

AUTOMATIC SHUTTER LENS MOUNT INSTALLATION



Allows for automatic/remote Current Session References

No more need to manually cap the lens

Includes a new break-out-box to replace the capture cable -- all camera signals are now readily available

KIT CONTENTS:

- One (1) - Automatic Shutter Lens Mount (Part Number: VRI-EXTSHUTTER-F-MOUNT)
- One (1) - Automatic Shutter Lens Mount compatible break-out box (Part Number: VRI-BOB-2-MS)
- One (1) - Installation Kit, (Part Number: AD-VSHUTTER-INSTALL-KIT), containing the following shims sizes:
 - 0.5mil
 - 1mil
 - 2mil
 - 3mil
 - 4mil
 - 5mil
 - 10mil
- CD containing latest firmware and software
- 7/64 inch hex wrench
- 9/64 inch hex wrench
- Four 8-32 x 5/16" cap head screws
- Four 6-32 x 5/16" cap head screws



EQUIPMENT NEEDED:

- Standard Non-Zoom Nikon Lens
- Focus Target (i.e., some type of test chart)

MINIMUM FIRMWARE/SOFTWARE REQUIREMENTS:

The supplied CD contains the most current Firmware, FPGA and Phantom Camera Control Software files required.

STEP-BY-STEP PROCEDURE:

A. Verify Camera Meets Minimum Firmware Requirements

1. Install the Phantom Camera Control Software, from the disc provided by double clicking on the Autorun.exe file.
 - a. When the installer screen appears, select Install Phantom (*version number*), and follow the instructions.
 - b. After installation is complete, select Run Phantom (*version number*) on the install screen.
2. From the Phantom Camera Control – Main Screen:
 - a. Click on the Help pull-down menu, and
 - b. Select the About command.
3. In the About dialogue window verify that the camera meet the minimum Firmware, and FPGA, requirements:

Camera Model	Firmware	FPGA
Phantom v10	639	343058
Phantom v9.1	639	343058
Phantom v7.3	639	74062
Phantom v5.2	639	343058

- a. If the firmware meets the minimum requirements skip to Step C.
- b. If the firmware does not meet the minimum requirements continue.

B. Perform a Firmware Upgrade

Important Notes:

Ensure the camera is connected to AC power. If the firmware upgrade fails, the camera will need to be returned to Vision Research for service.

1. Note the serial number of the camera the firmware upgrade is to be performed on. The four-digit serial number is located on the side of the camera.
2. From the Acquisition pull-down menu, select the Restore NV Memory... command.
3. In the Restore the nonvolatile memory setting window, click on the Firmware... button.
4. In the Phantom Nucleus dialogue window:
 - a. Click the down arrow next to the Camera field and select the camera the firmware upgrade is to be performed on.
 - b. Browse the CD and locate the designated folder for your camera, then:
 - 1) Click on Firmware... (ph7 file).
 - a) Select the ph7 file, and
 - b) Click the Open button.
 - 2) Click on FPGA... (ph.bin file).
 - a) Select the ph.bin file for your camera model, and

- b) Click the Open button.
- c. Click the Upload.. button.
- d. Click the OK button when the “Camera RAM cines will be deleted” warning message if it appears.
- e. Click the OK button in the “Proceed with uploading...” message window.

RESULT: The system will display a series of information windows.

- f. In the Phantom Nucleus window, click the:
 - 1) Refresh button to verify changes, they should be as shown below:

Camera Model	Firmware	FPGA
Phantom v10	639	343058
Phantom v9.1	639	343058
Phantom v7.3	639	74062
Phantom v5.2	639	343058

- 2) Close button
- g. In the Restore the nonvolatile memory settings window, click the Close button.
- h. Close the Phantom Camera Control software.
- i. Power off the camera.

C. Install the Automatic Shutter Lens Mount

1. Remove the lens mount and back focus shims from the camera housing using a 9/64 inch hex wrench.
2. Retain all screws and back focus shims for later use. If needed, extra screws have been included in the kit.
3. Remove all four (4) automatic shutter lens mount housing screws, located in the counter bores of all four corners using a 7/64 hex wrench, (indicated by the red circles in the image to the right).
4. Retain all screws for later use. Do not mix with lens mount screws removed in Step 1.
5. Separate the automatic shutter lens mount back plate from the automatic shutter lens mount housing body.
6. Place the original shims, if any, removed in Step 1 on the back side of the automatic shutter lens mount back plate just removed.
7. Carefully insert the automatic shutter lens mount back plate, with the original shims into the lens mount of the camera with the larger size upward.
8. Attach the automatic shutter lens mount back plate, rounded side down, to the camera housing with the four (4) supplied 8-32 x 5/16” long head cap lens mount screws using the 9/64 hex wrench.



9. Re-attach the automatic shutter lens mount housing body to the back plate by re-installing the four (4) automatic shutter lens mount screws removed in Step 3 using the 7/64 hex wrench.
10. Attach the Power/Control cable of the break-out box to the Power/Control Connector located on the side of the automatic shutter lens mount housing.
11. Attach the 19-pin conical connector of the break-out box to the 19-pin Capture interface on the back of the camera, and apply power

RESULT: Shutter will self test and rotate to the open position.

Note:

The camera will recognize that a shutter has been installed only when it has been connected before the camera is powered up.

D. Test the Automatic Shutter Lens Mount

1. Connect to the camera using the Phantom Camera Control software.
2. From the Phantom Camera Control main dialogue window, click the Acquisition menu and select the Setup and Recording... command.
3. In the Setup and Recording dialogue window click the Current Session Reference button.

RESULT: Shutter wheel should close then re-open, and a dialogue box will open asking if you want to "Save the new calibration to the camera non-volatile memory?"

4. In the "Save the new calibration to the camera non-volatile memory?", Click Yes.

E. Perform Back Focus Adjustment

Important Notes:

The standard shim depth for all v-Series cameras is 7mil. This depth may require minor adjustments to achieve proper back focus. Each camera may vary slightly. Some cameras require no shims.

Ensure the lens is set to the widest aperture before proceeding.

1. Attach the lens to the Automatic Shutter Lens Mount.
2. Check infinity focus by focusing far beyond the infinity specification of the applied lens.
 - a. If object is not sharply focused to infinity:
 - 1) Remove the Automatic Shutter Lens Mount.
 - 2) Remove the installed shim(s).
 - 3) Reinstall the Automatic Shutter Lens Mount making sure that it is securely fastened.
 - 4) Re-test.
 - b. If object is not focused at infinity repeat removing shims until focus is achieved.
 - c. If focused is achieved prior to setting to infinity, shims need to be added:
 - 1) Remove the Automatic Shutter Lens Mount.
 - 2) Add various size shims until focus is achieved.

Note:

The farther the focus point is to the infinity setting the thicker the shim(s) will be.

- d. If focused, adjust lens to shortest focus point and measure the minimum focus distance of lens to the target using the tape measure.
- e. If not focused repeat the Back Focus Adjustment process again.
- f. If focused, adjust lens to medium focus point, approximately 10 feet from the sensor not the lens, and measure the minimum focus distance of the lens to target using the tape measure.
- g. If not focused repeat the Back Focus Adjustment process again.

F. Performing a Current Session Reference – Image Calibration

Use Current Session Reference (CSR) to calibrate the image for current acquisition parameters. The application will compute the offsets specific to the current parameters, obtaining a more precise compensation of the pixel errors. The CSR (Current Session Reference) process is similar to Black Reference adjustment in the Setup and Recording>Options window.

You use a CSR before recording a cine when you have a single cine configuration or a multicine configuration with all cines having the same acquisition parameters. If the cines have different setup values, you should perform CSR on each cine separately.

1. Start the Phantom Control Software application
2. Open the Acquisition pull-down menu
3. Select the Setup and Recording... command from the Acquisition menu
4. Set the acquisition parameters you need. The calibration will be done considering the resolution, frame rate, exposure and EDR values. The current settings for AutoExposure and for BitDepth are ignored.
5. Perform a Current Session Reference Adjustment
 - a. From the Setup and Recording screen, click on the Current Session Reference button.
 - b. Click the OK button. The system will now acquire a few images for calibration

Note:

After executing a CSR, if you change the acquisition parameters, the calibration calculated during the Current Session Reference will apply partially correct on the new setup. For example, if you increase later the image resolution the pixels outside the previous resolution used at CSR will be corrected differently.

Vision Research recommends that you perform a CSR prior to any new recording to ensure the best image quality possible.