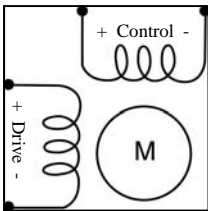


GEViCAM Auto-iris Lens Control

Auto-iris lens input signal

There are two types of auto-iris lenses commonly used in surveillance application. Video input models and DC-iris control models.

The majority of auto-iris lenses today are using a galvanometric aperture control. In the special occasions, motorized iris lenses are also used but in this Tech Note, we will discuss the galvanometric auto-iris lenses.



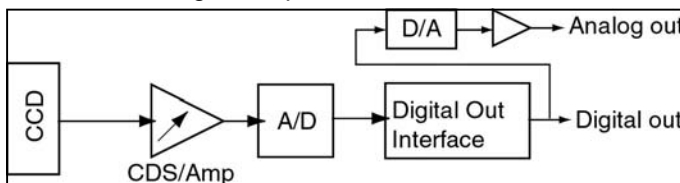
The galvanometric motor uses two pairs of driving signal. One is driver and another for control (brake). A DC-auto-iris lens takes these driving signal directly from a camera.

In order to send such feed back signal, auto-iris lenses use analog video signal and extract the amplitude to open and close the lens aperture. The conversion circuit from the video into the motor drive (DC signal) is located inside video-auto-iris lens or inside camera body.

GEViCAM platform consists of such conversion circuits and is capable to drive both video signal and DC drive. Generally DC-auto-iris lenses are more compact and lower cost than video version from the obvious reason.

Aperture Priority Exposure Control.

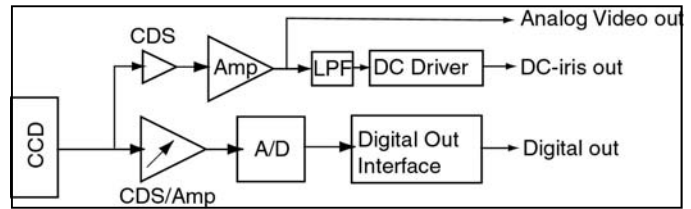
Some video cameras provide analog video signal in order to drive an auto-iris lens. The analog signal can be the same as the video output signal used for image display or capture. This means the signal went through internal amplifier or image preprocessing such as Gamma correction and AGC. In the case the auto-iris lens must react to the internal gain variation. If the scene is dark, internal gain increases and video output goes high then auto iris react to even close the aperture. Image gets noisier as the internal gain try to even increase further. You can see such feed back is not good for a camera performance. With digital camera, this practice is very common as analog video is created by D/A from the digital output.



The best result of using auto-iris lens is to perform **“Aperture priority exposure control”**, the term quite often used in photography.

The lens reacts to direct signal from CCD (with fixed amp gain) independent from camera gains and internal preprocessing. So, when scene is dark, the lens opens for better exposure. The camera can be controlled the gain and functions without affecting the lens control.

GEViCAM platform has a specific circuit for auto-iris lens control.



As you can see it has separate iris control circuit from the main digital signal path. The CCD works as an accurate photometer to drive the lens aperture and the digital output is going through internal gain control, electronic shutter (exposure control) and image preprocessing (LUT).

Async Signal and Auto-iris Lens

Most of surveillance may not need async shutter or interrupted image capturing. So typical auto-iris lenses take standard continuous video signal. The DC-iris also uses the same signal internally before converting to the DC drive.

However, in applications such as ITS (Intelligent Transportation Systems), a camera is only activated when the external trigger comes in. In this case, the camera outputs a image (one frame) per trigger. If the traffic is not heavy, there is no video for iris control. When next traffic is in, it is too late for the iris lens to react.

GEViCAM platform has two modes for the auto-iris lens drive. One is the common continuous video, the same way as surveillance. Mode 00 23 00 00 00 00 or 00 23 00 00 00 10 (partial scan) is the normal mode. Another mode is ITS mode (00 23 00 00 00 04 or 00 23 00 00 00 14). For auto-iris application, select “1 frame capture” (default on 00 29 00 00 00 00). The shutter speed can be adjustable by 00 24. In this mode, the video output from CCD and Auto-iris circuit is continuous. When external trigger comes in, only one frame of the immediate image is output from the digital block via GigE for image capture and process by the host computer.

