

# Axis M1013 Camera Compatibility

It has come to our attention that the Axis M1011 camera has been discontinued and superseded by the Axis M1013 camera. This document details any differences or issues we are aware of between the two cameras when used with WPILib and the provided sample vision programs.

## Optical Differences

The Axis M1013 camera has a few major optical differences from the M1011 camera:

1. The M1013 is an adjustable focus camera. Make sure to focus your M1013 camera by turning the grey and black lens housing to make sure you have a clear image at your desired viewing distance.
2. The M1013 has a wider view angle (67 degrees) compared to the M1011 (47 degrees). This means that for a feature of a fixed size, such as the 4 in. wide retroreflective tape, the image of that feature will span a smaller number of pixels

## Using the M1013 With WPILib

The M1013 camera has been tested with all of the available WPILib parameters and the following performance exceptions were noted:

1. The M1013 does not support the 160x120 resolution. Requesting a stream of this resolution will result in no images being returned or displayed.
2. The M1013 does not appear to work with the Color Enable parameter exposed by WPILib. Regardless of the setting of this parameter a full color image was returned.

All other WPILib camera parameters worked as expected. If any issues not noted here are discovered, please file a bug report on the [WPILib tracker](#) (note that you will need to create a FIRSTForge account if you do not have one, but you do not need to be a member of the project).

## Using the M1013 With Vision Sample Code

If using the M1013 camera with the provided Vision sample code, or code based on it, please note the following:

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1. Per #2 in Optical Differences above, the view angle of the camera is different than the M1011. The code for distance calculation will need to be modified to use the appropriate angle. Based on testing with the 206 and M1011 cameras, teams may wish to take measurements of the actual distance to the target and corresponding image parameters and calculate an empirical view angle.
2. Per #2 in Using the M1013 With WPIlib above, the Color Enable parameter does not appear to work with the M1013. This does **not** affect the Monochrome option of the LabVIEW sample. This option of the sample code processes a single plane of the image, but does not request a monochrome image.