

AUTOTRONICS BOOTH: HALL 2 P0908



A Caravision system with cameras, monitor and DVR.

CARAVISION HAS ADAS IN ITS SIGHTS

The explosion of advanced driver-assistance systems (ADAS), coupled with the U.S.-China trade war, has been a boon for Caravision.

A brand of Taiwan's Hi Sharp Electronics, Caravision is known for its high quality rear, side and interior vehicle cameras. In 2020, Caravision is promoting its AI System Block, a customizable unit that combines Caravision cameras and video recorders with several optional features.

"We simply refer to it as the 'AI Box,'" Johnny Tsai, Caravision's general manager, said during a recent visit. "To be very frank, building a camera cell is easy. Many competitors in China and elsewhere can build high quality

cameras. The only way to survive is by building a system."

Tsai added that the AI Box is completely modular. "If a customer only needs one part, then we can customize that for them."

The AI Box is built around Caravision's iMX8 Digital Video Recorder. Current versions of the DVR record video using the standard H.264 codec, but Caravision soon will incorporate the new, more efficient H.265 codec, which stores nearly twice as much video in the same amount of memory. That lets users record videos at 1080p resolution.

What's in the box. Customers can add any number of optional modules to the AI Box — or none at all — allowing the AI Box to work with existing hardware and software applications. Modules include:

- ADAS Lane Departure, which monitors oncoming vehicles and warns if drivers are crossing into another lane;
- Forward Collision Warning, which warns if a vehicle comes too close to the one ahead of it. The current, commercially available system works to a distance of 100m (328 feet), but Caravision has successfully tested



Johnny Tsai

the system to 150m. The system also records data that can be useful in case of collision.

- Side Radar Blind Spot Detection for passenger and transport vehicles, which generates a warning if other vehicles are detected within a blind spot. A 79 GHz unit "sees" to a distance of 25m, while a 77 GHz unit detects vehicles as far away as 150m;

- Driver Fatigue monitoring, which watches a driver's face and head to detect if they are nodding off. Sensors determine when someone's eyes are partially closed, or when the head is tilted. This requires sophisticated algorithms that, for example, have to account for different eye structures found in different populations, such as the epicanthic eyelid fold common among many Asian peoples;

- Rear collision warning; and
- Tire pressure monitoring, which notifies drivers of abnormal tire pressures or temperatures.

The AI Box complements Caravision's current product offerings, which include high quality vehicle cameras with optional audio recording. Most of Caravision's products carry high Ingress Protection Ratings. The brand also offers four digital video recorders that capture high resolution data, offer 3G, 4G and WiFi connectivity, and are GPS-enabled. These systems work with Caravision monitors, available in 7-, 9-, and 10-inch sizes.

Although Caravision products are

focused on small cars, it also supplies company fleet vehicles and semi-trailer trucks.

For fleets, Caravision offers a management platform system that streams real-time data to corporate monitors, even in remote locations, via a mobile phone app or a desktop browser.

Privacy on demand. Because these systems generate a high volume of data, privacy is a concern. Tsai said Caravision can modify privacy considerations depending on the customer's requirements.

"For fleet owners, vehicle safety concerns rank well ahead of data privacy concerns," Tsai said. "Having said that, we have a Japanese customer that needed to block out many data elements. We created a customized solution in that case. Another customer required only the face of the driver for fatigue monitoring purposes. The algorithmic solution blurred all peripheral information; only the driver's face appeared. In another case, a customer required only the license plate of the car in front to be super clear. We provided a solution to that."

Caravision is also developing AI systems for autonomous vehicle applications.

"A new autonomous vehicle testing center recently opened in Taoyuan. We have been availing ourselves of that," Tsai said. "The technology requires a

lot of cameras, a lot of sensors, and lidar systems. The main role we play is in providing cameras."

Keeping watch. Hi Sharp launched the Caravision brand in 2013, originally for an OEM project for Mitsubishi.

"Caravision is now focused on smart solutions for passenger cars and company fleet vehicles, including semi-trailers, but mainly small cars," Tsai added. "A major area of focus for the future is on bringing the systems that work on smaller cars to larger vehicles. Rear cameras have been in cars for around 10 years. But they are still rare in trucks."

Hi Sharp — short for "high sharpness" — is a public Taiwan company that makes security systems and surveillance cameras. In Taiwan, Hi Sharp is the No. 1 manufacturer of visual imaging products and has a 50 percent market share.

The company counts some 1,000 customers in Taiwan and 500 overseas. A team of 50 engineers in Hi Sharp's R&D department focus on designing custom cameras, monitors, network recorders, artificial intelligence, application software and hardware design solutions.

From product design to manufacturing and marketing, all work is done at Hi Sharp's Taoyuan headquarters. The U.S.-China trade dispute has helped Hi Sharp as customers seek alternatives to China-based suppliers. ■ **Glenn Reeves**