ResearchInChina
www.researchinchina.com

Automotive DMS (Driver Monitoring System) Research Report, 2021

Dec.2021

Automotive DMS Research: The Installations of DMS in the First Nine Months of 2021

Our data show that in the first nine months of 2021, China sold 251,511 sets of DMS for new passenger cars, 244% more than in the same period of the previous year, of which 15,201 sets, or 6% of the total were for joint venture brand cars, and 236,310 sets, or 94% of the total were for local brand cars. Top-ranked brands were Changan, Xpeng, Haval, BMW, NIO, WEY, Leapmotor, GAC Aion, ORA and JETOUR.

Installations and Installation Rate of DMS by Auto Brand, 2020-2021

	Installations (1,000 units)			Installation Rate		
	Joint Venture	Local	Total	Joint Venture	Local	Total
2020	0.5	133.8	134.3	0.0%	2.0%	0.7%
2021, 1-9	15.2	236.3	251.5	0.2%	3.9%	1.7%

Source: ResearchInChina

The main reason for the boom of DMS in China in 2021 is that local brands installed DMS in more of their models. 96,700 units of new models launched in 2021 are equipped with DMS, making up 38% of the total installations. Wherein, the key contributors include Changan UNI-T, Haval First Love (100%), Changan UNI-K (100%), Xpeng P7 (17%), Aion Y (100%), WEY Mocha (100%), Neta U (91%) , Leapmotor T03 (49%), Haval Chitu (100%), and JETOUR X70 (40%).

In the future, DMS will sustain growth, and policies will be the key driver. For example, the Guidelines for Administration of Entry of Intelligent Connected Vehicle Manufacturers and Their Products (Trial) (Draft for Comments) released by Ministry of Industry and Information Technology in April 2021 requires that companies should have monitoring capabilities of human-computer interaction and driver participative behaviors, boosting DMS growth; also, OEMs should equip more of their models with DMS with declining prices.

OEMs Refine and Expand DMS Capabilities

OEMs not only install more DMSs but refine and expand DMS capabilities. As well as driver drowsiness detection and face recognition, their all new DMSs tend to enable more related functions such as gesture interaction, action recognition, expression recognition, and eyesight screen brightening.

Comparison of DMS Enabled Functions by Brand/Model (Part)

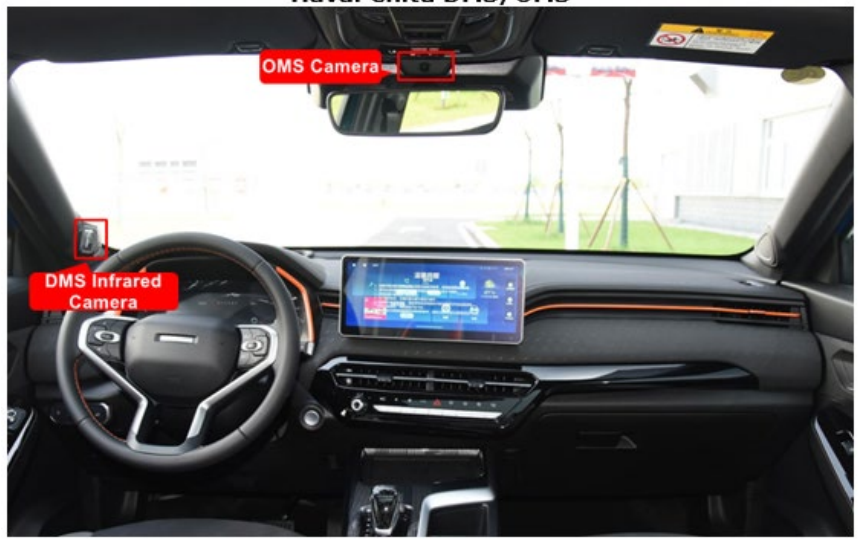
Brand	Model	Drowsy Driving Alarm	Face Recognition	Gesture Interaction	Action Recognition	Expression Recognition	Eyesight Screen Brightening	Video Conference	Driver Vital Signs Monitoring	Glasses-free 3D Cluster
Changan	UNI-T	• (Three levels of feedback: voice/incoming call simulation/window or air conditioner open + playing music)	•	×	×	×	×	×	×	×
Changan Oshan	X7/X7 PLUS	• (Feedback: cluster display + voice assistant dialogue)	•	• (Switch driving mode)	×	×	×	×	×	×
EXEED	Lanyue	• (Feedback: voice assistant prompt, etc.)	•	×	• (Nod - confirmation / shake head - deny / make a hush sign - silence)	×	×	×	×	×
WEY	Mocha	• (Feedback: image + sound + seat belt)	•	×	×	• (Monitor different facial expressions, push music and ambient lights)	•	×	×	×
Feifan	MARVEL R	• (Feedback: sound prompt)	•	• (Wave a hand - sunroof open/close; make a fist and thumb up to the left/right - air conditioner volume adjustment)	×	×	×	• (DingTalk)	×	×
HiPhi	HiPhi X	• (Feedback: cluster + sound/seat vibration + air conditioner + fragrance + music)	•	×	Unknown	• (Recognize emotions, turn on corresponding seat, music, fragrance	×	×	•	×
Mercedes-Benz	S Class	•	•	×	×	•	×	×	×	•

Source: ResearchInChina

Cases for Refining and Expanding DMS Capabilities

For example, the DMS for Haval Chitu enables fatigue/distraction monitoring, face recognition (face login to IVI account, automatic personalized adjustment of seat, theme interface, etc.), and expression recognition (recognizing expressions, e.g., happy, angry and surprised, and pushing corresponding music, air-conditioning and other features). The supplier is ArcSoft.

Haval Chitu DMS/OMS



The DMS for SAIC Feifan MARVEL R enables fatigue/distraction monitoring, face recognition, gesture interaction (waving a hand to open and close sunroof before and after the recognition, etc.), and video conferencing (DingTalk).

Feifan MARVEL R DMS

Local OEMs not only favor DMS but start deploying OMS. Models including HiPhi X, Voyah FREE, GAC Aion Y, Trumpchi GS4 PLUS, Trumpchi EMPOW, ORA Good Cat, Haval Chitu, Haval First Love, WEY Mocha/VV6/VV7, JETOUR X70 PLUS, and Changan UNI-T/UNI-K have packed both DMS and OMS.

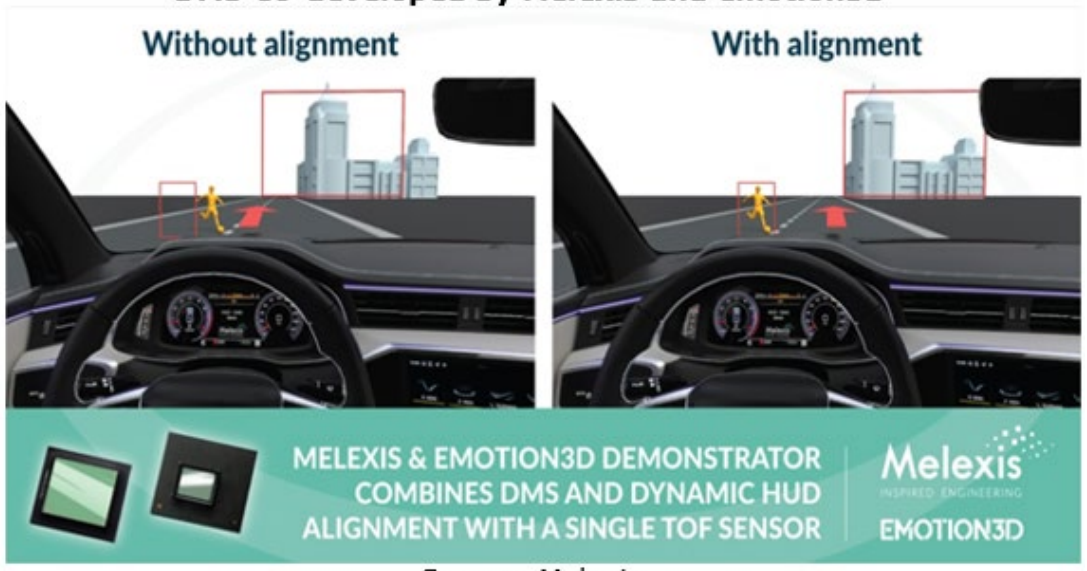
DMS Solutions Rapidly Fusing with other Cockpit Functions or Integrating with Hardware

For suppliers, it can be seen that DMS solutions are rapidly fusing with other cockpit functions, or integrating with hardware.

Fusion with HUD among others. For instance, in September 2021, Melexis and emotion3D joined forces to offer a 3D Time-of-Flight (ToF) demonstrator, a solution that combines the driver monitoring system (DMS) with high-precision 3D driver localization, to dynamically align augmented reality head-up displays (AR HUD) objects.

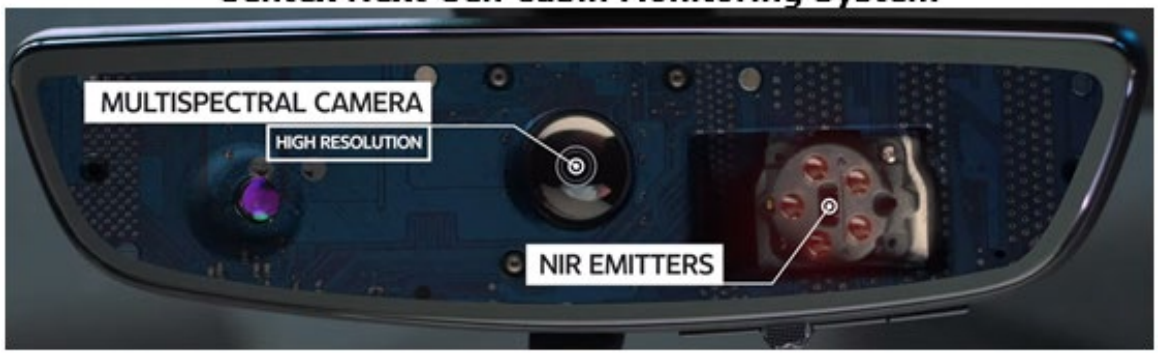
Products that integrate cluster display and interior rearview mirror come into being as well. Examples include an integrated solution for interior sensor technology unveiled by Continental in October 2021, integrating the camera directly into the cluster display for the first time ever; and the next-gen cabin monitoring system launched by Gentex in January 2021, integrated into the interior rearview mirror and combining DMS and OMS.

DMS Co-developed by Melexis and emotion3D



Source: Melexis

Gentex Next Gen Cabin Monitoring System



DMS Solutions Rapidly Fusing with other Cockpit Functions or Integrating with Hardware

Extension to or fusion with in-cabin perceptions like IMS. For example, the AutoSense solution XPERI DTS introduced in late 2020, integrates DMS and OMS; the I-CS (In-Cabin Sensing) solution launched by MINIEYE in September 2021 allows accurate detection of occupants including their facial features, line of sight, gestures and joints.

MINIEYE I-CS DMS

Source: MINIEYE

Comparison of Products between Chinese DMS Suppliers (Part)

	SenseTime	ThunderSoft	Jingwei Hirain	Horizon Robotics	Baidu
Product	SenseAuto Cabin (incl. DMS/OMS, etc.)	Cockpit Vision-based DMS	DMS	DMS, integrated in Horizon Halo® Solution	Driver Fatigue Monitoring System
Launch Time	Apr. 2021	Aug. 2020	Aug. 2017	2019	2017
SOP	2021	Nov. 2020	2020	2019	2019
Technology Route	Near infrared	Support for RGB and infrared camera	Near infrared	Near infrared	Near infrared
Position of Camera	Above the center of center console, above steering column, etc.	/	/	A-pillar, rearview mirror and other cameras	Above rearview mirror, etc.
Enabled Functions	Driver identification, gesture recognition, fatigue detection, gaze area recognition, dangerous behavior analysis, child recognition, object recognition, pet detection	FaceID, driver status detection (fatigue, distraction, bad behavior), occupant/object detection (object/child/pet/behavior), biological detection, human-vehicle interaction (Kanzi AI assistant)	Driver monitoring, identification, attention detection	Identification, fatigue level detection, child recognition, behavior recognition, attention detection, gender and age recognition	Face recognition, fatigue monitoring, distraction monitoring, posture recognition
Detection Modes	Facial features, head tracking, eye tracking, behavior recognition, number and location of occupants	Face, emotion recognition, eye tracking, breathing/frequency, behavior recognition, number of occupants, vivo detection	Face, eye tracking, behavior characteristics	Face recognition, head recognition, emotion recognition, action recognition, gaze area	Facial characteristics, behavior recognition
Detected Behaviors	Eye tracking, yawning, nodding, smoking, drinking water, calling, not wearing seat belts, etc.	Camera blocking, not wearing seat belt, eye blocking, yawning, looking around, mask detection, calling, smoking, drinking water, not looking ahead for a long time, driver not at the driver's seat	Smoking, calling, drinking water, drowsiness, eye moving	Yawning, eye blocking, camera blocking, not wearing seat belt, using mobile phone, smoking, drinking water, distracted, calling	Using mobile phone, smoking, not wearing seat belt, not wearing mask, closing eyes, yawning, hands off the steering wheel, etc.
OEM Customers	Great Wall (WEY Mocha), Chery (JETOUR X70 PLUS), Neta (U)	BYD D1	HiPhi, GAC (AION V Plus)	Changan (UNI-T and UNI-K), GAC (AION Y), SAIC (IM Motors), Great Wall (2022 Haval H9)	EXEED

Source: ResearchInChina

Table of Content

Table of Content

Table of Content

Table of Content

Table of Content

Contact

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

Website:
www.researchinchina.com

WeChat: zuosiqiche

zuosiqiche

Chengdu Branch

TEL: 028-68738514
FAX: 028-86930659