STEP 2-Press and hold down the power button on the console for 3 seconds until the image is displayed on the monitor.

STEP 3-Aim the camera lens at the selected object. Press SNAP to capture a .jpg image, or RECORD to begin recording a .asf video.

System Modes





The HHB1600 provides three simple working modes: Preview, Browse and Manual Mode.

Preview Mode	The Preview Mode is activated as soon as the unit is turned on. The image received by the camera is displayed in real time on the video monitor. The user can capture photos and record video while in the Preview Mode.
Browse Mode	In Browse Mode, users may view photos and video, and conduct basic file maintenance.
Manual Mode	In Manual Mode, users may customize their set up preferences.

Note: The system returns to Preview Mode automatically after 10 seconds without any response in Manual Model.

Multi-function keys

Each console button performs a unique function depending upon the Mode in which the system is being operated

Push-Buttons	Preview Mode	Browse Mode	Manual Mode
	Switch to Browse Mode to view photos and videos.	Move to previous photo or video.	Move upward through the main manual.
	Switch to Browse Mode to view photos and videos.	Move to next photo or video.	Move the light bar downward.
OK	Enter Manual Mode.	Delete photo or video.	Execute selected command.
ESC	Return to Preview Mode.	Return to Preview Mode.	Return to Preview Mode.
	Capture a .jpg photo	View the next photo or pause/play video clips.	Display various data for repair
	Start and stop video recording	Return to Preview Mode	Return to Preview Mode

Manual Screen

The user may press the MENU button in Manual Mode to execute desired commands as indicated below.

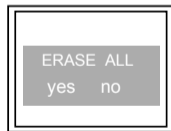
DELETE ALL
VIDEO OUTPUT
DATE/TIME SETUP
LANGUAGE
VIDEO FORMAT
AUTO POWER OFF



(Figure.1)

•DELETE ALL

After initiating this command, select “yes” or “no” by pressing up or down arrow buttons. To delete all, select “yes”. Exit by pressing the OK button.



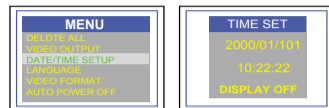
(Figure.2)

•VIDEO OUTPUT

This command will send the video signal out through the AV port. The monitor will turn black until you execute this command again.

•DATE/TIME SETUP

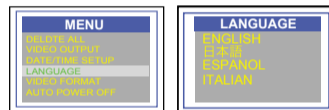
Use the arrow buttons to select Year/Month/Day or Hour/Min/Sec. Press RECORDING to increase the number, or press SNAP to decrease. Select “Display ON” to print the date on the photo.



(Figure.3)

•LANGUAGE

Use this command to select the desired language.



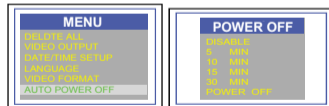
(Figure.4)

•VIDEO FORMAT

Set up your video format.

•AUTO POWER OFF

Set the auto power off feature to your desired length of time.





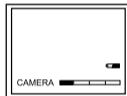
(Figure.5)

Operating Instructions

Power On/Off

STEP1: To turn the console on, press the power button for 3~5 seconds until you see the sign below appear on your monitor.

( SD card memory capacity  Battery capacity)



(Figure.6)

STEP2: Press the power button for 3~5 seconds to turn the console off.

Adjust the brightness

When the objects on the screen or "fully-blank (light over)", it might be because the light source is too bright. In this case, please turn the light switch counterclockwise to reduce the brightness. Turn the light switch clockwise to increase the brightness.

Taking Photos

Press  button during Preview mode to take the photo.


Or, continue pressing the  button to show the photo that has just been taken.

Image Status: Returns to Preview Mode automatically after photo is taken.



(Figure.7)

Video Recording


1. Press  button to start video recording.

Image Status:  sign will appear at the left bottom of the screen.



(Figure.8)


2. Press  button again to stop recording.

Image Status:  sign disappears.

Note: User may return to Preview Mode anytime by pressing **ESC button regardless of working under Browse mode or Manual mode.**

Viewing photos/videos



1. Press  or  during preview mode.

Image Status: Display the latest photo/video.



(Figure.8)



2. Press  or  again to view the oldest or second to last photo/video.

Image Status: All les will be stored according to the time sequence of photo capture/video recording.

Note: When viewing videos, the video will be displayed automatically until it ends and then the next photo or video will be displayed.

Setting Time/Date

1. Press **OK**
2. Press **▲** or **▼** to move to Date/Time command.
3. Press **OK** to initiate the command.
4. Press **◀** to increase the number or **▶** to decrease.
5. Press **◀** for next adjustment.
6. Repeat step 4 and 5 until the correct time/date are set.
7. Press **OK** to complete the set up.



(Figure.9)

Setting Time Display

1. Press **OK**
2. Press **▲** or **▼** to move to "Date/Time" command.
3. Press **OK**
4. Press **▲** or **▼** for "Display" option.
5. Press **◀** to switch the "Display" function between ON/OFF.

*Image Status: Press **◀** once for ON, press again for OFF.*

6. Press **OK** to complete set up.
7. Press **ESC** to return to Preview mode.

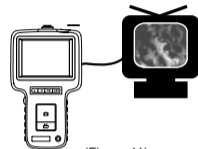


(Figure.10)

Viewing on a TV monitor

1. Plug the included AV cord into the AV socket located on the right side of the console.

Notice: Please plug the other end of the AV cord into the "AV in" socket on the external monitor.



(Figure.11)

2. Press **OK**
3. Press **▲** or **▼** to move to "Video output" option.
4. Press **OK**

Image Status: image will be transmitted to the external monitor.

Setting video format

1. Press **OK**
2. Press **▲** or **▼** to move to "Video Format" option.
3. Press **OK**
4. Press **▲** or **▼** to select NTSC/PAL.
5. Press **OK**



(Figure.12)

Deleting a specific photo (Browse mode only)

1. Enter Browse mode, then press ▲ or ▼ to locate the photo or video you wish to delete.

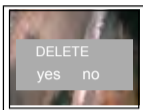
2. Press **OK**

Image Status: "Delete yes or no" options

3. To select your option, press ▲ or ▼

Image Status: The selected option flashes.

4. Press **OK** to execute your selected option or press ESC to cancel.



(Figure.13)

Deleting all photos

1. Press **OK** during Preview mode.

Image Status: Showing the Main Menu

2. Press ▲ or ▼ for "Delete All" command.

3. Press **OK**

Image Status: "yes" or "no" option appears

4. Use ▲ or ▼ to select "yes".

5. Press **OK** to execute.



(Figure.14)

Setting auto power off

1. Press **OK** during Preview mode.

2. Press ▲ or ▼ for "Auto power off" command.

3. Press **OK**

4. Press ▲ or ▼ to select desired time length or choose "Disable".

5. Press **OK**

The console will automatically turn off if it has not been used for this preset length of time.



(Figure.15)

Re-charging the battery

Re-charging the console battery

Plug the adapter into the outlet and plug the power jack into the socket on the console.

Creation of Memory Card Folder

The following information applies to the included SD card only. All photos and videos are stored in the [100MEDIA] folder under the [DCIM] folder. All files will be named according to the time/date setup.

The original setup date 1 Month 1 Date 6:14:23 Name of the file

1 1 0 6 1 4 2 3 .JPG Month Date Hour: Minute: Second Extension



- Users should complete the time/date setup before usage in order to achieve accurate file management.
- The time/date is pre-set to 2007/1/1. Users may identify this when the file name begins with the digits 11.
- File names are not labeled by serial number. They are labeled according to the current time/date.
- Both photos and videos are named in the same way but with different file extensions, .jpg and .asf.

Specifications

Camera System and Insert Tube

0.2" Diameter Insert Tube	325(H)*250(V)
Housing	Steel
Light Source	White LED
Length	OBEDIENT 3.3', 6.6', 9.8' (1M, 2M, 3M)SOFT METAL 3.3', 6.6', 9.8', 16.4', 32.8', 98.4' (1M, 2M, 3M, 5M, 10M, 30M)
Field of View	Horizontal field angle 46°
	Vertical field angle 34°
	Diagonal field angle 56°
Depth of Field (DOF)	0.4" ~ 2.4"
Water Resistant	Only the Insertion/Insert tube is water resistant
Working Temperature	32°F to 131°F

System Console

System Dimension	8.5" x 4.7" x 1.4" (215 x 120 x 36 mm)
System Weight	380g
Power	Battery rechargeable Li-Polymer battery 3.7V power supply AC 100-240V 50-60Hz power consumption DC5.5 1.8A
Display	3.5 TFT LCD QVGA
Recording Medium	1G SD CARD
Video Out Format	NTSC & PA

Interface	AV out
Compression Format	Compliant with MPEG4
Still Image Storage Format	jpeg (640*480)
Frame Rate	~30 fps
Exposure	Automatic
White Balance	Fix
S/N Ratio	42dB or more
Language	English // Japanese // German // Spain // French // Italian // Traditional Chinese // Simplified Chinese
Recharge Temperature	32°F to 104°F
Working Temperature	-4°F to 140°F
Storage Temperature	-4°F to 140°F

Troubleshooting

•1. *Unable to turn on the console*

Users will not be able to turn on the console when the battery is very low or empty. Please re-charge before use.

•2. *Can turn on the unit but the image does not appear on the monitor*

Please check the insert tube connector or simply re-connect the insert tube to correct the problem.

•3. *Unable to capture photos/video*

Please check the status of the SD card. Users will not be able to capture photos or video if the SD card is not installed properly or if it is full, write protected or damaged.

Insert Tube Maintenance

- »To avoid danger, please do not put the insert tube into any □ammable liquid or gas.
- »The insert tube contains a series of small wires that control the optics and electronics of the camera tip. To ensure long-term reliability, do not bend the insert tube more than 180 degrees, and always bend the insert tube in as large an arc as possible during usage and storage.
- »Camera Lens cleaning
User may clean the camera lens with a cotton swab and small amount of cleaning naphtha

Cautions for Use



- »Do not remove the SD card during capturing photos or video. This can cause a loss of the image or video and may damage the SD card.
- »Video recording requires an SD card with fast writing speed. We recommend 80X (or above) writing speed SD cards for better video quality.



- »This is designed for industrial use only. Do not use the system for human or any other biological inspection.
- »Do not insert the insert tube into any flammable gas or liquid (such as a fuel tank) to avoid dangers.
- »Do not use this Video Borescope in a fuel tank or other dangerous environment such as a gasoline or alcohol storage tank.

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