

News Release

Sharp to Take Part in CES 2023^{*1}, Major US Tech Event

Exhibiting advanced energy-related technologies and in-vehicle solutions that contribute to carbon neutrality

MISSISSAUGA, ON, December 13th, 2022: Sharp Corporation (Sharp) will participate in CES 2023 (Consumer Electronics Show) in Las Vegas, Nevada, United States, to be held from January 5th to 8th, 2023. CES is one of the largest and most influential tech events in the world.

Sharp will exhibit advanced technologies and products that embody the company's ESG-focused management under the four themes of New Energy, Automotive, AR/VR, and TV.

Exhibit Highlights (Tentative):

New Energy technologies:

- **LC-LH (Liquid and Crystal Light Harvesting) Indoor Photovoltaic Device [exhibited for the first time outside of Japan]** ^{*2}: By combining dye-sensitized solar cells, which can convert indoor light into electricity with high efficiency, and Sharp's LCD technology, this device achieves power generating efficiency approximately double that of typical solar cells used in clocks and calculators. Applicable not only to a variety of small appliances, it will also help reduce environmental impacts by replacing disposable batteries.
- **Perovskite Solar Cell [prototype]**: Thin, lightweight, and flexible next-generation solar cells with high power generation efficiency that can be manufactured at low cost with low energy consumption. It makes installation possible in even the places facing problems such as load capacity and configuration.

Automotive:

- **Passenger Seat Monitor Using Viewing Angle Control Display (Passenger Information Display) [exhibited for the first time outside of Japan]**: Proprietary backlight technology controls the viewing angle of the display so that the image on the passenger seat monitor cannot be seen from the driver's seat while driving, helping to ensure safe and comfortable driving.
- **Driver Monitoring System [prototype; exhibited for the first time]**: A camera module integrated into the dashboard display detects the driver's line of sight, head position and orientation, and eye blink pattern to assess driver status. Drowsiness can also be detected.

- **Click Display [exhibited for the first time outside of Japan]:** A newly developed display that combines a highly sensitive pressure sensor and haptics technology*. Arrow keys, volume control buttons, and the like can be formed with convex or concave shapes. Supports smooth and easy operation of car navigation systems, air conditioners, and audio systems.
**Technology that enables tactile feedback to be obtained through vibrations and other motions.*
- **Automotive Solar Cells [exhibited for the first time outside of Japan]:** In addition to lightweight and flexible compound solar cells of a practical size that have achieved the world's highest conversion efficiency of 32.65%*⁶, Sharp will introduce silicon-based solar cell modules for automobiles. Proposed applications include the aerospace and aviation fields, such as artificial satellites, which require high efficiency and light weight, and vehicles such as EVs.

3. Various devices and head-mounted displays (HMD) for AR/VR

- **Head-Mounted Display (HMD) [prototype; exhibited for the first time]:** Sharp will exhibit advanced devices such as an ultra-high-resolution display, an ultra-high-speed autofocus camera module (using a polymer lens), and an ultra-lightweight HMD prototype for VR equipped with an ultra-compact proximity sensor.
- **World's Thinnest Ultra-Compact Camera Module [exhibited for the first time] *³:** The world's thinnest ultra-compact camera module with a height of less than 2mm that can be used for sensing applications such as eye tracking.
- **Compact ToF*⁷-Distance Sensor:** Installing this sensor on an HMD (Head-Mounted Display) unit or controller will help the HMD wearer avoid collisions with people and objects.

4. Flagship AQUOS XLED TV model for the global market:

- **AQUOS XLED Model for the Global Market [exhibited for the first time]:** This TV employs mini-LED backlight and quantum-dot rich-colour display technology and features an audio system with speakers placed above and below the screen to combine dynamic images with excellent light and dark expression with an immersive sound field. This is a new-generation TV that provides viewers with a vividly realistic sense of being in the middle of the action.
- **120-Inch AQUOS XLED [prototype; exhibited for the first time] *⁴ *⁵:** This model features a 120-inch XLED screen, one of the world's largest. Taking advantage of its large screen and high contrast, it can be used not only for digital signage and public viewing displays in commercial facilities, but also for home theaters. (Receiver tuner not installed)

Official CES 2023 website: <https://www.ces.tech/>

We look forward to hearing from you soon, so we can set up a time to meet in Las Vegas at the WYNN Hotel.

Location of the Sharp Booth

Petrus Ballroom, Wynn Las Vegas Hotel
3131 Las Vegas Blvd., Las Vegas, NV 89109, U.S.A.

Exhibit Dates and Time

January 5th to January 8th, 2023 (Thursday to Sunday); Hours: 10 a.m. 5 p.m.

*1 Sharp will exhibit at a venue separate from the Las Vegas Convention Center, the main venue of CES 2023.

*2 As of December 15, 2022, for photovoltaic modules at the research level (according to Sharp findings)

*3 As of December 15, 2022, for camera modules (according to Sharp findings)

*4 As of December 15, 2022, for LCDs equipped with mini-LED backlights (according to Sharp findings)

*5 The 120-inch AQUOS XLED is not equipped with a tuner for receiving TV broadcasts.

*6 Conversion efficiency confirmed by the National Institute of Advanced Industrial Science and Technology (AIST; one of several organizations around the world that officially certifies energy conversion efficiency measurements in solar cells) in February 2022 (Module surface approx. 965 square centimeters; maximum output 31.51 W)

*7 Time of Flight: A method for measuring distance based on the time it takes for radiated light to reflect off an object and return to the sensor

For more information on Sharp's products, visit our website at <https://sharp.ca/>

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