

EMBEDDED A.I. FOR FLEET INTELLIGENCE



EMBEDDED

EMBEDDED A.I.



DMS



ADAS



FACEID

FLEET INTELLIGENCE



GPS



DVR



CLOUD



4G



WIFI



CONNECT

SPECIFICATIONS

PRODUCT SPECIFICATIONS



GPS



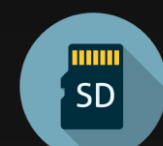
WIFI/BLE



4G/LTE



CLOUD



Specifications

	DMC – driver monitoring camera	1920*1080
	ADAS – forward facing camera	1920*1080 / FOV=40
	DVR*3 – F: forward; R: rear; C: cabin	1920*1080 / FOV=140
	Video/audio loop Recording	H.264
	Display	2”
	Infrared illumination	940nm
	Micro-S/D	Up to 128GB
	G-sensor	3-axis
	Super Capacitor	10F
	Dimension	125*60*30mm
	Voltage	9 – 30V
	Operating temperature	-20C – 65C
	AUX - I/F	RS-232
	Video Out	HDMI - optional

FEATURES

All-in-1 workstation: DMS/ADAS/3-ch DVR/GPS/4G-LTE/ WIFI/BLE/Cloud

HIGH END CAMERA

- 2M-px / 1080p DMS camera
- Dual forward camera: ADAS-FOV@40; DVR-FOV@140
- Starlight 3-ch (forward/rear/cabin) DVR dashcam

EDGE AI PROCESSOR

- Edge A.I. processor
- Advanced DMS (Driver monitoring system) and ADAS fusion
- Driver and drowsiness attention warning (DDAW)
- ADAS road understanding and A.I. segmentation
- Face recognition
- Europe GSR and China regulation compliance

CLOUD INTELLIGENCE

- Instant and event analysis
- On-demand video streaming
- GPS tracker
- 4G/LTE
- WIFI
- Bluetooth

DMS

FEATURES

- Drowsiness detection
- Gaze off road detection
- Smoke / phone detection
- Real time event reporting to the cloud
- Real-time audible alarm
- Night vision – 940nm IR
- All lighting conditions
- Sun-glasses, hat, mask, and face occlusions.
- Detection range: 45cm – 110cm

DROWSY

- Sleep
- Microsleep
- Yawning

INATTENTION

- Side looking
- Pitch down
- Gaze track

DISTRACTION

- Phone talking
- Smoking

COMPLIANCE

- Driver identity
- Driver presence
- Driver move out
- Lens block

FLEET & CLOUD

- GPS
- Driver status/event statistic
- Cloud - AWS

ADAS/DMS FUSION

FEATURES

- Forward collision prevention
- Lane change detection
- Obstacle detection
- ISA – Intelligent Speed Assistant
- Real-time audible alarm
- Real-time event reporting to the cloud
- Activate: > 15 km/hr
- Detection range: 100m

FCW – FORWARD COLLISION

- TTC – Time to collision
- Distance detection

LDW – LANE DEPARTURE

- Ego lane segmentation
- Lane deviation
- Lane switch

OBSTACLE DETECTIONS

- Pedestrian
- 4w: Sedan / bus / truck
- 2w: moto / scooter / bike
- Traffic light

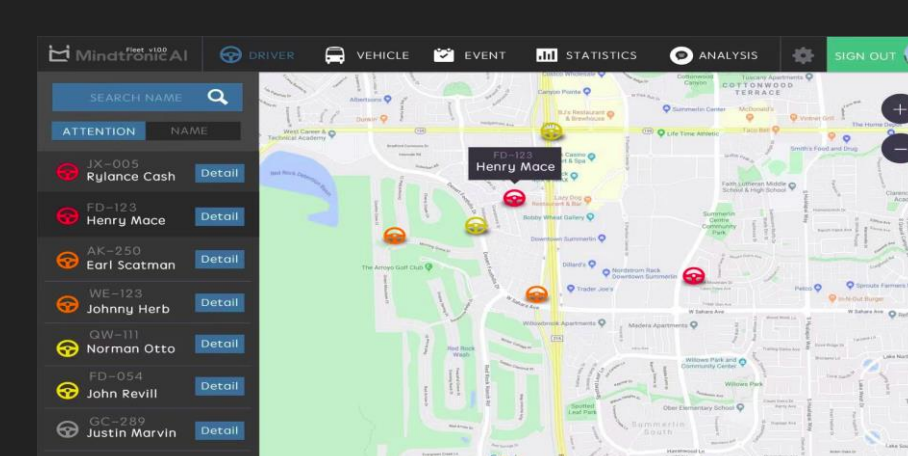
DMS FUSION

- Driver behavior versus traffic understanding

FLEET & CLOUD

- GPS
- Driver/ vehicle status & statistic
- Cloud - AWS

CLOUD Fleet Management



GPS Tracking



Driver Status Monitoring



Event Notification



Driver & Vehicle Analysis

FAMILY
PRODUCT OPTION

					
HORUS		MIDAS		OMNI	
Driver monitoring system		DMS/ADAS fusion + DVR		FLEET-Workstation	
GSR2019/2144 regulation compliance. Enforce from 2022		Integration for cost competitive; and fusion for best accuracy		All-in-1 fleet data hub and cloud data intelligence.	
DMS	V		V		V
ADAS			V		V
DVR			F/C		F/C/R
GPS	V		V		V
WIFI/BLE					V
LTE	O		O		V
CLOUD	O		O		V
V: required O: optional					

REGULATIONS
DMS REGULATION COMPLIANCE



DMS functionality	GSR (Europe)	China (DAMS)	MAI
General requirement			
Warning signal (visual & audio)	Y	Y	Y
Event-driven local/cloud image/video-clip storage	Y	Y	Y
Working in various lighting conditions (e.g., daytime, night, frontal/side/back/alternating light)	Y	Y	Y
Working under vehicle vibration	N/A	Y	Y
Working for occluded face (e.g., facial occlusion by hat, glasses, sunglasses, or masks)	N/A	Y	Y
Standard compliance	N/A	JT/T 794 6.3-6.7 (electric, EMC, comm, env), TD-LTE/FDD-LTE support	Y
Temperature of working environment	N/A	-20 ~ 70 °C	Y
Driver monitoring			
Fatigue detection accuracy and lead time	Y	Blink 95%; yawn 95%; combine > 90%, < 2s	Y, < 1s
Phone calling detection accuracy	N/A	Phone detection > 95%; phone talking > 95%; Combine > 90%, < 2s	Y
Gaze off-road detection accuracy and lead time	N/A	> 90%, < 1s	Y
Driver presence detection accuracy and lead time	N/A	> 95%, < 2s	>99%, < 1s
Smoking detection accuracy and lead time	N/A	Cigarette > 95%; smoking gesture > 95%; combine > 90%, < 2s	Y
Hands-off detection accuracy and lead time	N/A	Optional: > 95%, < 2s	Y
Driver ID recognition	N	Optional	Y
Device malfunction warning			
DMC blocking detection accuracy and lead time	Y	> 95%, < 5s	Y
Sunglasses detection accuracy and lead time	Y	> 95%, < 2s	Y
Cited reference			
Article name	General Safety Regulation: Overview of the approach for Driver Drowsiness and Attention Warning (DDAW) 交通運輸部辦公廳關於推廣應用智能視頻監控報警技術的通知(交辦通[2018] 115號) 道路運輸車輛智能視頻監控報警裝置技術規範		

STRENGTH
ADAS ROAD UNDERSTANDING



Segmentation technique
Ego-lane detection w/ or w/o printed lane



DMS/ADAS fusion
Mitigate false alarm by driver cognition detection

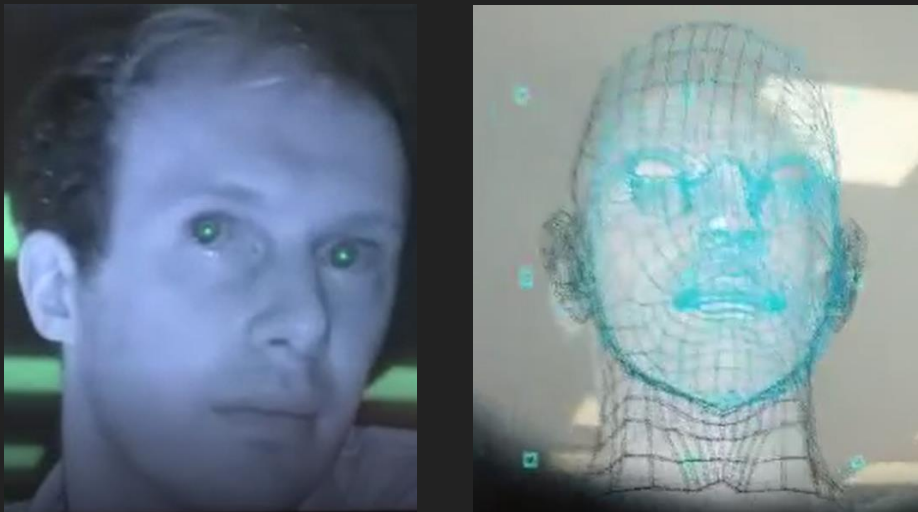
Real-time obstacle classification
Bus, truck, sedan, SUV, motorcycle, scooter, bike, pedestrian

DRIVER STATUS MONITORING



Infrared face recognition / enrollment
All lighting conditions. Remote enrollment in fleet console

Robust
All lighting conditions, sunglasses, mask, hat



Perfect eye tracking
1-mm tracking accuracy
Real-time head/face tracking
Perfect head/face pose alignment
Auto calibration
Auto fit driver's height, distance, and camera position