

PolarView®

Variable ND filter for camera applications

Neutral density (ND) filters are used in various camera applications to reduce the amount of light entering the image sensor in order to avoid overexposure. They are especially valuable at wider lens openings when a short depth-of-field is desired, or at long exposure times when motion blur is wished for.

Traditional ND filters have fixed transmittance; the photographer is forced to carry a set of filters with different densities and choose the one that matches prevailing light conditions. Variable ND filters based on two polarizers can also be found. Here the setting is adjusted by physically rotating one of the polarizers.

The innovative variable PolarView® ND filter is based on liquid crystal technology and offers significant advantages compared to the above mentioned filters. The level of ND is controlled electronically, there are no moving parts.

The PolarView® ND filter can be built-in inside the camera, integrated into a smart lens adapter, or positioned in front of the lens (the latter model currently under development). Designing the electronics for remote or automatic control is attractive for gimbal and crane mounted camera operation.

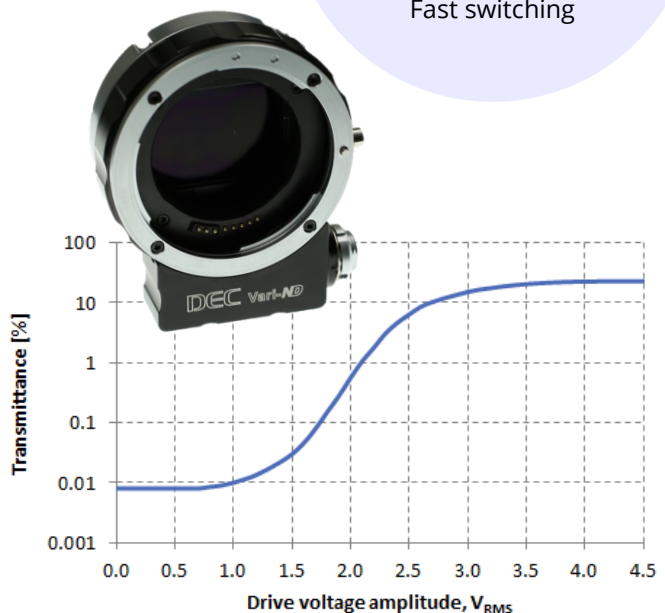
With its swift and accurate switching, the PolarView® ND filter opens up new possibilities for the ambitious videographer.

APPLICATIONS

- Photography
- Videography
- Machine vision

ADVANTAGES

- No moving parts
- No "polarizer cross"
- Continuously variable
- Fast switching



PolarView®-ND(212)-AR main characteristics

Technology	Liquid crystal
Polarization dependent	Circular polarizer
Substrate material	Glass
Open state transmittance*	$\geq 25\%$ / ND4 / f-stop reduction 2 @ $4.5V_{RMS}$
Closed state transmittance*	$\leq 0.024\%$ / ND4096 / f-stop reduction 12 @ $0V_{RMS}$
Number of gray levels	Infinite
Switching times	$\leq 10ms$ closing / $\leq 15ms$ opening / $\leq 80ms$ for all switches ≥ 1 f-stop reduction
MTF and wavefront aberration	Available upon request
Power consumption	10mW (typical) @ open state and 80Hz drive voltage frequency
Temperature range	$-10^{\circ}C$ to $+60^{\circ}C$ operational / $-10^{\circ}C$ to $+60^{\circ}C$ storage

*: The recommend operation transmittance range with respect to color shift is 12.5% to 0.098%, corresponding to ND8 to ND1024, or f-stop reduction 3 to 10.