



HOWEN DRIVER STATUS MONITORING

PRODUCT INSTRUCTION

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1 Product Introduction

Howen Driver Status Device(DSM), is the intelligent analysis system based image-recognized. It has built-in image analysis algorithm, which is able to detect fatigue driving, unsafe driving behaviors, ADAS monitoring. It will send voice alarms, and report to management platform at them same time. In this way, it can provide driver protection so that lower the rate of accidents happening.

2 Product Functionalities

(1) Fatigue driving monitoring and alarm

- Provide different level of alarm based on fatigue face
- Sensitivity based on speed
- Suitable different weather

(2) Driver recognition

- Face recognition algorithm
- Identify driver faces
- Driver register
- Voice alarm and report to the platform

(3) Unsafe driving behavior

- Fatigue driving announcement and reporting
- Making phone call during driving announcement and reporting
- Seatbelt reporting and monitoring
- Smoking announcement and reporting
- Distraction announcement and reporting
- Covering announcement and reporting

(4) ADAS

- Alarm announcement for not following the lane
- Reporting level based on the speed
- Changing lane recognition
- Turing light detection

3 Product manager

3.1 Product Package

HOWEN DSM device can be divided into four parts: main module, fatigue camera sensor, ADAS camera, speaker, GPS&4G (Optional).

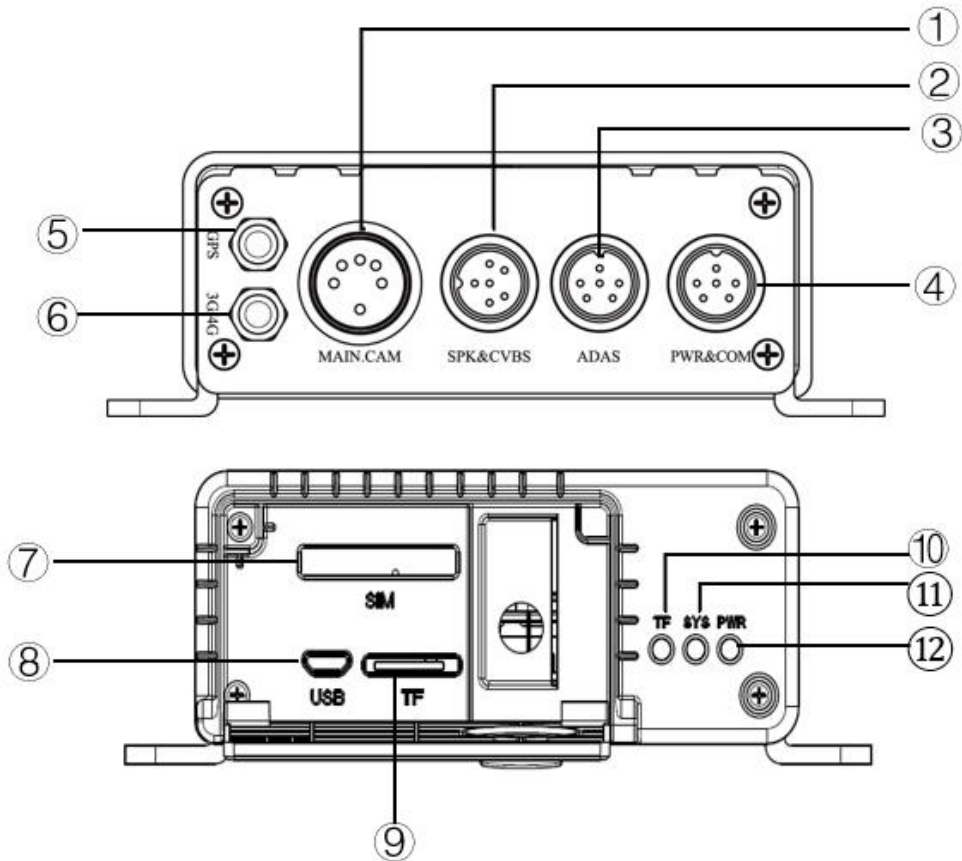


Main Module



Fatigue Camera & ADAS Camera

3.2 Port Instructions



Port Name and Definition

NO.	Name	Instruction
①	MAIN.CAM port	Collecting Fatigue Data Port
②	SPK&CVBS port	Speaker port & Video Output port (Fatigue Camera)

		is CVBS, ADAS Camer is AHD)
③	ADAS port	ADAS camera + turning input (RED for turning left, Yellow for turning right, Black for connecting ground)
④	PWR&COM Port	Main power and serial port (RS232 or RJ45)
⑤	GPS Antenna	GPS port, connecting speed
⑥	3G/4G Antenna	3G/4G Antenna port
⑦	SIM Card Slot	Sim card Slot, support different internet (PS: press yellow button for taking out the sim)
⑧	USB Port	USB Port, for APP configuration and for firmware upgrading
⑨	TF Card Slot	For up to 32GB SD storage
⑩	TF Indicator Light	SD card indicator light (still pending)
⑪	System Indicator Light	System indicator light, green is working
⑫	Power Indicator Light	Power Indicator, red means working

4 Main Specifications

4.1 Specification

Name	Description
Model	HW-FD04-VEN0
Operation System	Linux
Baud Rate	115200 Baud
Dimension	Module 154.5mm x 120mm x 40.8mm DSM Fatigue Camera 123mm x 53mm x 38mm ADAS Camera 55mm x 28mm x 28mm
Communication Port	RS-232、RJ45、USB

Fatigue Cameras Installation Distance	70cm ~ 100cm
Working Voltage	9V~36V
Working Ampere	ADAS(Non-GPS、No 4G) : 530mA-630mA 4G_Standard Version(No ADAS) : 480mA-580mA 4G_ADAS (All the accessories included) : 580mA-670mA
Average Power Consumption	ADAS (No GPS、No 4G) : 7W 4G_Standard (No ADAS) : 6.4W 4G_ADAS (All the accessories included) : 7.6W
Temperature Range	-20°~+70°
Humidity Range	<=85%无水珠或结冰

4.2 Product Specifications

Type	Name	Description
Main Module	CPU	Quad-core ARM Cortex-A7 @1GHz
	RAM	512MB DDR3
	TF Card	Support TF, up to32GB
	4G	Support TD-LTE、FDD-LTE、TD-SCDMA、WCDMA、
	GPS Location	GPS/BD dual Mode, Accuracy 2.5m, Start time <29s, Sensitivity -162dBm
DSM Fatigue Camera	Resolution	1280*960
	Lenses	5G1P, f=6mm, 50° (H) ,IR 940nm
	FPS	25fps
	Video Format	USB Output, YUV or MJPEG
ADAS Camera	Resolution	1280*720
	Lenses	6G1P , f=6mm , 50° (H) , IR 940nm
	Video Format	AHD2.0 , 25fps
Speaker	Size	Diameter 60mm, thickness 35mm
	Power	4Ω 2W
	Alarm Capture	Format Picture Size 40-50KB

Alarm snapshot and video	Alarm Video	Period 6-10s, format avi
	Video Output	Two channel videos, Fatigue cameras is signal, ADAS video is AHD signal, Use 4Pin standard aviation port

5 Product Installation and Configuration

For installation please follow installation instruction manual.

6 How to Use HOWEN DSM Product

After installation and configuration, please connect the RS232 to HOWEN MDVR products, and start the engine, the device will start working automatically.

6.1 Alarm Report Types

Report fatigue driving and other unsafe driving behaviors, and also do the ADAS functions as following

Alarm Type	Driving Mode	Testing model	Voice Alarm
Fatigue-Level 1	Driver head down, closing eyes for 2 seconds	Driver head down, closing eyes for 2 seconds	Driving Carefully Please
Fatigue-Level 2	Driver head down, closing eyes for 5seconds	Driver head down, closing eyes for 5seconds	Watch out
Distraction	Looking around for 4s, face forward to cancel the status	Looking around for 4s, face forward to cancel the status	Please mind the lane
Yawn	Yawning for 3s, 3 times within 5min;	Yawning for 2 seconds	Please take a rest
Phone Calling	Holding phone for 7 seconds, putting down the phone to cancel the alarms, max 2 reports within 5mins	Making phone call for 4s	Please do not make a phone call

Seatbelt Fasten	Unfasten seatbelt for 1min, max 2 times within 5mins;	Release the seatbelt for 10s	Please fasten the seatbelt
Smoking	Smoking, max 1 time within 4 mins	Smoking for 3 seconds	Please do not smoke
Covering	Covering the cameras for 10s	Covering the cameras for 10s	Please do not cover the cameras
Error	Cannot capture picture for 3 seconds	Cannot capture picture for 3 seconds	Camera Error
Lane	Not following the lane	Not following the lane	Please follow the lane
Too Close to the vehicles	Distance less than 1.2s times speed	Distance less than 1.2s times speed	Please keep the distance
Stop	Distance less than 0.8s times the speed	Distance less than 0.8s times the speed	Please stop

6.2 Notice

1) Testing mode and Driving Mode

For testing mode just for device configuration and testing, which help products find out suitable installation position and configure the sensitivity. It can help installers save time for installation.

Driving mode is for normal vehicle operation, it will report based on actual situations.

2) As this DSM is analyzed by AI function by image, it may occurs errors in the strong light area or situation, please work with Howen mobile DVR for better results.

3) Driving mode only working when the speed more than 30km/h, less than this speed the alarm would not be reported (it can configured by clients' needs)

4) The default speed is 80km/h in test mode.

6.3 Upgrade

4G version support upgrade remotely, or using phone APP to upgrade locally. The other model only support upgrade locally.

6.4 Communications

- 1) Support RS232, RJ45,CAN(CUSTOMIZED)
- 2) 4G version support upload images and alarm information to platform;
- 3) Phone can view the image by using OTG with USB
- 4) Two video channel output
- 5) The alarm video would be recorded before and after 5s when the alarm occurs, and they will save inside the SD or internal storage

7、 Platform

It can work with HOWEN MDVR and log into VSS platform for management.