

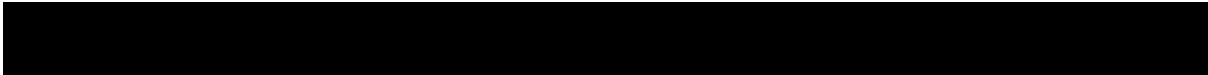


HMR10/HCK10 Point of View (POV) Underwater Housing

Setup, Use, and Care Guide

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Product photos by Lee Petersen.

This manual and current revision is available in 8.5 x 11 size and full color at

<http://www.gateshousings.com/documentation.html>



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	Table of Contents	
	Setup, Use, and Care Guide.....	1
1:	Introducing the HMR10/HCK10	4
	Features.....	4
	Warranty Disclaimer	4
	Unpacking the HMR10/HCK10	5
2:	Cautions.....	6
3:	The HMR10/HCK10 Setup	7
	HMR10 Housing Preparation.....	7
	HCK10 Housing Preparation	7
	AG-HMR10 Recorder Preparation.....	8
	AG-HCK10 Camera Preparation	8
	HMR10 / HCK10 Cable Connection	9
	Installing the AG-HMR10 Recorder	10
	Closing the HMR10 Housing	12
	Installing the AG-HCK10 Recorder.....	13
	Closing the HCK10 Housing	13
	HD-SDI Video Out (Optional).....	14
	Final Checks	14
	Seal Check (Optional).....	15
4:	HMR10/HCK10 Operation	16
	Changing Ports	17
	Cleaning Ports and Filters	18
	Diopters	18
	HMR10/HCK10 Configurations.....	19
	Tips for Shooting Video with the HMR10/HCK10	20
	Housing Care and Maintenance	21
	O-Ring Care and Maintenance	21
5:	Customer Support.....	22

1: Introducing the HMR10/HCK10

Congratulations on owning a new Gates product: the HMR10/HCK10 housing. You've selected a product that will provide years of value and reliable service. We designed the HMR10/HCK10 Housings specifically for the Panasonic AG-HMR10 and AG-HCK10 digital video recorder and camera head, respectively.

Please read through this entire guide to learn about the housing so you can get the most out of this imaging tool. In this section, we'll introduce you to the features of the HMR10/HCK10 so you can get started.

Features

The HMR10/HCK10 has several key features:

- **Small and travel friendly.** At just a few pounds, the HMR10/HCK10 packs easily into your luggage or dive gear.
- **Highly Configurable Point of View Imaging** for a myriad of applications that require distance and/or small size.
- **Up to 60' Cable separation** between camera and recorder.

Warranty Disclaimer

The HMR10/HCK10 is a tool that, like any tool, requires knowledge and understanding to be effective.

Your responsibility is to learn the proper setup, use and care of the HMR10/HCK10. Because we can only provide you with the information necessary to do so, Gates does not warrant the contents of your housing (e.g. your camera and recorder) under any circumstance. For the same reasons, Gates does not warrant optical performance or image quality.

We warrant the HMR10/HCK10 as an image acquisition tool for a period of 2 years. The optional Seal Check unit is warranted for 1 year. Optics are warranted for a period of 1 year or 100 hours water contact, whichever comes first.

If you have any questions about the setup, use and care of the HMR10/HCK10, contact Gates directly. Details are in section 5.

Unpacking the HMR10/HCK10

After you remove the HMR10/HCK10 from its shipping container, carefully inspect it for missing parts or damage that may have occurred during shipment. If you discover any discrepancies, contact Gates or your dealer immediately for assistance.

Standard Parts

The HMR10 comes with the following standard items.

- The HMR10 Recorder Housing**
- Grip/Carry Handle**
- Swivel Mount to join the HMR10/HCK10 housings together as a single unit**
- 3/16" Hex Tool**

The HCK10 comes with the following standard items.

- The HCK10 Camera Housing**
- 10ft/3m or 60ft/20m cable**
- Port(s) of choice (Dome, Flat, Wide Angle, etc)**
- 9/64" Hex Tool**
- Grip/Carry Handle**

Optional Parts

Your housing may also come with optional items:

- Color Correction Filter**
- Comm Input**
- Seal Check**
- HD-SDI Video Out and Cable**
- Light System (user install)**

2: Cautions

- ▶ **TRANSPORT.** NEVER ship or transport your AG-HMR10 recorder or AG-HCK10 camera inside the housing. The housing was not designed for this purpose and severe damage may result.

- ▶ **USER RESPONSIBILITY.** This Setup, Use and Care guide contains important detailed procedures for setup and use of the HMR10/HCK10. It is the user's responsibility to read, understand and employ these procedures. Failure to do so can result in poor or non-operation of the HMR10/HCK10 and may void your warranty.

Contact Gates if you have questions about this manual or using the HMR10/HCK10.

3: The HMR10/HCK10 Setup

The HMR10/HCK10 housing requires complete and thorough setup prior to use.

HMR10 Housing Preparation

- **Open the HMR10 shell.** Four bolts secure the housing halves together. Loosen and remove each one with the 3/16" hex tool.
- **Separate** the shells.



HCK10 Housing Preparation

- **Open the HCK10 shell.** Two bolts at the rear secure the housing halves together. Loosen and remove each one.
- **Separate** the shells.



AG-HMR10 Recorder Preparation

Your Panasonic camera will need some preparation before installing into the housing.

- **Charge a battery**, but do not insert just yet.
- **Insert an SD Card** with sufficient recording space.
- **Remove the plastic covers** from the base of the recorder if you are using either the optional HD-SDI output or COMM input.



AG-HCK10 Camera Preparation

Your Panasonic camera will need some preparation before installing into the housing.

- **Remove any lens caps or external lenses** you may have added to the front of the camera.
- **Install the optional Color Filter or Diopter** to the front of the camera.

HMR10 / HCK10 Cable Connection

- **Note** the two ends of the cable have slightly different length of cable protruding through the sealing assembly toward the inside, as shown in the photo. The longer one is for the HMR10 Recorder, the shorter for the HCK10 Camera.



- **Insert the proper cable end** into the housing shell. Orient the small slot on the end of the electrical connector facing up towards you.
- **Tighten the sealing assembly collar** until snug.
- **Repeat and install the cable** to the HCK10 camera rear shell.



Installing the AG-HMR10 Recorder

- **Holding the AG-HMR10 recorder as shown in the photo**, mate the electrical connector and tighten the collar snug. Note that the small slot on the connector must face toward the top (LCD side) of the recorder for proper mating.
- **Install a charged battery**, still holding the recorder as shown.
- **Carefully lay the AG-HMR10 recorder** into the HMR10 Housing. It will generally align evenly in the shell, and have very little movement in any direction. If it does not, or any corner is noticeably higher than the others, stop and carefully look for the cause (e.g. obstructions, wrong cable end, etc).



First, mate the electrical connector to the AG-HMR10 Recorder. Note the alignment of the small key slot on the connector.

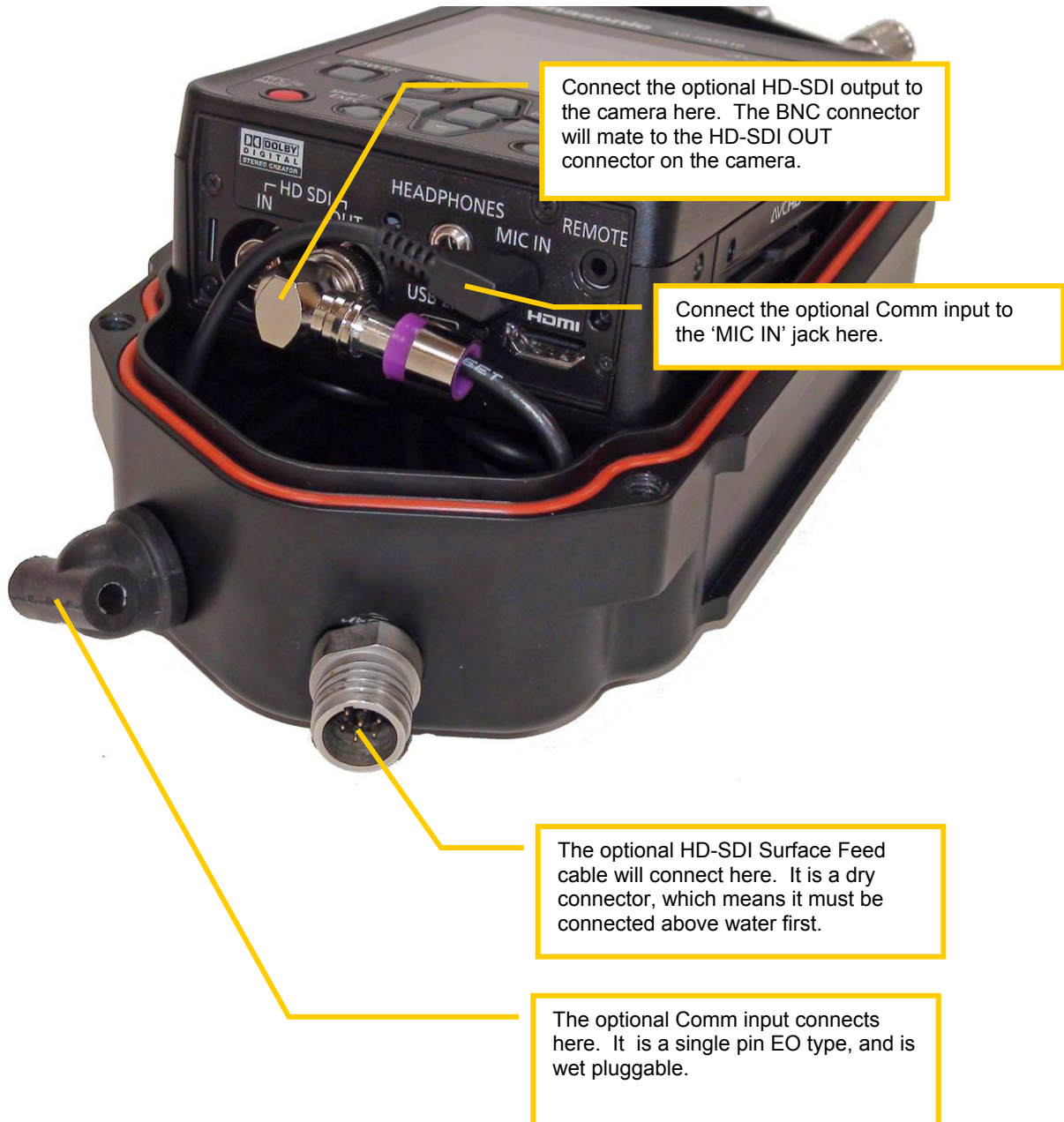


Next, install a charged battery.



Now carefully lay the recorder into the shell so it lies flat on the bottom, and generally aligns with the shell curves.

- **Connect the optional HD-SDI output or COMM input connectors** to the HMR10 recorder. You will need to lift the bottom of the recorder up slightly to plug in these connectors.



Closing the HMR10 Housing

- ❑ **Carefully inspect** o-ring and ensure it is clean and in good condition. Check the mating surface to the o-ring on the HMR10 top shell is free of nicks, scratches and debris.
- ❑ **Place the top housing shell onto the bottom.** You can clearly see when the housing halves align and seat together properly.
- ❑ **Insert the four bolts** and screw down until seated, but do not tighten. Once all are seated, tighten the four bolts snug and in a cross-pattern as shown in the photo.
- ❑ **Carefully inspect the parting line** between front and rear housing. If this line is not even all the way around, remove the top shell and determine the reason. (O-ring out of place, wrong cable end, etc.) Failure To Do This May Result In A Wet camera/recorder!
- ❑ **Power up the recorder.** Check all controls for the proper operation before entering water. (See section 4)



Installing the AG-HCK10 Recorder

- **Position the HCK10 camera as shown in the photo.** Mate the electrical connector and tighten the collar snug. Note that the small slot on the connector must face toward the top of the camera for proper mating.
- **Carefully inspect** o-ring and ensure is clean and in good condition, Check also the mating surface on the HCK10 rear shell that it is free of nicks, scratches and debris.
- **Insert the camera into the HCK10 shell.** If you feel obstructions during insertion, stop and locate the source. **Once mated,** the shells will be flush and even at the parting line.

Mate the electrical connector to the camera, noting the orientation of the key slot is toward the top.



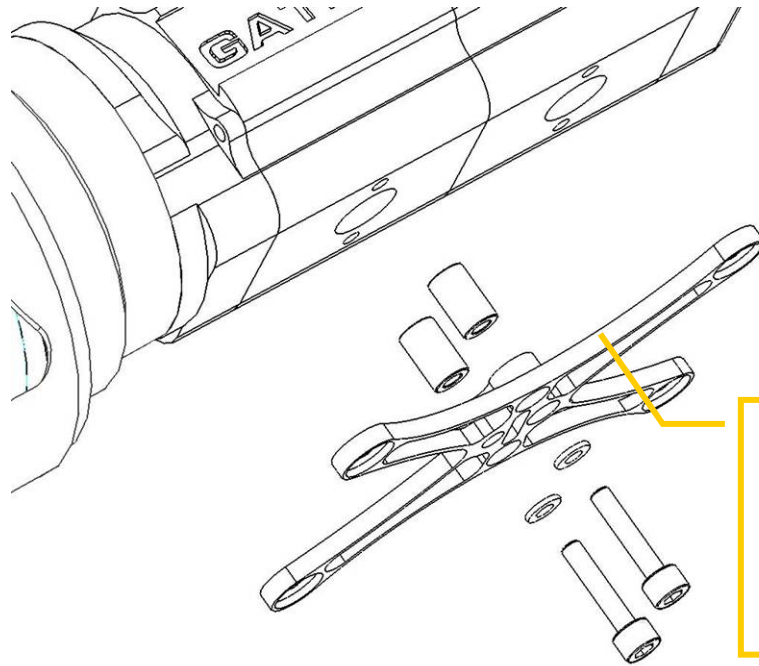
Closing the HCK10 Housing

- **Insert the two bolts / washers** and screw down until seated, but do not tighten. Once both are seated, tighten them snug.
- **Carefully inspect the parting line** between front and rear housing. If this line is not even all the way around, remove the rear shell and determine the reason. (O-ring out of place, wrong cable end, etc.) Failure To Do This May Result In A Wet Camera!
- **Check the Port.** It should be seated flush on the front bulkhead with no uneven gaps. If the port is not seated properly, remove the port and re-install per directions in a subsequent section of this document. Also check that the dot or indent on the port is aligned with the dot on the housing.



HCK10 Foot / Tripod Adapter Installation

- The HCK10 Housing includes a Foot / Tripod Adapter. See the image below for assembly details. Note that the spacers are not used with the FP25 and SP25 ports.



Assemble the Foot / Tripod Mount as shown into either front or rear section of the HCK10 Shell.

Use spacers and 1" screws when using the GP25A / WP25A Ports. Use no spacers and .375" screws with the FP25 / SP25 Ports.

HD-SDI Video Out (Optional)

- **BNC Camera connection.** If you have the HD-SDI video out installed, plug the video connector into the recorder after inserting the AG-HMR10 recorder into the housing. See the section above 'Installing the AG-HMR10 Recorder' for details.

Comm Input (Optional)

- **Mic Input connection.** If you are using the optional Comm Input, plug the single pin audio connector into the MIC IN jack after inserting the AG-HMR10 recorder into the housing. See the section above 'Installing the AG-HMR10 Recorder' for details.

Final Checks

- **Visual Inspection.** Look closely at all seal mates – Port and Main Housing seal – for gaps. Look over the housing one final time.
- **Verify operation.** As a final check, power on the camera / recorder and verify all controls are functioning normally. Also check the optional HD-SDI or Comm connections for signal integrity and function.

Seal Check (Optional)

- **Seal Check Manual.** Follow the procedures in the Seal Check manual for verifying integrity of the housing and monitor.
- ▶ **NOTE.** It is necessary with the HMR10/HCK10 to pull a vacuum of 10-12 in Hg and then wait before monitoring the Seal Check gauge. This is because the 'pass through' cable design allows air to pass from one shell to the other through the core of the cable. With a 10'/3m cable you can expect the vacuum to settle in 30 minutes. The 60'/20m cable will require up to 120 minutes. When the vacuum condition settle, a valid reading can be made and monitored to verify integrity.
- ▶ **NOTE.** When using only the HCK10 housing (for example on a pole over the side of a boat) it is not possible to use Seal Check. Seal Check can only be used when the HMR10 / HCK10 are used together.



4: HMR10/HCK10 Operation

The HMR10 housing is very straightforward. That is, operation of the AG-HMR10 recorder while in the HMR10 housing shell is identical to the AG-HMR10 recorder itself. All pushbuttons are directly aligned with their counterparts inside.

For complete description of the HMR10 controls, refer to your Panasonic user guide.



Changing Ports

Gates offers several ports for your HMR10/HCK10 housing, which attach with a bayonet-style mount. Port changes are easy and straightforward:

- **Removal.** You will see alignment dots on the housing and on the port. When aligned, the port is fully engaged and ready for underwater use. Turning the port 90 degrees, or $\frac{1}{4}$ turn in either direction to face the dot left or right allows the port to release from the front of the housing. Gently pull the port directly away from the housing to do so.
 - **Inspect the o-ring** -- Before installing a new port, perform an inspection and lubrication of the sealing o-ring. See “O-ring Care and Maintenance” in this Use and Care Guide for specific details.
 - **Installation.** Mounting a different port is directly the opposite: Insert the port into the front bulkhead of the housing with the alignment dot on the port facing left or right, or $\frac{1}{4}$ turn away from the dot on the top of the housing. You may need to gently push the port into the bulkhead to fully seat the port. Then turn the port until the dot on the port aligns with the dot on the housing. Be sure the port is fully seated and flush with the housing. You should see no gaps between the port and the housing.
- ▶ **CAUTION:** The Port must be fully seated and flush with the housing to avoid flooding.



Cleaning Ports and Filters

Gates ports can be cleaned readily by following these simple guidelines.

- **Dust or Lint** can be blown with compressed air, preferably from a can. Do not clean the surfaces if it is unnecessary.
- **Salt deposits or sand may also be removed with compressed air.** Use a soft lens brush if necessary to brush away foreign material that remains.
- **Rinse fresh water over the outside of the port, if necessary,** to loosen any residual salt or sand that may remain. Do this with the port sealed on your housing to keep water away from the rear of the port.
- ▶ **CAUTION:** Do not submerge the GP25A wide angle port in water when separated from the housing! This port is not sealed from the backside and damage will result if submerged.
- Only if necessary, **clean the port using a mild cleaning solution and a non-abrasive, lint free cloth.** Use light circular strokes when wiping away cleaning solution and any foreign material. Excessive pressure used when cleaning dirty lenses (e.g., rubbing sand into the lens surfaces) may damage coatings. Use a light touch.
- ▶ **CAUTION:** Not all cloths are lint free and non-abrasive! Use of an abrasive material (such as cotton balls and cotton fabric) may scratch the glass and/or coating of Gates ports and will void the warranty.
- ▶ **TIP:** Gates offers approved cleaning solutions and lint free cloths as accessory items. Use of these materials will not void your warranty.

Diopters / Filters

Diopters and Color Filters may be used with the HCK10 housing. The filter threads on the AG-HCK10 camera are 43mm.

Diopters work well with the FP25 Flat Port for close up/macro imaging. There is sufficient space between the camera and port to utilize up to three diopters stacked on the camera.

The optional Color Filter can be used with any Gates port compatible with the HCK10 housing. There are four: the WP25A / GP25A Wide Angle Ports, SP25 Standard Port and FP25 Flat (Macro) Port.

Refer to the section above “AG-HCK10 Camera Preparation” section for details on installing a Diopter or Filter to the camera

HMR10/HCK10 Configurations.

The HMR10/HCK10 Housings allow for a variety of uses, functions and applications. Just a few of the configurations are shown here for illustration.



Tips for Shooting Video with the HMR10/HCK10

- **Manual Focus.** The HMR10/HCK10 housing has a control for the SHIFT/EXEC button, which provides quick access to several functions, including ONE PUSH AUTO FOCUS. This can be a useful feature underwater to prevent the camera from auto 'hunting' or 'seeking' to find focus.

A common technique is allowing the camera to auto focus on your subject (or on something about the same distance from you as your subject) with the ONE PUSH AUTO FOCUS, then release to return back to manual focus. This 'freezes' the focus at that distance – no hunting or seeking. The GP25A wide angle port further provides a large depth of field (DOF), so most everything in front of your camera will be in focus, too.

- **Image Stabilization.** The AG- HMR10 / AG-HCK10 system has built-in image stabilization functions. These are useful underwater for steady, even shots, so you should have image stabilization turned on.

This new technology can be quite forgiving to shaky hands; however it does so at the expense of playing 'catch up' to your subject. That is, if you move the camera left to right you may notice the image 'catches up' and keeps moving even though you've stopped moving the camera.

- **Using the GP25A and WP25A Ports.** The WP25A and GP25A ports provide a wide angle view for the HCK10 camera. Diagonal Field of View (FOV) is approximately 81° and 90°, respectively. The Depth of Field is also quite large with these lenses. On a well lit day you can expect subjects from approximately 36" to infinity to be in focus.

- ▶ **NOTE: the GP25A and WP25A ports will allow ~1/2 zoom through capability, after which the camera will be unable to focus.**

- **Using the FP25A Macro Port.** For small subjects, the FP25A Macro Port is a good choice. You can utilize the entire zoom range to capture little critters and their behaviors. The FP25A also provides sufficient space between the camera and port to use diopters and stacked diopters for even smaller subjects.

Be aware that stacking diopters can result in a 'keyhole' effect where the center of the image is sharp, but quickly becomes soft toward the edges. This is optical physics and unavoidable.

Note also that macro imaging, by contrast to wide angle imaging, is the realm of very shallow DOF's. In general, the stronger the diopter magnification (+1, +2, +4) the more shallow the DOF. For this reason tripods are highly recommended to stabilize your shots.

Housing Care and Maintenance

Proper care of your Gates housing is important to provide you reliable operation and long life. You'll find all the guidelines in the "Housing Care and Maintenance" document included with your Gates housing. You can also find it on Gates web site at www.GatesHousings.com.

O-Ring Care and Maintenance

Your Gates housing has 2 serviceable o-rings. One is located between the mating halves of the housing (the large orange one), and one is located on the Port.

Servicing the o-rings is easy and covered in the "Housing Care and Maintenance" document in this package. It can also be found on the Gates website at www.gateshousings.com.

- ▶ **CAUTION: Do not lubricate the large orange o-ring! It is a special silicone o-ring and can be damaged by petroleum-based lubricants.**

- ▶ **CAUTION: Never use metal tools or objects for removing o-rings!**

5: Customer Support

Should you have any questions about the HMR10/HCK10 and its operation, please contact Gates at the numbers below.

Email:	Customer.srvc@GatesHousings.com
Web:	www.GatesHousings.com
Phone:	858.391.0052
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