

AutoCC Instruction Manual

version: 1.4.0

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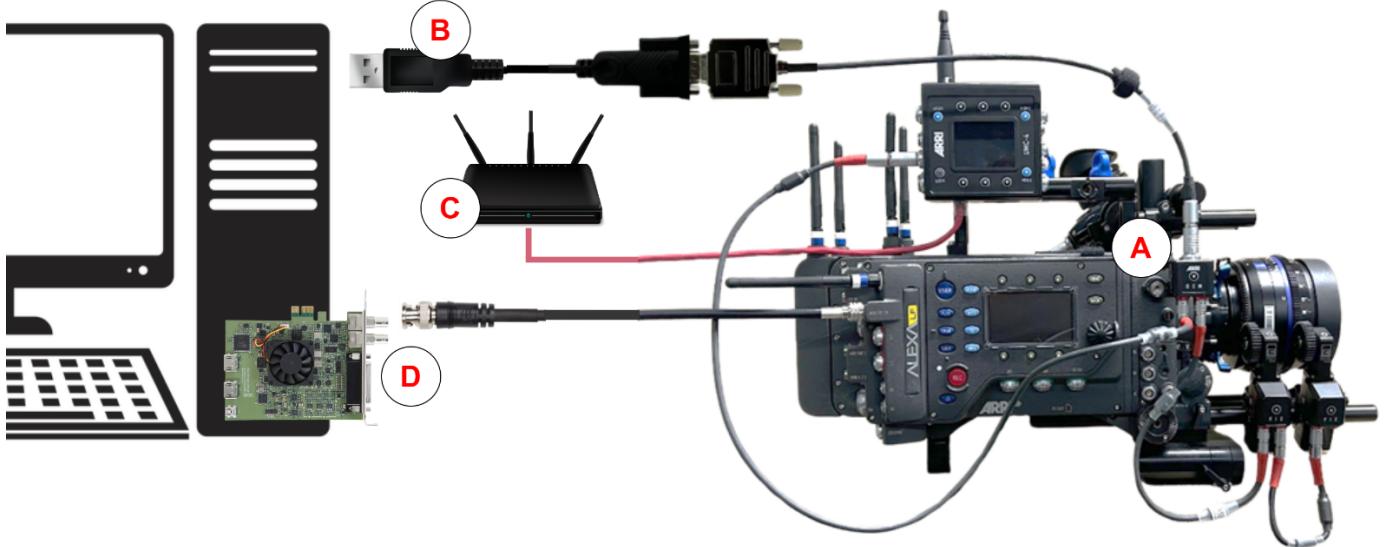
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1. System Setup

1.1 Required Components

| Hardware | | |
|----------|---|---|
| 1 | Camera Body: ARRI Alexa LF |  |
| 2 | Lens Motors: ARRI CForce Mini |  |
| 3 | Universal Motor Controller: ARRI UMC-4 |  |
| 4 | Wireless Compact Unit: ARRI WCU-4 |  |
| 5 | Serial to LBUS Converter: LCUBE CUB-1 |  |
| 6 | DeckLink Capture Card: DeckLink Models <ul style="list-style-type: none">• With SDI port• Supports 1080p or better |  |
| Cables | | |
| 7 | ARRI LBUS Cable (3-4) |  |
| 8 | CMotion AMO-1 Cable (1) |  |
| 9 | USB-A to DB9 RS-232 Adapter Cable (1) |  |
| 10 | SDI Cable (1) |  |

1.2 Connecting the Camera



A. LCUBE CUB-1 Setup

1. Mount the LCUBE CUB-1 on the camera using the attachment included in the LCUBE set.
2. Connect one LBUS cable from the UMC-4 to the left LBUS port of the LCUBE.
3. Connect another LBUS cable from the right port of the LCUBE to the first motor.

B. Connect LCUBE CUB-1 to Computer

1. Connect the AMO-1 cable to the top port of the LCUBE.
2. Connect the USB-A to DB9 RS-232 Adapter to the other end of the AMO-1 cable.
3. Plug in the USB-A side of the adapter into a USB-A port on your computer.

C. Connect UMC-4 to the Network

1. Connect an ethernet cable from the underside of the UMC-4 to your local area network.

D. Connect DeckLink Capture Card to Camera

1. Install a DeckLink capture card with an SDI port into your computer.
2. Connect the SDI cable from the capture card to any of the MON OUT ports on the camera.

2. Installing AutoCC

Unzip the **Windows-AutoCC-Installer.zip** file and run **AutoCC-setup.exe**. Follow the instructions to install AutoCC on your computer.

3. Calibration Procedure

3.1 Connect AutoCC to Camera Data

Before calibrating, you must connect to the data streams emitted from the camera system (namely the **serial Port to Connect**, **network Port to Stream**, and the **camera device and format to Capture**). The buttons you must click to enable these streams, as well as the corresponding connection status (the dots next to each item that turns either red – disconnected - or green - connected) are shown below the connection toolbar.



A. Serial Data Connection

Set **Port** as the COM connecting the AMO-1 cable to your computer and click **Connect**.

B. Metadata Connection

Configure the UMC-4 with the following settings.

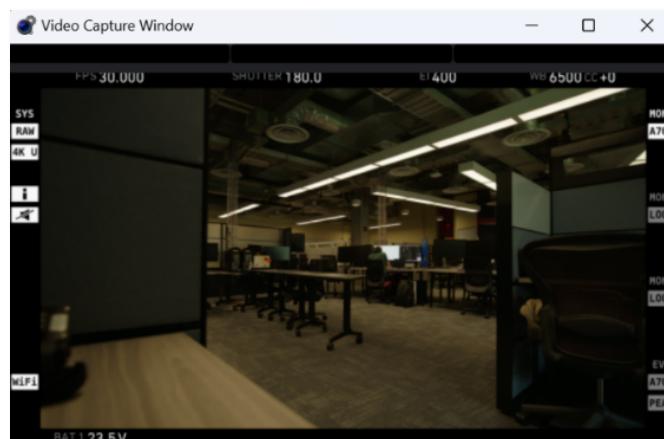
- Stream Status: **ON** [Menu > Metadata > Stream]
- Streaming Mode: **Unicast** [Menu > System > Network > Streaming Mode]
- Streaming Address: **(Your Computer IP)** [Menu > System > Network > Streaming Address]

Set **Port** as the port targeted by the UMC-4 for metadata streaming (default is 5432) and click **Stream**.

C. Capture Connection

Select the capture device and format using the 3 dropdown menus

- **M:** The interface mode to search for devices (decklink or dshow) on Windows
- **D:** The capture device
- **F:** The pixel format and fps for the selected device



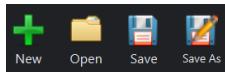
All data streams must be connected to calibrate. If you lose connection to a data stream, you must reconnect before continuing calibration.



If using a DeckLink capture device, ensure you have installed the [Blackmagic Design Desktop Video](#) software before connecting to the video capture stream.

3.2 Session File

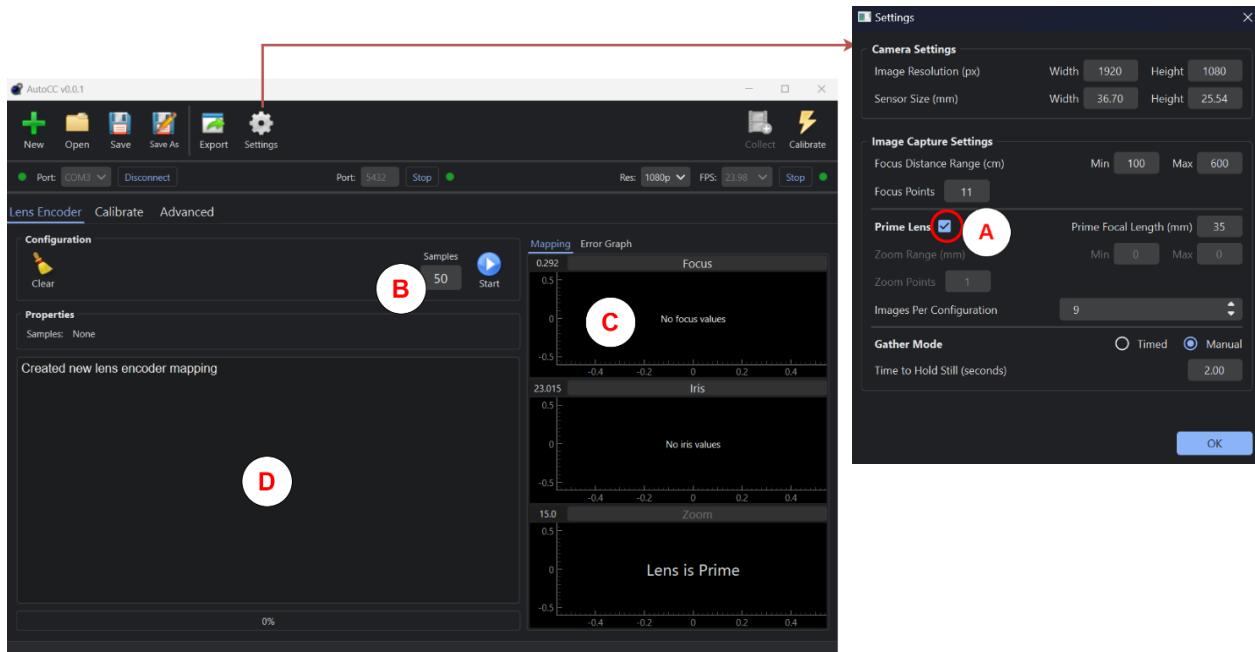
AutoCC stores your calibration progress in a JSON file called the *Calibration Session file*, which includes lens encoder mapping data, calibration data, and settings data.



Click the to open an existing session file. Otherwise, click the to create a new *Calibration Session*.

3.3 Create a Lens Encoder Mapping

Navigate to the [Lens Encoder](#) tab.



A. Configure Lens Type and Focal Length

Click the in the toolbar to open the Settings Window. Uncheck the box labeled **Prime Lens** if using a lens with zoom capabilities. If using a prime lens, set the **Prime Focal Length** field to the focal length of your lens in mm.

B. Start Lens Encoder Mapping

Configure the number of samples for the mapping (higher sample count results in better accuracy). 50 is the recommended sample count. Click the button to start the mapping.

C/D. Encoder Mapping Visuals

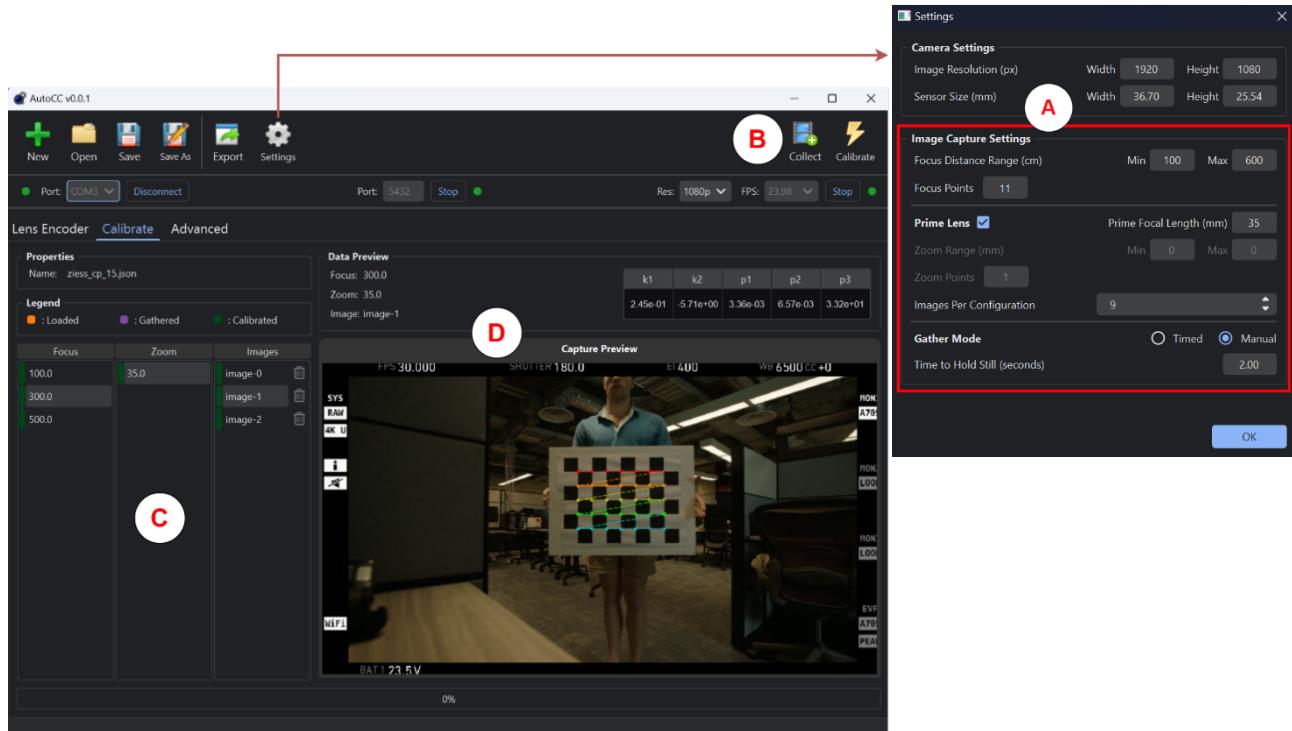
Graphs and the debug window provide process information during mapping to help troubleshoot any errors that occur.



A successful lens encoder mapping is indicated by the icon becoming enabled in the toolbar.

3.4 Collect Image Data

Navigate to the [Calibrate](#) tab.



A. Configure Image Capture Settings

Click the icon in the toolbar to open the Settings Window.

- **Focus Distance Range:** min and max focus distance to capture images.
- **Focus Points:** number of focus distances between min and max to capture images.
- **Zoom Range (non-prime):** min and max zoom distances to capture images.
- **Zoom Points (non-prime):** number of zoom distances between min and max to capture images.
- **Images Per Configuration:** number of images to capture per focus/zoom configuration.
- **Gather Mode:** timed autodetection or manual button click for capture.
- **Time to Hold Still (timed-mode only):** seconds to hold still before checkerboard is captured.

B. Guided Image Collection

Click the icon to begin collecting images. The Video Capture Window will populate with instructions. Follow the guided procedure until “Image Gather Complete” is displayed.



C/D. Calibration Data Browser and Preview

The data browser uses a directory-like structure to display the data points captured from image collection. Each data point is prepended with a color that indicates the status of the calibration data. You can click focus, zoom, and image data to see a preview of the captured image and calculated calibration data.

To remove data from the data set, click the icon next to the image you want to delete.



An image collection is complete once all images in the data browser have a purple indicator, meaning the images are collected and ready for calculation

3.5 Calculating Distortion Parameters

Click the icon to run the calibration algorithm over all collected image points.



The calibration process is complete once all images in the data browser have a green indicator . Calibration data is now ready for export

4. Export

Click the icon in the toolbar to export all calibration data to a *.ulens* file, which can be dragged directly into the Unreal Engine Asset Browser to instantiate a Lens File Asset.