

 Press Information

Corporate

TDK demonstrates the world's first direct retinal projection display for smart glasses using a meta-optic mirror

- The world's first demonstration of a direct retinal projection display for smart glasses using a meta-optic mirror.
- A natural-looking appearance suitable for everyday use, enabled by an ultrathin, transparent mirror that can be embedded in a lens.
- Future realization of full-color capability to contribute to the widespread adoption of smart glasses.

October 2, 2026

TDK Corporation (TSE:6762) has successfully demonstrated, for the first time in the world, a direct retinal projection (DRP) display for smart glasses using a meta-optic mirror. The flat mirror uses nanoscale reflectors, measures just 150 nm thick and can be embedded directly into a lens. With a visible-light transmittance of approximately 80 percent, it enables smart glasses with transparency equivalent to that of ordinary eyeglass lenses, giving them a natural appearance suitable for everyday use. TDK will exhibit a prototype at CEATEC 2026, beginning on October 13, 2026, and at electronica, November 10-13, 2026.

TDK has established technologies for an ultra-compact full-color laser module (FCLM), one of the smallest of its kind in the world, and a visible-light full-color laser control device capable of achieving 4K resolution. The company has also been developing the key devices required for DRP in smart glasses. Conventional DRP systems used a curved mirror mounted in front of the user's eye to project images onto the retina, making it difficult to achieve smart glasses with a natural appearance. By arranging unique nanoscale reflectors on a plane and creating a structure that changes the angle of light reflection depending on the position of the mirror, it is possible to reflect laser light incident from various angles at the reflection angle necessary for DRP. Therefore, it is possible to replace conventional curved mirrors.

Furthermore, the DRP smart glasses prevent images from being visible to people facing the wearer (image leakage). This provides a natural look and addresses privacy concerns since others cannot see the projected content.

Conventional waveguide displays have complex structures and can be costly to manufacture. The meta-optic mirror, however, can be manufactured using processes comparable to those used for semiconductors, opening the way to cost-competitive mass production. The current meta-optic mirror supports monochrome operation. TDK aims to demonstrate full-color operation and achieve mass production within the next few years.

TDK has entered into a business cooperation agreement with QD Laser, Inc. (TSE:6613, hereinafter "QD Laser"). By combining QD Laser's proprietary retinal projection technology and patent portfolio with TDK's

FCLM, visible-light full-color laser control devices, meta-optic mirrors, and other technologies, TDK is accelerating the development of next-generation RGB light source modules and optical engines for smart glasses. TDK will contribute to the transformation of smart glasses, an application expected to grow within the AI ecosystem on which TDK is focusing, and their widespread adoption in society.

About TDK Corporation

TDK Corporation (TSE:6762) is a global technology company and innovation leader in the electronics industry, based in Tokyo, Japan. With the tagline “In Everything, Better” TDK aims to realize a better future across all aspects of life, industry, and society. For over 90 years, TDK has shaped the world from within; from the pioneering ferrite cores to cassette tapes that defined an era, to powering the digital age with advanced components, sensors, and batteries, leading the way towards a more sustainable future. United by TDK Venture Spirit, a start-up mentality built on visions, courage and mutual trust, TDK’s passionate team members around the globe pursue better—for ourselves, customers, partners, and the world. Today, the state-of-the-art technologies of TDK are in everything, from industrial applications, energy systems, electric vehicles, to smartphones and gaming, at the core of modern life. TDK’s comprehensive, innovative-driven portfolio includes cutting-edge passive components, sensors and sensor systems, power supplies, lithium-ion and solid-state batteries, magnetic heads, AI and enterprise software solutions, and more—featuring numerous market-leading products. These are marketed under the product brands TDK, InvenSense, Micronas, Tronics, TDK-Lambda, TDK SenseEI, and ATL. Positioning the AI ecosystem as a key strategic area, TDK leverages its global network across the automotive, information and communication technology, and industrial equipment sectors to expand its business in a wide range of fields. In fiscal 2026, TDK posted total sales of USD 16.6 billion and employed about 107,000 people worldwide.

You can download this text and associated images from

https://www.tdk.com/en/news_center/press/20261002_01.html

Further information on the technologies can be found under

https://www.tdk.com/en/featured_stories/entry_092-meta-optic-mirror.html

Contacts for media

Contact		Phone	Mail
Mr. Daiki ITO	TDK Corporation Tokyo, Japan	+813 6778-1055	TDK.PR@tdk.com