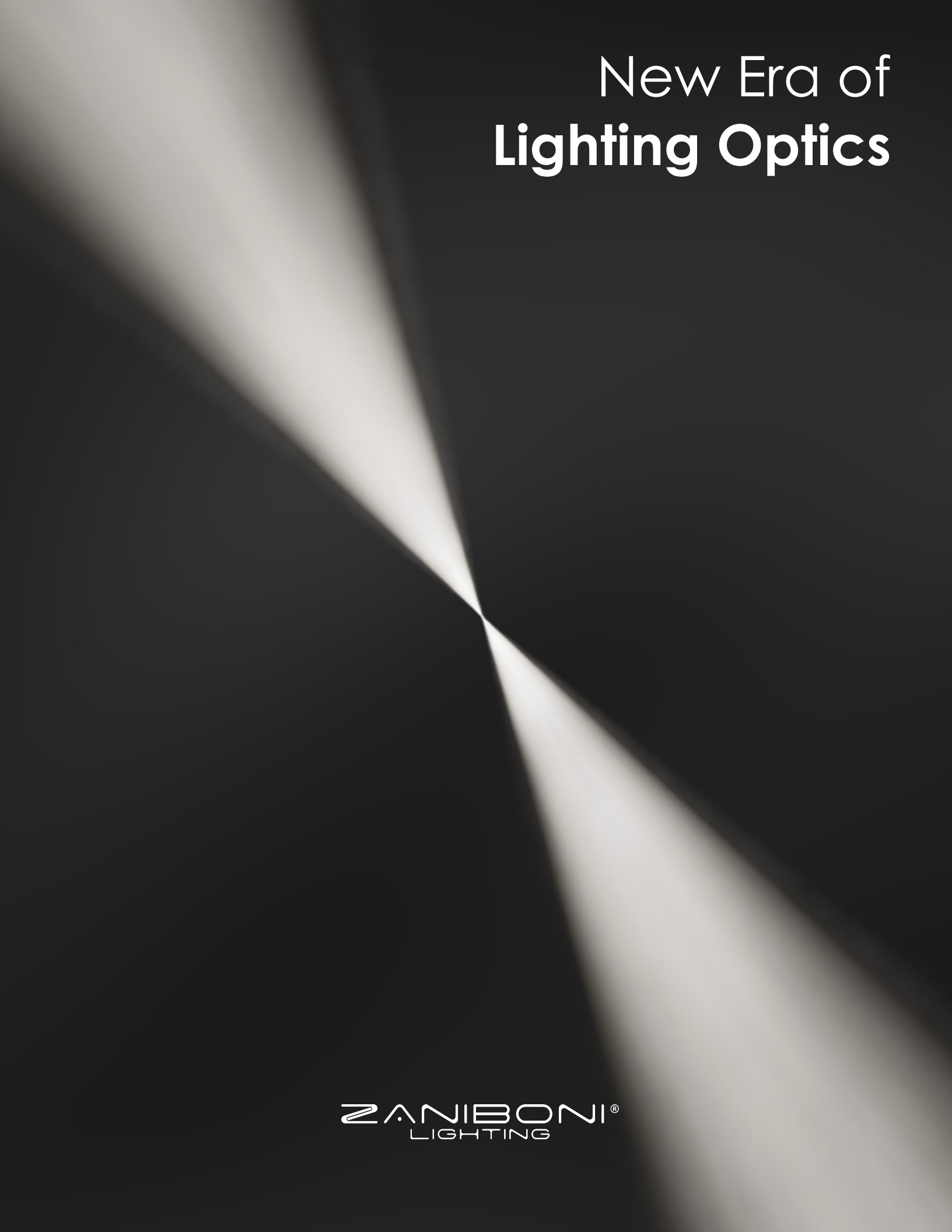

New Era of
Lighting Optics
ZANIBONI®
LIGHTING

A New Era of Lighting Optics

For years, architectural downlights relied on parabolic aluminum reflectors paired with a glass lens to shape and control the beam. Today, Zaniboni Lighting is introducing a **next-generation all-in-one lens** that replaces the traditional reflector-and-glass approach. This innovative optic is made from high-performance PMMA acrylic and integrates beam shaping and glare control into a single component.

Cross-Light Anti-Glare Technology

One of the standout features of our new lens is its **cross-light anti-glare design**, engineered to virtually eliminate glare. In traditional downlights, light often spills inside the reflector, causing the trim or interior to glow and become a source of glare. By contrast, our all-in-one lens precisely uses a converge-then-expand optical path: rays are first driven inward to cross at a controlled node just outside the fixture trim, then open to the selected beam angle. Because the bundle is narrowest at the aperture, the trim and cavity stay dark—delivering deep cut-off and far less high-angle glare. Shifting the focal region forward minimizes internal cut-off losses, boosting delivered lumen output and optical efficacy while maintaining clean edges and minimal spill.



Ultra-Narrow 10° Spot for Dramatic Focus

Even our 1″ apertures lighting fixtures can now deliver a razor-sharp 10° beam – a feat previously unattainable with older reflector designs. This ultra-narrow spot creates striking contrast and focus on a space, making it perfect for dramatic accent lighting. Thanks to a refined anti-glare design, the light source remains deeply recessed and virtually invisible, while a crisp, controlled spotlight draws attention exactly where it's needed. Using such a focused 10° beam can instantly put a painting, sculpture, retail display, or dining table in the center of attention. The result is a brilliant focal point with high center brightness and a soft edge, enhancing contrast on the target without washing light into the surrounding area. And because glare is so well controlled, you get the benefit of high-impact illumination without uncomfortable brightness in the viewer's eyes. In a true 10° optic, the fixture concentrates delivered lumens into a very small cone, producing much higher center-beam intensity on the target. Because there's virtually no spill outside 0–10°, you can get strong contrast with lower wattage—less energy, less heat, same visual punch.

Beyond the ultra-tight 10° spot, our new PMMA lens family offers a wide range of beam angles - 10°, 15°, 24°, 36°, 50°, 70° (Only on our 3" aperture fixtures), 80° (Only on our 2" aperture fixture). This means a single fixture can serve many lighting needs, from sharp highlights to wide general illumination. Each optic is engineered for a clean, controlled beam with minimal spill and smooth edges. Even at the narrowest settings, there is virtually no unwanted light or color fringing outside the beam. By simply choosing the appropriate lens, one lighting fixture can transition from an intimate spotlight to a wide ambient glow, all while maintaining excellent beam quality and consistency.

Effortless Beam Customization with Interchangeable Lenses

We designed our lens system with real-world practicality in mind. The lenses lock securely into the LED module's holder, allowing for quick, tool-free swapping. In other words, the fixture's beam angle can be changed on the fly by simply replacing the lens – giving lighting designers complete freedom on site, even after the fixtures are installed and visible. This approach allows to fine-tune or redesign the lighting without replacing the entire fixture, adjusting convenient and cost-effective. If a space's layout or design requirements evolve, effortlessly switching out the lens lets you adapt the beam spread to new needs in minutes. Industry peers have embraced this concept of field-interchangeable optics because it ensures you always have the ideal light distribution for any application. It's a future-proof solution – as the function of a space changes, the lighting can keep up by simply changing optics rather than entire fixtures.

High Efficiency Through PMMA Optics

At the core of this innovation is **efficacy** – we aim to squeeze every lumen out of the LED and deliver it usefully into your space. The lens is made of PMMA (polymethyl methacrylate), an optically superb material with about *93% light transmission*. By using a PMMA total-internal-reflection design, the optic **captures and redirects nearly all of the LED's output toward the target** with minimal losses. Compared to the old setup (an aluminum reflector plus a flat glass), the new integrated lens eliminates extra surfaces that can absorb or scatter light. Every photon is guided through the lens's refractive geometry. The payoff is significant: higher fixture lumens, more punch from the same wattage, and ultimately energy savings. With more light extracted from the LED, you can achieve the desired illumination levels with lower power or fewer fixtures. This **improved efficacy means reduced energy costs and a more sustainable lighting solution**, without sacrificing brightness. Just as importantly, the lens maintains excellent beam quality and uniformity – there are no multiple shadows or color aberrations. It delivers clean, consistent light with high optical precision. By maximizing output and minimizing wasted light, our PMMA lens technology allows designers to use light more *intelligently*. You get bright, high-quality illumination exactly where you want it, while using energy in the smartest way possible.

Empowering Design Freedom for Any Application

Perhaps the most exciting aspect of this innovation is how broadly it can be applied. **Zaniboni's all-in-one lens technology isn't tailored to just one type of project – it elevates lighting quality across the board, meeting diverse needs in different environments.** Whether the priority is efficiency, atmosphere, or highlighting, this solution rises to the occasion:

- **Offices & Retail:** In workspaces and stores that need high light levels, the lens provides exceptional efficiency and glare control. This means you can brightly illuminate large areas (for productivity or merchandise display) **while maintaining visual comfort for occupants**. The increased optical efficiency translates to energy savings and potentially fewer fixtures required to achieve target lux levels. Employees and shoppers benefit from well-lit, comfortable environments with minimal glare – enhancing both performance and experience.
- **Hospitality (Hotels & Restaurants):** In hospitality settings, **ambiance is everything**. Our technology gives designers a wide palette of beam options and lighting effects to craft the perfect mood. Use a softer, wider glow for relaxing lounge areas or dining spaces, or a tighter beam to add drama to decor and architecture – all with the same fixture family. High optical quality ensures the light is smooth and flattering (excellent color uniformity and no harsh cut-offs), which is crucial for creating inviting atmospheres. It's no surprise that **high-end lighting designs increasingly favor advanced lens optics, as they offer comfortable, glare-free light with a more "layered" and luxurious feel**.
- **Galleries, Museums & Accent Lighting:** For applications that require precise accenting – such as museums, art galleries, high-end retail displays, or even residential feature lighting – our 10° spot and other narrow beams are game-changers. They allow curators and designers to **pinpoint light onto artwork, sculptures, or focal objects with extreme accuracy**, *without* spilling light onto the surroundings. This creates a strong visual focus and contrast that draws the viewer's attention exactly where it's intended, elevating the impact of the piece. Moreover, if the exhibit or layout changes, the optics can be swapped in the field to re-target the lighting as needed. This level of flexibility and precision is invaluable in accent lighting.

  In short, **this all-in-one lens technology is an innovation for every application** – it addresses a spectrum of lighting needs from energy efficiency and code compliance to aesthetic excellence and creative freedom. Designers are no longer constrained by the old trade-offs: you don't have to choose between performance and beauty, or between efficiency and flexibility. With Zaniboni's new PMMA lens optics, you get it all in one package: high output and low glare, precise control and easy adjustability, efficiency, and emotional impact. We're proud to bring this cutting-edge technology to market as part of our commitment to *exquisitely designed, functional lighting*. It truly represents a new era of possibility, giving you the **freedom to shape spaces** exactly as envisioned, with lighting that is smarter, cleaner, and more inspiring than ever.