## **P-Iris Lens Presentation**





## **Problems with Current Iris Control Mechanisms**

### Hunting

- Conventional auto-iris lenses sometimes have problems finding the right iris position when a light source frequently changes. The result is that the iris will constantly open and close to search for the best position.
- To solve this "hunting" problem, an ND filter is used.
- However, resolution goes down if there is an ND filter.

### Diffraction

- Diffraction increases as the iris opening gets smaller.
- This problem cannot be solved with conventional auto-iris lenses since the user cannot control the iris position.
- Diffraction is especially noticeable when using megapixel cameras with a small pixel size.
- Depth of Field is not Optimized
  - Conventional auto-iris lenses do not allow a user to eliminate shallow depth of field because they cannot control the iris position.



## Hunting Problem (DC Auto-Iris Lens)



# Conventional Method to Prevent the Hunting Effect



Solution: Use an ND filter to prevent the hunting effect.

Problem: ND filter decreases resolution because it is placed in front of the optical path.

ND Filter

**Decreases Megapixel Camera Performance** 

## **Influence of Diffraction**





### Effects on the Image:

- Image will appear to be soft or blurry.
- Negative influence on contrast and sharpness.



## **Influence of Diffraction**



### Small F-Stop (Iris Open)

### Large F-Stop (Iris Closed)

### **Cannot maximize megapixel resolution!**



# **Experiment with P-Iris Lens**

### Influence of Diffraction

#### **P-Iris Stops Closing**



#### DC AI Gives Priority to Brightness



# Aperture priority is important for megapixel systems.



### P-Iris Lens Can Optimize Depth of Field





F2.0 – Iris Open

F22 – Iris Closed

Depending on the surveillance application, the ideal iris opening will vary. The optimal iris position can be selected with P-Iris control (cashier vs. corridor).



## Kowa's New P-Iris Method

### Iris Controlled by a Galvanometer



### Iris Controlled by a P-Iris with Stepping Motors



## **Characteristics of the P-Iris**



- The iris closing can stop before the effect of diffraction can influence the image quality.
- ND filter is not necessary so optimal resolution is guaranteed.
- You can set the best iris position for you application.



## **Iris Control Comparison Chart**

	Galvanometer Iris	P-Iris
ND Filter	× (Decreased Resolution)	Ø
Effect of Diffraction on the Image	×	0
Cost	0	O (Motor for Iris)
Iris Control	Δ	0
Current Compatibility with Cameras	0	Δ
Hunting	0	0

