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**Monthly Monitoring Report  
on China Automotive  
Intelligent Driving  
Technology and Data Trends  
(Issue 2, 2024)**

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# Insight into intelligent driving: ECARX self-develops intelligent driving chips, and L2.5 installation soared by 175% year on year.

Based on the 2023 version, the 2024 version of Monthly Monitoring Report on China Automotive Intelligent Driving Technology and Data Trends adds trend forecast, new vehicle research, OTA tracking and other contents, and further details the data indicators.

## **In the advanced intelligent driving market, the installations of L2.5 ADAS functions grew fastest.**

According to statistics from ResearchInChina, from January to February 2024, ADAS functions (L1-L2.9) were installed in a total of 1.977 million passenger cars in China, a like-on-like upsurge of 49.9%, with an installation rate of 61.2%, 8.1 percentage points higher than the same period last year. Wherein, L2 ADAS functions were installed in the largest number of passenger cars, up to 1.347 million units, jumping by 69.2% on an annualize basis, with an installation rate of 41.7%, up 9.6 percentage points. As seen from the growth in installations, vehicles equipped with L2.5 ADAS functions enjoyed the fastest growth, soaring by 174.9% to 76,000 units from 28,000 units in the prior-year period.

In terms of OEM types, joint venture brands boasted installations and installation rate of L2 ADAS functions higher than Chinese independent brands. The installations reached 804,000 vehicles, up 73.2% compared with the same period of the previous year, and the installation rate was 54.1%, up 16.7 percentage points, which were mainly driven by the vehicle sales of Volkswagen, Toyota and Honda, each selling up to more than 100,000 units. In addition, joint venture brands also took a certain share in the L2.5 and L2.9 ADAS markets, mainly boosted by the sales of Mercedes-Benz and Tesla, respectively.

Chinese independent brands had installations and installation rate of L2+ and above ADAS functions higher than joint venture brands. Wherein, L2.9 ADAS functions were installed in the largest number of passenger cars, up to 95,000 units, 84.2% more than in the same period of the previous year, with an installation rate of 5.4%, up 1.3 percentage points, which were mainly driven by the sales of brands such as AITO, Li Auto and ZEEKR, each selling more than 10,000 units.

# Installations and Installation Rate of L2 and above ADAS Functions in Passenger Car Models in China

## Installations and Installation Rate of L2 and above ADAS Functions in Passenger Car Models in China, Jan.-Feb. 2024

	Installations (10,000 Vehicles)				Installation Rate (%)			
	Jan.-Feb. 2023		Jan.-Feb. 2024		Jan.-Feb. 2023		Jan.-Feb. 2024	
	Joint Venture Brands	Independent Brands	Joint Venture Brands	Independent Brands	Joint Venture Brands	Independent Brands	Joint Venture Brands	Independent Brands
NL	41.4	70.1	31.3	86.2	33.3%	56.4%	21.0%	49.4%
L0	1.8	3.3	2.2	5.8	1.4%	2.6%	1.5%	3.3%
L1	25.8	6.5	23.5	6.6	20.8%	5.2%	15.8%	3.8%
L2	46.4	33.2	80.4	54.2	37.4%	26.7%	54.1%	31.1%
L2+	2.6	3.3	2.7	5.7	2.1%	2.7%	1.8%	3.3%
L2.5	0.0	2.8	1.2	6.4	0.0%	2.2%	0.8%	3.7%
L2.9	6.1	5.2	7.4	9.5	4.9%	4.1%	5.0%	5.4%
Total	124.2	124.3	148.7	174.5	100.0%	100.0%	100.0%	100.0%

Note: the independent brands include emerging brands.

Source: ResearchInChina

# Installations and Installation Rate of L2 and above ADAS Functions in Passenger Car Models (By Energy Type) in China

As for energy type, most fuel-powered models were installed with L2 functions, with an installation rate of 48.1%, of which the installation rates of L2+ and above functions fell off a cliff and were all lower than 2% and L2.9 functions had yet to be available. The installation rates of L2.9 and above functions in new energy models were all higher than 5%, and showed an upward trend, of which L2.9 functions boasted the highest installation rate, up to 16.5%, and were mainly installed in Model Y, AITO M7 and Model 3.

From the perspective of the growth in installation rate, the installation rate of L2 ADAS functions in fuel-powered models grew fastest, up to 48.1% compared with 33.4% in the same period last year, which was primarily driven by the sales of models like Sagitar, Laida and Mercedes-Benz C-Class. New energy models saw the fastest-growing installation rate of L2.5 ADAS functions, up to 6.0% compared with 3.9% in the prior-year period, which was mainly pushed up by the sales of Li Auto's models, ZEEKR 007 and Blue Mountain DHT-PHEV.

**Installations and Installation Rate of L2 and above ADAS Functions in Passenger Car Models (By Energy Type) in China, Jan.-Feb. 2024**

	Installations (10,000 Vehicles)				Installation Rate (%)			
	Jan.-Feb. 2023		Jan.-Feb. 2024		Jan.-Feb. 2023		Jan.-Feb. 2024	
	Fuel	New Energy	Fuel	New Energy	Fuel	New Energy	Fuel	New Energy
NL	81.5	30.0	74.6	42.8	45.3%	43.7%	33.8%	41.8%
L0	4.7	0.3	7.3	0.7	2.6%	0.5%	3.3%	0.7%
L1	30.6	1.8	28.6	1.5	17.0%	2.6%	13.0%	1.5%
L2	60.1	19.5	106.1	28.6	33.4%	28.5%	48.1%	27.9%
L2+	3.0	3.0	2.6	5.8	1.7%	4.3%	1.2%	5.7%
L2.5	0.1	2.7	1.5	6.1	0.0%	3.9%	0.7%	6.0%
L2.9	-	11.3	-	16.9	0.0%	16.4%	0.0%	16.5%
Total	179.9	68.6	220.7	102.5	100.0%	100.0%	100.0%	100.0%

Note: new energy models include PHEV, EV and EREV.

Source: ResearchInChina

# Independent development of intelligent driving chips: ECARX joined the self-development camp, focusing on developing NPU.

ECARX positions itself as an "incremental parts supplier" serving global automakers, and comprehensively deploy incremental parts for intelligent vehicles, such as chips, LiDAR, and computing platforms, for example:

In March 2024, ECARX and SiEngine announced AD1000, a self-developed advanced intelligent driving chip in Longying Series. It adopts a 7nm process and is manufactured by TSMC. With CPU compute of 250 KDMIPS and NPU compute of 256 TOPS, and through multi-chip synergy, it enables computing power of up to 1024 TOPS, meeting the requirements of L2++-L4 intelligent driving. It is expected to come into mass production in October 2024.

## ECARX AD1000 Meets the Requirements of L2++-L4 Intelligent Driving



Source: ECARX

# Emerging carmakers and conventional OEMs are also representatives in independent development of intelligent driving chips

Momenta, a Tier 1 supplier of intelligent driving software, also makes layout. In July 2023, several former key staffs of OPPO ZEKU joined Momenta to develop autonomous driving chips. In January 2024, Momenta entered the IP phase in development of autonomous driving chips. In December 2023, Xinxin Hangtu (Suzhou) Technology Co., Ltd. was established as the chip project company of Momenta. The new company raised funds independently and closed the angel funding round. Currently, Momenta's chip team has nearly 100 people.

In addition, emerging carmakers NIO, Xpeng and Li Auto, and conventional OEM BYD are also representatives in independent development of intelligent driving chips. For example, in December 2023 NIO unveiled Shenji NX9031, a chip with CPU compute of 615K DMIPS, enabling microsecond-level dynamic wake-up of various subsystems, and having been installed on NIO ET9. Xpeng's intelligent driving chip was brought up in late 2023 and is scheduled to be mounted on cars in 2025. BYD planned to develop dedicated intelligent driving chips in house from 2022. This project is led by BYD's semiconductor team. Currently, BYD has carried out the self-development projects of intelligent driving sensors, chips and domain controllers.

Whether it is ECARX or OEMs, they put their focus on NPU (Neural Processing Unit) in self-developing intelligent driving chips. Their self-developed NPUs can better adapt to their intelligent driving algorithms and enable higher peak performance, energy efficiency and area efficiency, achieving the aim of quickly processing AI inference tasks. For example, according to ECARX, compared with NVIDIA Orin X, its Longying intelligent driving chip AD1000 has 100% higher NPU capabilities and 185% more local storage space in NPU. Li Auto began to work hard to self-develop intelligent driving chips in November 2023, concentrating on developing NPU modules.

# Leveraging the 18C rules of the Hong Kong Exchanges and Clearing Limited (HKEX), China's local intelligent driving chip vendors are concentrating their efforts on going public.

In addition to independent development, China's local intelligent driving chip vendors are doing their utmost to be listed on HKEX. In March 2024, Horizon Robotics submitted a prospectus to the stock exchange. At the same time, Black Sesame Technologies also submitted its application for listing on the main board to HKEX again.

On March 31, 2023, the Chapter 18C of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited officially came into effect. Chapter 18C is a new listing regime for specialist technology companies, involving listing applications from companies operating in one of five Specialist Technology Industries: (i) next-generation information technology; (ii) advanced hardware and software; (iii) advanced materials; (iv) new energy and environmental protection; and (v) new food and agriculture technologies. The 18C rules help some technology start-ups which are not profitable to quickly gain support from the capital market for listing, lowering the listing threshold requirements for commercialized and uncommercialized specialist technology companies.

## Comparison of IPO Status and Products between Horizon Robotics and Black Sesame Technologies

	Horizon Robotics	Black Sesame Technologies
Implementation of Products	Software and hardware integrated solutions have been adopted by 24 OEMs (31 OEM brands) in more than 230 models (designated for over 100 new models in 2023). The hardware delivery has totaled 5 million units.	As of March 13, 2024, it has cooperated with more than 49 automotive OEMs and Tier 1 suppliers; it has secured mass production intent orders for 23 models from 16 automotive OEMs and Tier 1 suppliers. As of December 31, 2023, the total shipments of Huashan A1000 series SoCs have exceeded 152,000 pieces.
Main Customers	Volkswagen, SAIC, BYD, Geely, Li Auto, NIO, Bosch, ZF, etc. As of December 31, 2023, the top ten OEMs in China have all been customers of Horizon Robotics.	FAW, Dongfeng, JAC, Hycan, ECARX, Baidu, Bosch, ZF, Marelli, etc.
Financing	Closed a total of 11 funding rounds, with the disclosed amount exceeding USD2.36 billion.	Closed a total of 10 funding rounds, with the disclosed amount exceeding USD695 million.

Source: ResearchInChina

Monthly Monitoring Report on China's Automotive Intelligent Driving Technology and Data Trends has 12 issues a year, and costs US\$2,000 per issue, each with different topics.

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