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Automotive Event Data Recorder (EDR) Industry Report, 2022

Mar.2022

Abstract

An event data recorder (EDR), sometimes referred to informally as an automotive black box, is a device or a system installed in vehicle to monitor, collect and record technical vehicle data and occupant protection information for a very brief period of time before, during and after a crash.

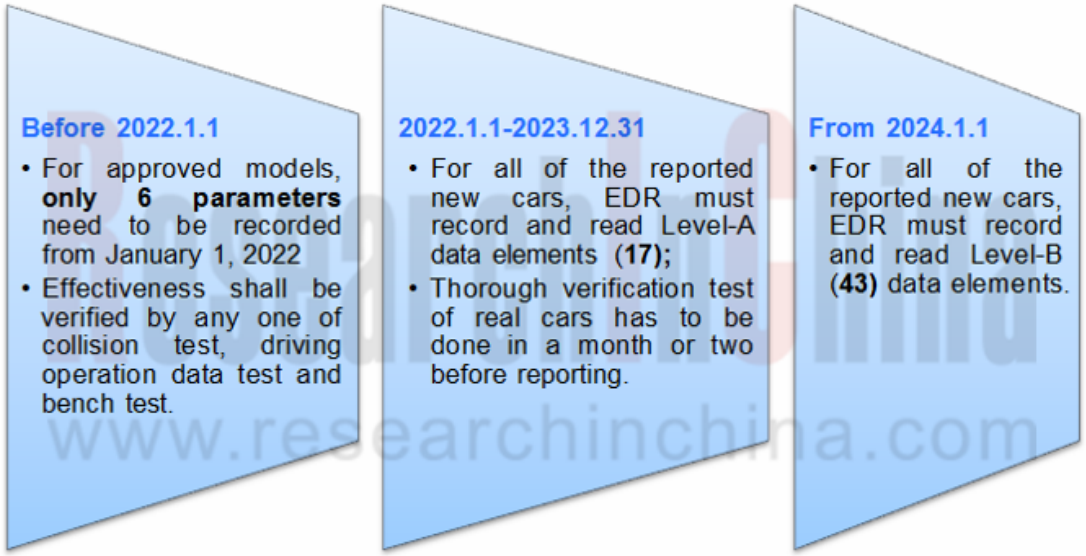
EDR gets compulsorily installed to new passenger cars starting from 2022

In December 2020, China publicized GB39732-2020 Vehicle Event Data Recorder System to replace GB39732-2017, requiring passenger cars be equipped with EDR from January 1, 2022.

Abide by the new national standards, some requirements are posed on EDR to record crashes, i.e., 1) have certain trigger threshold; 2) the recorded data will be locked automatically and cannot be modified; 3) the system can record data of at least three consecutive collision events.

The data recorded by EDR is divided into Level-A and Level-B, including 17 Level-A data and 43 Level-B data, effective from January 1, 2022 and January 1, 2024 respectively.

China's Policy of EDR Availability onto Vehicle by Phases



Source: ResearchInChina

Comparison of EDR Regulations between China and the U.S.

It is in 2006 that the U.S. formulated regulations concerning EDR, and it is clearly stipulated in NHTSA CFR regulations in 2012 that all vehicles sold after September 2014 need to be equipped with EDR.

Comparison of EDR Regulations between China and the U.S.

17 Level-A Data Elements of China EDR with New National Standards	15 Data Elements of U.S. EDR
• Longitudinal delta-V • Maximum record of longitudinal delta-V • Up to maximum record of longitudinal delta-V time • Vehicle velocity • Accelerator pedal (throttle valve) location and percentage • Driving brake, on or off • Power-on cycle in the event • Power-on cycle while reading • Driver belt status • Vehicle identification number (VIN) • ECU software and hardware number for recording EDR data • ECU software number for recording EDR data • ECU serial number for recording EDR data • The time interval between this event and last one • Integrity of event data recording • Clipping sign • Revolutions per minute (rpm)	• Longitudinal speed change Delta-V • Maximum longitudinal speed change • Time when the maximum longitudinal speed change occurs • Vehicle velocity • Engine valve opening/accelerator pedal position • Brake (on/off) • Ignition cycle at collision • Ignition cycle while reading data • Driver belt use status • Frontal airbag warning light (on/off) • Deployment time (1st Level) of frontal side airbag at the driving position • Deployment time (1st Level) of frontal side airbag at the right front driving position • Sequence of multiple events • Intervals of multiple events • Complete event record (Yes/No)

Source: ResearchInChina

In Europe, EDR is compulsory in all new cars from March 2022 on (pursuant to the general safety regulation issued in March 2019), and corresponding CDR must be purchased on the market. By March 2024, stock vehicles require to be installed with EDR as well.

The incremental market size of passenger car EDR will surpass RMB5 billion in 2022

Millions of passenger cars and light-duty trucks worldwide are equipped with EDR, as is revealed by Bosch data, and a total of more than 200 million vehicles are installed with EDR in the U.S. and Canada where roughly 98% of the new cars on the market carry EDR.

The brands like BMW, Mercedes-Benz, Lexus, Tesla, Toyota, BYD, XPENG and Haval first employ EDR. Through our analysis of the motor vehicle filing enterprises in 348th-350th batches issued (from Sept.2021 to Dec.2021) by the Ministry of Industry and Information Technology (MIIT), the passenger cars reported are all nearly with EDR, indicating the readiness of Chinese automakers for the policy about compulsory installation of EDR, and thus ushering in the explosive EDR market in 2022.

The incremental market size of passenger car EDR will surpass RMB5 billion in 2022

Chinese Passenger Car Models Already with EDR System (Part from Filing Automakers in 348th-350th Batches Issued by MIIT)

	Automaker	Brand	Model	Type
Chinese OEMs	FAW	Hongqi	E-QM5	BEV
		BESTUNE	E05	BEV
	Changan Automobile	Changan	UNI-V	Fuel
			UNI-T	Fuel
			EADO	Fuel
			ALSVIN	Fuel
			CS35	Fuel
			CS95	Fuel
			CS85	Fuel
			OSHAN	Fuel
			Ruixing	Fuel
			Changan Star	BEV
	GEELY	Geely	Xingyue L	HEV
			Boyue	Fuel
	Great Wall	HAVAL	Haval Shenshou	Fuel
		TANK	500	Fuel
			300	Fuel
		ORA	R1	BEV
			R2	BEV
			ORA Ballet Cat	BEV

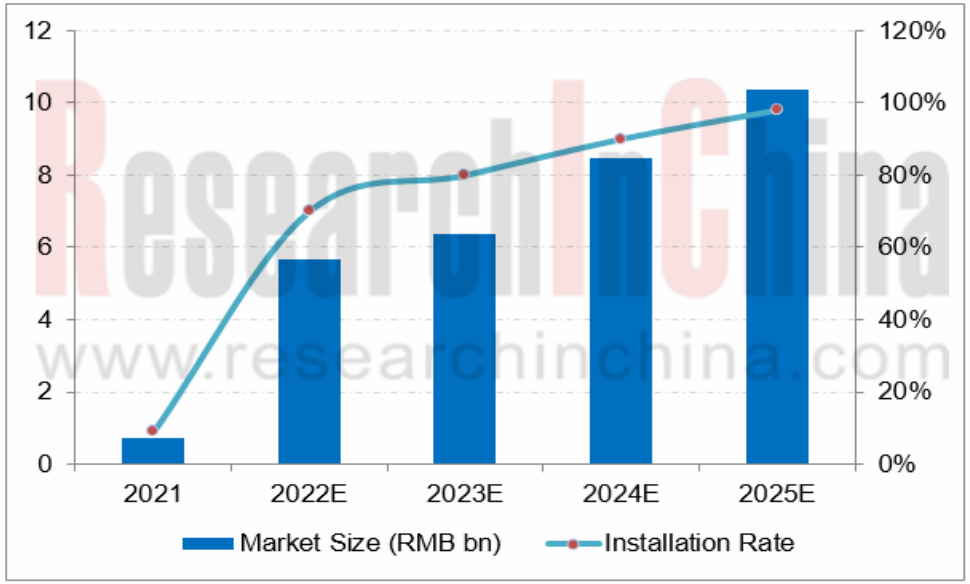
Source: ResearchInChina

Passenger Car EDR Market Size

In 2021, the rate of EDR installations onto passenger cars in China remained low, about 9%, a figure projected to climb over 70% in 2022 along with compulsory installation of EDR, and even surge to at least 90% in 2024, according to ResearchInChina.

If with EDR data retrieval tools unconsidered, EDR hardware alone is priced between RMB300 and RMB500, and then the market in 2022 is valued at RMB4.85 billion to RMB8.03 billion.

Passenger Car EDR Market Size and Penetration Rate in China, 2021-2025E



Source: ResearchInChina

The players in the industrial chain are scrambling for EDR market dividends

EDR market ushers in explosive growth from 2022 when the new national standards for EDR take effect, and the players in the EDR industry chain are stepping up efforts in this lucrative segment. EDR gets increasingly used onto passenger cars besides commercial vehicle.

The providers of data storage, chips, data retrieval tool, etc. race to beef up production lines and technology input. OEMs expedite the testing and verification of their products and make them available onto cars.

Qiming Information Technology: It started in 2020 to develop products in line with national standards for EDR, has boasted a rich portfolio of EDR related data storage products and got them used in commercial vehicle.

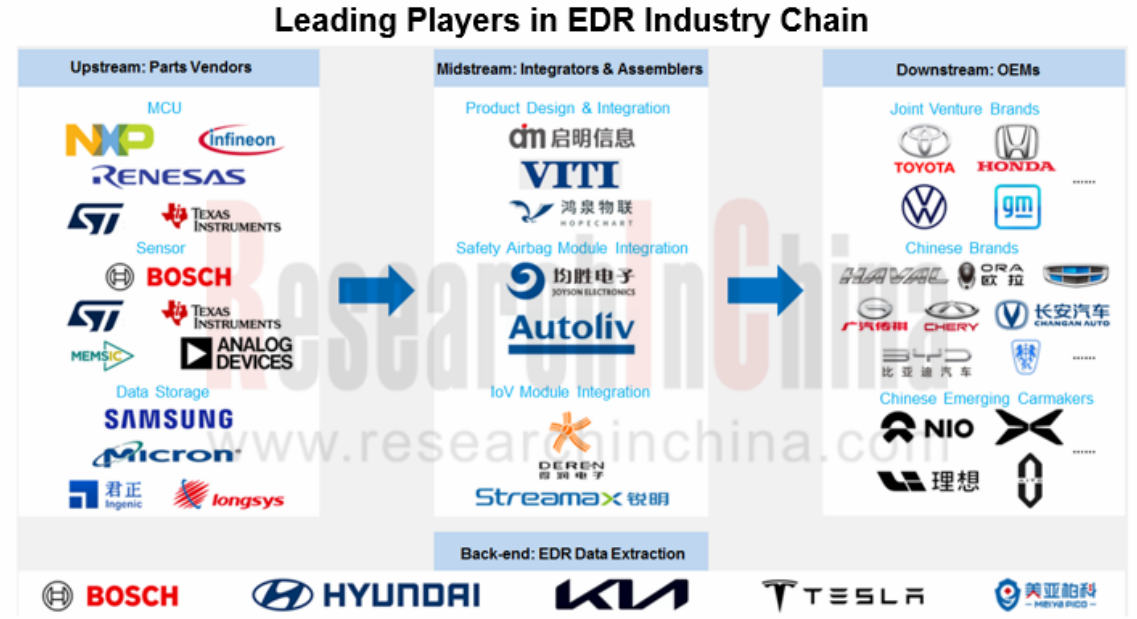
Bosch: a world-renowned provider of EDR data retrieval tools has got its CDR (crash data retrieval) available for information acquisition of EDR on passenger cars and light-duty trucks since 2000.
As of January 2022, Bosch CDR has been iterated to the version 21.4, which fully supports a multitude of vehicle models (2022) in China such as Bentley, Maserati, Ferrari, Chrysler, Fiat, Jeep, and Toyota Corolla.

GigaDevice Semiconductor (Beijing) Inc.: MCUs have been used in EDR devices and shipped massively, particularly the MCUs like 105 and 305 with handsome deliveries; wherein, GD32F105 is the EDR used for commercial vehicle.

Ingenic Semiconductor Co., Ltd.: It grows into a leading supplier of automotive memories through acquisition of ISSI (Beijing) in 2019. For automotive sector, the company delivers FLASH memory for EDR.

Leading Players in EDR Industry Chain

On the whole, it takes quite a period of time for independent suppliers' products to be verified for access to the OEM passenger car market although without a high technical barrier for EDR. The technology provider, by contrast, is faced with more opportunities. No matter which side it is, overall competence is vital in competition.



Source: ResearchInChina

For autonomous driving, EDR is gearing towards DSSAD

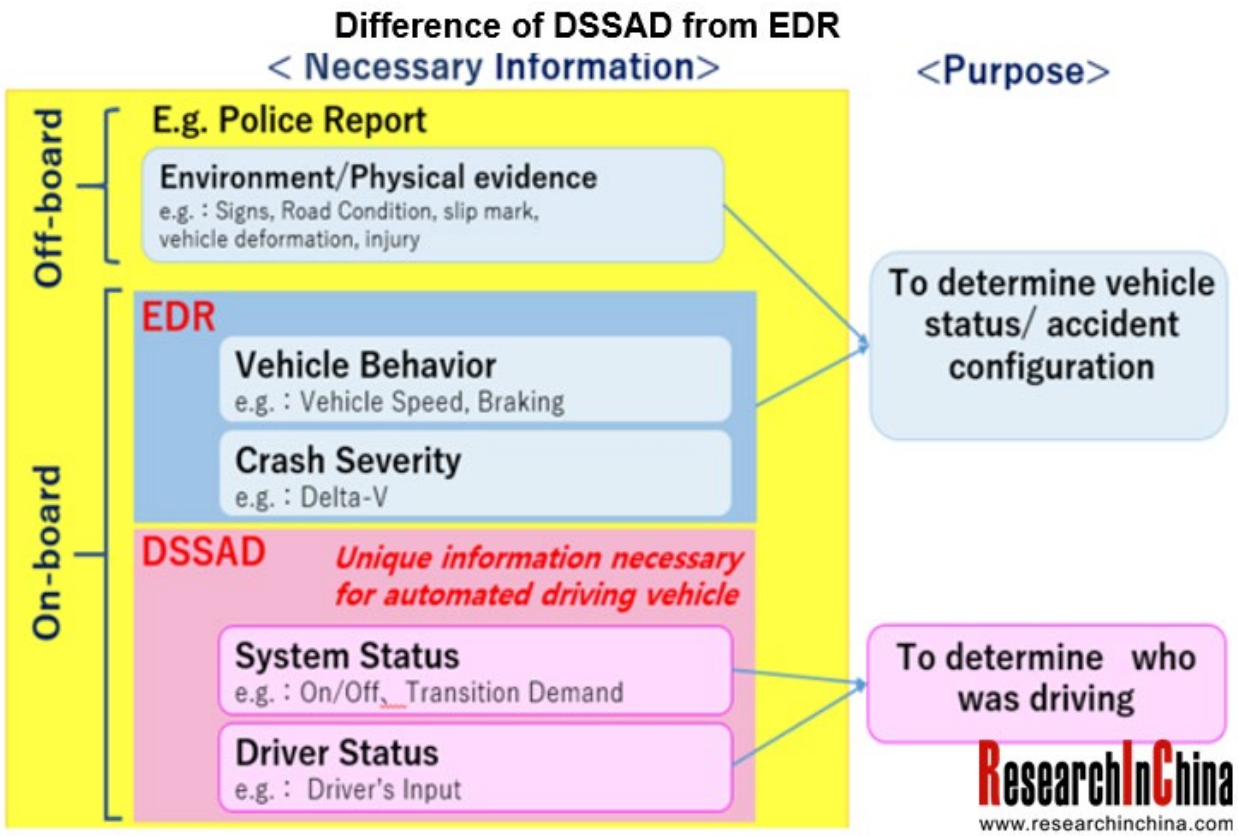
EDR alone can no longer meet the future market demand amid the prevailing autonomous vehicle. With a focus on recording information about vehicle and the driver when an accident occurs, EDR is unable to record whether the driver or the automated driving system is held accountable. To that end, DSSAD, short for data storage system for automated driving, is needed.

It is clearly required in the world's first international regulations in June 2020 on L3 autonomous vehicle that autonomous vehicle must be equipped with DSSAD. The Chinese DSSAD standards is still being formulated.

In the DSSAD market, the competitors such as CalmCar and Duvonn Electronic Technology have made preemptive moves and rolled out DSSAD products. Noticeably, CalmCar DSSAD system suited for more than a dozen vehicle models in 2021.

Hopefully, DSSAD system will be popularized as the policy on L3 autonomy gets enforced and advanced autonomous vehicle is produced on a large scale.

Difference of DSSAD from EDR



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Beijing Headquarters
TEL: 13718845418
FAX: 010-82601570
Email: report@researchinchina.com

Website:
www.researchinchina.com

WeChat: zuosiqiche

Chengdu Branch

TEL: 028-68738514
FAX: 028-86930659

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