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WARRANTY



# User's Guide

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## **HHB400** **Wireless Video Inspection System**

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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, human applications.

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# WELCOME

*Thank you for purchasing a HHB400 Wireless Data logging Video Inspection Camera Scope. Please read this User's Manual carefully before using this product.*

*The product is designed as a remote inspection device. It can be used to look into tight or inaccessible areas and wirelessly transmit real time video or still images for monitoring or recording.*

*Typical applications may include HVAC inspection, automotive inspection, cable routing, automotive/boat/aircraft inspection, etc.*

## OVERVIEW

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### The HHB400 Wireless Video Inspection System

HHB400 Camera Scope with removable display comes with, 12mm Diameter, 3.28 ft. (1m) Obedient Probe, 2GB Micro SD card, 3 Extension Tools: (Mirror, Magnet, Pick-Up Hook), USB and Video interconnect Cables, Li-ion rechargeable batteries with Charger, Hard Blow Mold Case and Instruction Manual. It is suitable for HVAC/R, plumbing and general inspection

The system has a high clarity color LCD of 3.5" in size. The camera head and adjustable LED lights are imbedded in the probe tip. Three accessories can be attached to the probe tip for various applications: the magnetic tip is used to pick up small metal objects; the mirror tip is used to view 90° angle; the hook is used to grab onto objects.

HHB400 Series' wireless function allows user to detach the LCD from the handle and view findings remotely up to 32 ft away. The system operates on a built-in rechargeable lithium polymer battery. It interfaces with external displays such as computer, TV and LCD panel via USB, SD card and AV cable.

## FEATURES

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- 12mm diameter probe, 3.28 ft. (1m) long, flexible obedient and waterproof to IP67 standards
- Optional probe extensions are available to extend probe length up to 16 ft. (5m)
- 3.5 in. (88.9mm) (Screen Diagonal) TFT-LCD Wireless Color Monitor can be detached from the unit for remote viewing up to 32 ft. (10m) away
- Both monitor and handle use Li-ion rechargeable batteries. System comes complete with batteries and charger.
- Two LED lights inside the tip of the probe illuminate dark spaces for clear inspection
- Built-in magnets on back of monitor facilitate hands-free operation
- View results in real time or data log and record in still photo (JPEG) or (AVI) video
- NTSC or PAL compatible USB and AV Out interfaces
- Three languages menu includes English, Spanish and French
- (x3.2) zoom feature
- 180° image rotation feature on still images

## SAFETY INSTRUCTIONS

---

*Failure to follow the instructions listed below may result in electric shock or personal injury.*

- Read and understand all instructions prior to any operation.
- Do not remove any labels from the product.
- Work in a well lit area as dark areas may cause accidents.
- Do not operate the product in the presence of flammable/explosive gases.
- Do not use the product around corrosive chemicals which can damage sensitive tips.
- Keep bystanders, children and visitors away while operating the product.

- Stay alert, watch what you are doing and use common sense. A moment of interruption can result in serious personal injury.
- Do not over-reach. Keep proper footing and balance at all times.
- Always wear eye protective gear. Dust mask, non-skid safety shoes, hard hat or hearing protection must be used for appropriate conditions.
- Do not place the product on any unstable cart or surface. The product may fall causing serious injury to a person or serious damage to the product.
- Never spill liquid of any kind on the video display units. Liquid increases the risk of electrical shock and damage to the product.
- Do not use the device for personal or medical use.
- The units are not shock-resistant. Do not drop it.

## **BATTERY PRECAUTIONS**

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- Please use the enclosed factory power adapter, otherwise you may damage the instrument.
- Completely exhaust the power for the first time. We recommend full charging and full discharging for the first few times. The charging time should not be less than 12 hours for the first few usages. A fully activated battery will offer maximum capacity of the built-in batteries.
- The charging and discharging time differs based on the current consumption of the units' components.
- Always keep the charging connector away from the metal and oily objects.
- Fully charge the battery to make sure it has high performance.
- Don't compress and puncture the battery inside.
- **"Li-ion" Rechargeable battery inside! Please do not open battery compartment in the handle unless battery replacement is necessary.**
- Don't throw the product into fire, this may cause an explosion.
- Dispose the battery properly. High temperature will cause the battery to explode. **Some countries have regulations concerning battery disposal.**

**Please follow all applicable regulations.**

# PRODUCT COMPONENTS



1. Camera head and Probe
2. The grip
3. LCD Screen
4. Magnetic tip
5. Hook tip
6. Mirror tip
7. DC adapter
8. One-into-two cable
9. Micro SD memory card
10. TV cable
11. USB cable

# TOOL COMPONENTS

## Grip Handle

- A. Camera protection cover (Remove cover before use)
- B. Camera head
- C. Probe
- D. Probe connector
- E. Power indicator — — Green lights means normal power; Red light means low battery.
- F. Switch / Wheel button to adjust the LED brightness
- G. Charging light indicator
- H. Charging interface

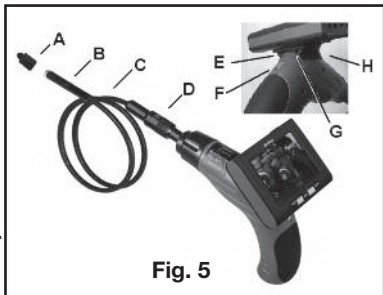



Fig. 5

## Monitor

- I. 
- J. Locking buckle clip
- K. Signal connector slot
- L. Charging light indicator
- M. Charging interface
- N. Micro SD socket
- O. USB interface
- P. Video Out

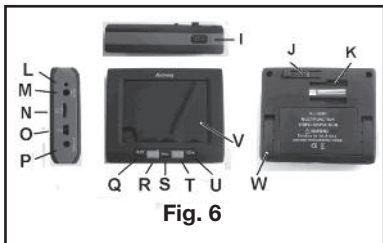


Fig. 6







- Q. 
- R. 
- S. 
- T. 
- U. 

V. LCD screen

W. Base stand



## DESCRIPTION FOR KEYS

Keys	View mode	Playback mode	Menu set
	Switch into playback mode; Hold for 3s to turn off the unit.	Switch into view mode; Hold for 3s to turn off the unit.	Hold for 3s to turn off the unit.
	Switch into menu set.	Switch into current file operation, delete single all format the memory card, etc.	Set functions set date and time
	Take a photo	Show the last photo or video;	Moving to left;
	Take a video	Show the next photo or video;	Moving to right
	Image rotation	Play pause, resume the video file;	Moving up / progressive increase data and time;
	Image magnify	Stop video file; View six files or six folders.	Moving down / progressive decrease data and time;

## OPERATION INSTRUCTIONS

### • Battery Charging

1. Connect the DC cable to the grip and/or screen.
2. Plug the AC plugs to household power outlet.
3. The LED G and/or L turns red means charging.
4. The LED G and/or L turns green, means fully charged
5. Pull out the AC plug of adapter.

**Notes:** If you want to charge both the grip and screen, use the one-to-two cable. The single end goes to the adapter, and the double end goes to screen and grip.

# CONNECTING THE DISPLAY UNIT TO THE CAMERA

## HEAD AND PROBE:

The display unit must be connected to the camera head and probe. To connect the probe to the display unit, make sure the keyed ends are properly aligned (See Fig. 7). Once they are aligned, tighten the nut.

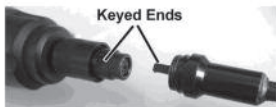


Fig.7

## ACCESSORIES INSTALLATION:

The three accessories include mirror tip, hook tip and magnetic tip (See Fig. 2). All are attached to the camera head the same way. Hold the camera head as shown in Fig. 8, slip the semicircle end of the accessory over the flats of the camera head then rotate the accessory 90° to fix it in place as shown in Fig. 9.



Fig.8



Fig.9

## • Connect the grip handle to Monitor



The product can work with the grip detached from screen and the grip attached with screen; Slide the slot at the back screen into the slot of grip in the left direction until you hear the locking sound, which means connection is accomplished. Press the lock buckle clip and slide to the right direction to detach the screen (FIG.10).



Fig.10

**Note:** The wireless function is off while the product is attached to the screen on the grip, which will ensure that the image quality does not suffer from outside interference.

- **Install Micro SD card**

When the SD card is inserted correctly,  icon will show on the screen; Otherwise  icon will show.

- **U-disk function- attach to computer**

The USB interface on the screen can be connected to a computer. When inserting the memory card, it can be considered as a U-disk; When connecting the USB2.0 cable to computer and turning the power on, the LCD displays “MSDC” , now the screen can be used as U-disk.

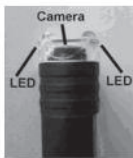
- **Video output**

If you want to view image from television, please connect the VIDEO OUT of screen to VIDEO IN of television by video out cable, now the screen is off.

- **How to work**









1. **How to operate the grip:**

- a. Roll the button on the grip towards the probe direction to power on.
- b. Continue to roll the button to adjust the brightness of the camera LEDS (FIG.11).



**Fig.11**

## 2. How to view the screen

- a. Insert the Micro SD to memory card slot correctly.
- b. Press  to enter view mode, the screen automatically find the image signal. When the same receiving and transmission frequency occurs, it is time to view image. (The default channel is CH1 : 2414MHZ) 。
- c. Press  to take a photo (but if no card is inserted, the key will not function), the files will be stored in memory card itself.
- d. Press  to start record image (but if no card is inserted, the key will not function), red icon will show on the up edge of the screen, the files will be stored in memory card itself.
- e. Press  to rotate image, every press rotates 180°.
- f. Press  to zoom from 1 to 3.2 times with corresponding numbers indicating zoom size.
- g. Press  to enter menu set.
- h. Press  to enter playback mode.
- i. Hold  for 3s to turn off the product.




Note: The screen turns off itself if not in use for 3 minutes.

Tips: When the system is working (especially in video mode), ejecting SD card will damage the stored files or damage SD card, please make sure the system is off before removing SD card.







## 3. How to set screen Menu

- a. In View status, press MENU to set menu.
- b. Select the menu by pressing the four direction keys.
- c. Press MENU to confirm the selection.
- d. Press EXIT back to the last menu until you are View mode.
- e. The following table shows screen setting menu.

## DESCRIPTION FOR KEYS

Function Menu	Menu Selection	Selection Parameter
 Advanced Setting	Tuner Channel	CH1; CH2; CH3; CH4; EXIT
	Photo Quality	High Quality; Standard Quality; Low Quality; EXIT
	Movie Quality	QVGA; D1; EXIT
	TV Output Standard	NTSC; PAL; EXIT
	EXIT	
 Auto Capture	Auto Capture	ON; OFF; EXIT
	Master Capture	Photo 1; Photo 3; Movie 5s; Movie 10s; EXIT
	File OverWrite Setting	ON; OFF; EXIT
	EXIT	
 Set Time/Date	Set Time/Date	YY/MM/DD
	Photo TimeStamp	On; Off; EXIT
	Movie TimeStamp	On; Off; EXIT
	Resume to factory default	Yes; No
	EXIT	

#### 4. How to operate Playback mode (No selection is available if there is no memory card.)

- Press  to display stored six images, press again to display different folders.
- Press **MENU** to scan files or folders.
- Press  or  to view the last or next image.
- If it is video file, press  to play video, press again to pause. Pressing once more will resume video. Press  to stop playing.
- Press **MENU** to play files, press direction keys to select delete single all files or format the memory card.
- Select EXIT to return to last menu until playback mode.
- Press  to return to view mode.

5. This product is designed for inspection of hard-to reach areas. Typical applications include HVAC inspection, car inspection, circuitry, vessel and aircraft.

## **OPERATION PRECAUTIONS!**

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1. Please read all the safety instructions carefully.
2. The probe is flexible to help you operate in hard-to-reach areas. Please don't insert or bend by force. Please do not over bend any part of the probe. Normally, the bending radius should not be less than 2" (50mm) to prevent from permanent damage to the probe.
3. Don't use the probe or camera head to modify surroundings, clear pathways or clogged areas.
4. The hand-held display unit is not waterproof. The camera head and its cover are waterproof, but not acid-proof or fire-proof. Do not touch these materials or they will ruin the camera head's protective plastic. Avoid submersing the camera head into corrosive, oily places or high temperature objects.
5. Don't place the camera head or probe into anything or anywhere that may contain a live electrical charge.


*Please check following methods to avoid injury.*

**For walls:** For inspecting the inside of walls, be sure to shut off the circuit breaker to the whole house before using the tool.

**For pipes:** If you suspect a metal pipe could contain an electrical charge, have a qualified electrician check the pipe before using this product. A ground circuit, in some cases, can be returned to the cast aluminum pipes and cause them to be charged.

**For automobiles:** Be sure the automobile is not running during inspection. Metal and liquid under the hood may be hot. Don't get oil or gas on the camera head.

- Please do not operate this product unless the manual has been read thoroughly and proper training has been completed.

- The red LED will light when the handle has a low battery; The “” will show up on the screen if the monitor has a low battery.
- Do not immerse the handheld display unit in water which will result in electric shock and damages.
- The camera head is water-proof, but the handheld display is not water-proof.
- Do not use the product if condensation forms inside the camera head.
- If the tool does not work well after turning it on. Please take the batteries out and do not use. Please have the unit checked by a qualified technician.
- Store idle products out of reach of children and other untrained personnel. The product is dangerous in the hands of untrained users.
- Maintain the inspection product with care. If the product is dropped, check for the breakage which may affect its operation. If it is damaged, have the product serviced before using. Many accidents are caused by poorly maintained products.
- Use only accessories that are recommended by the manufacturer for your product. Accessories are suitable for the product, but may become hazardous when used on another product.
- Should the unit freeze up, press reset button or power off to reset.
- Dry your hands before turning the tool ON or OFF.
- Protect against excessive heat. The product should be kept away from heat sources, such as radiators heat registers stoves or other products (including amplifiers) that produce heat. Don't use the tool near moving machinery or areas where the temperature exceeds 113F (45C).
- Please cover the camera tip with protective cap while not in use.
- Store the product in ventilated and dry places.

## TROUBLE SHOOTING

Problems	Causes	Solutions
Will not charge	Adapter didn't make a good connection with product.	Please check and try again.
	The connector or cable is broken.	Replace and try again.
	Dead battery	Ask a technician to replace the battery.
The screen is on but without image or shows "No Signal"	1. Different channel set between the grip and screen.	Set the same channel.
	2. The probe is loose.	Check and connect again.
	3. Stains on the camera head.	Check if stains exist.
LEDs on the camera head are dim at max brightness, display changes from black to white, color display turns itself off after a period.	Low battery	Use adapter for charging.
The product won't turn on.	The circuit is in protection status.	Press reset or use adapter for charging to release.
	Low battery	Use adapter for charging
	Dead battery	Ask a technician to replace the battery.
Abnormal display or invalid keys.	Interference to the screen or voltage fluctuation.	Please use the reset button inside the hole below the stand base.



## **FCC INFORMATION**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference. (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## **CAUTIONS!**

- The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus. Do not expose instrument to moisture.
- Don't drop the instrument or use by force.
- Don't disassemble the instrument to avoid failure.
- Please do not open battery compartment in the handle unless battery replacement is necessary.
- Don't place the instrument with corrosive gas or objects.
- Don't expose the instrument in environment which is with shock, too high or too low temperatures.
- Store the instrument in a safe area.
- Don't immerse the instrument into water which can cause damages to the product.
- Turn off the Camera/Monitor if the system is not in use.
- The adapter is used as the disconnect device from the mains. The adapter shall remain readily operable.
- The Camera/Monitor can only be completely disconnected from the mains by unplugging the adapter.
- Do not cut the DC power cable of the apparatus to fit with another power source.
- Attention should be paid to the disposal of batteries in environmentally- friendly ways.
- Charge the batteries every three months if not being used for a long period of time

## **SPECIFICATIONS:**

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### **CAMERA HANDLE/PROBE**

Transmission Range: Up to 32 ft. (10m), clear range without obstacle

Transmission Frequency: 2414Mhz,

Resolution: 320 x 240 Pixels

Lighting Source: White LED

Focal Length: 1.97 in (50mm)

Field of View: 60°

Depth of Field (DOF): 1.2" – 3.94" (30mm – 100mm)

Camera Tipped Probe: 0.47" (12mm) Diameter Standard

Probe Length: 3.28 ft. (1m) Standard

Water proof capacity: IP67, only for obedient probe and camera head

Power Source: 3.7 V "Li-ion" rechargeable battery pack (included);  
DC5.5V

Power Adapter: Input: AC 100 – 240 V, 50 – 60 Hz; Output: 5.5V, 1.5A

Dimensions: 8.5" x 6.9" x 1.9" (215 x 175 x 50mm)

Weight: 8 oz. (228g)

### **PROBE OPTIONS:**

- 3.28 ft. (1m) and 6.56 ft. (2m) long 12mm Diameter Probe Extensions -Total Length: Up to 16 ft. (5m)
- 3.28 ft. (1m) long 9.0mm Diameter Camera Tipped Probe

### **MONITOR**

Display: 3.5 in. (88.9mm) (Screen Diagonal) Color TFT LCD Screen

Receiving Frequency: 4 channels, 2414MHz, 2432MHz, 2450MHz, 2468MHz

Resolution: 320 x 240 Pixels

Power Source: 3.7 V "Li-ion" rechargeable battery pack (included);  
DC5.5V

**Power Adapter: Input: AC 100 – 240 V, 50 – 60 Hz; Output: 5.5V 1.5A**

**Image Resolution: 320 x 240 Pixels**

**Video Resolution: QVGA/D1**

**Image storage media: Micro SD card (Up to 16G)**

**Dimensions: 3.9 x 3.2 x 1 in. (100 x 82 x 26mm)**

**Weight: 6.2 oz. (175g)**

**Operating Temperature: 32 to 113°F (0 to 45°C)  
5 to 95%RH non-condensing**

**Storage Temperature: (-20 to 60°C) <85%RH**

**Adapter: Input-100 to 240VAC Output: 5.5V 1.5A**

**Charging Time: About 3.5 Hours**

**Battery Life: About 2 Hours**

***EU Environmental Protection Waste electrical products should not be disposed of with household waste.***

**Please recycle where facilities exist.**

**Check with your Local Authority or retailer for recycling advice.**



## NOTES:

## NOTES:

## NOTES:

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence. The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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- ☑ Transducers & Strain Gages
- ☑ Load Cells & Pressure Gages
- ☑ Displacement Transducers
- ☑ Instrumentation & Accessories

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- ☑ Air Velocity Indicators
- ☑ Turbine/Paddlewheel Systems
- ☑ Totalizers & Batch Controllers

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- ☑ Benchtop/Laboratory Meters
- ☑ Controllers, Calibrators, Simulators & Pumps
- ☑ Industrial pH & Conductivity Equipment

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- ☑ Communications-Based Acquisition Systems
- ☑ Plug-in Cards for Apple, IBM & Compatibles
- ☑ Data Logging Systems
- ☑ Recorders, Printers & Plotters

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- ☑ Cartridge & Strip Heaters
- ☑ Immersion & Band Heaters
- ☑ Flexible Heaters
- ☑ Laboratory Heaters

## ENVIRONMENTAL MONITORING AND CONTROL

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