



# Liquid Crystal Switchable Mirror

The *e-TransFlector™*, an *electrically switchable trans-reflective mirror*, developed by Kent Optronics, represents a unique state-of-the-art of electro-optically switchable mirror. It is a solid state thin film device made from special liquid crystal material, can be *rapidly switched between pure reflection, half-reflection and total transparent states* through a push button. The *e-TransFlector™* series products offer customers a switchable reflective shutter for both visible and infrared applications while providing the flexibility to customize bandwidth, aperture size, and array format, as well as excellent environment stability.

The *e-TransFlector™* products can be used either as a component in customer system or a standalone device for designated purposes. Examples include switchable polarizer, achromatic polarizing switchable beam splitter/combiner, light shutter, laser beam director, switchable mirror and half-mirror, seasonal switched energy saving windows, smart spectacles/sun glasses, etc. The envisioned systems and applications include projection displays, helmet mounted displays (HMD), laser protection devices, see-through displays, cameras/camera-phones, vision-aid devices, and high-throughput, spectrally tunable filters, to name a few.

The *e-TransFlector™* is superior to current state-of-the-art switchable mirror products: it has *~87% photopic reflectance* in reflection state, *>87% photopic transmittance* in transparent state, *~43% reflectance/transmittance* when in the half-reflection state. Its *reflection bandwidth can be tailored from 50 to 1,000 nm* and the *state-to-state transition time is nominally 10 - 100 milliseconds*.

It comes with a compact power supply that can be either battery or 110/220 V wall-plug powered. Customers have the option to choose the *e-TransFlector™* substrate material, shape, and curvature. All products are offered at a competitive price. A demo is available upon request.



*In reflection state*



*In transparent state*



*In half-reflection/transmission state*

## Contact Info:

Le Li, CEO

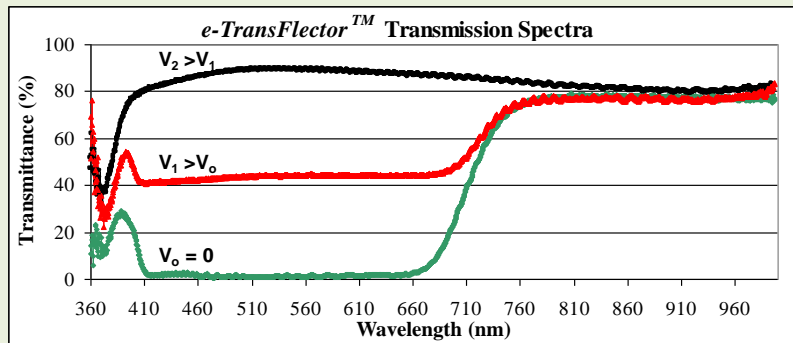
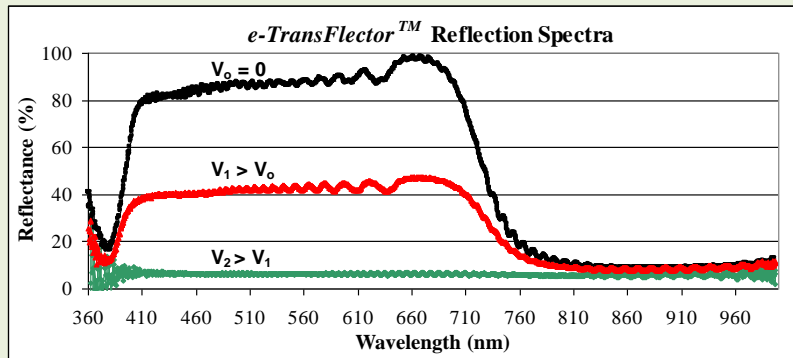
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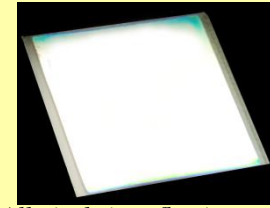
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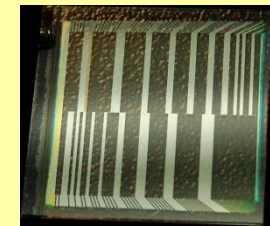
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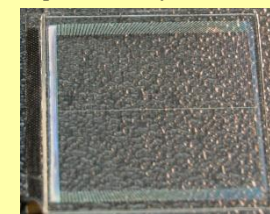
## Pixilated e-TransFlector™



All pixels in reflection state



Part pixels in reflection state



All pixels in transparent state

## e-TransFlector™ Specifications

| Parameter  | Specification                          |
|--|--|
| Spectral range                                       | 400 – 3,600 nm                         |
| Reflection spectral bandwidth                        | 50 – 1,000 nm                          |
| Photopic reflectance in reflection state             | > 87%                                  |
| Photopic transmittance in reflection state (leakage) | <0.7%                                  |
| Photopic transmittance in clear state                | > 87% (photopic transmittance)         |
| Transmittance/reflectance in half-reflection state   | 43%/43%                                |
| Transmittance/reflection Uniformity                  | $\leq \pm 0.2\%$                       |
| Viewing angle  | $0^\circ - 70^\circ$                   |
| Switching time                                       | 10 ms – 100 ms (20°C)                  |
| Switching voltage                                    | 100 - 260 V/20Hz square wave           |
| Power consumption                                    | 7 mW/cm <sup>2</sup>                   |
| Operation temperature                                | -10 – 70°C                             |
| Storage temperature                                  | - 51 – 120°C                           |
| UV stability   | stable under 30W UV-B                  |
| Life time  | > 10 years (in-door)                   |
| Active area size                                     | 5 mm × 5 mm to 1 m × 1 m               |
| Pixel size (if pixilated)                            | 30 μm and up                           |
| Thickness  | 0.5 mm or greater                      |
| Substrate material                                   | glass, quartz and plastic (PET and PC) |