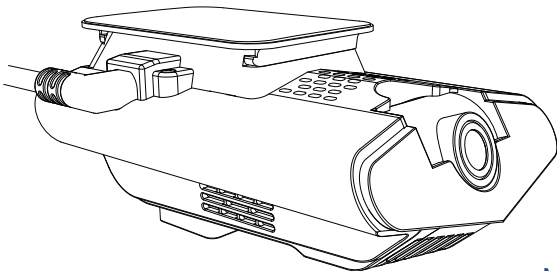


MVT-9

User Manual



MOVON CORPORATION

※ Thank you for purchasing MOVON Driver Status Monitoring System.

Please read the manual carefully before using MVT-9.

- **Any inappropriate or illegal activities or violation of traffic rules on the roads are driver's responsibility.** MOVON Corporation will not compensate any damage nor accept responsibility related to behaviors mentioned.
- Please be aware of MOVON's policy that private information and traffic related laws are user's responsibility. **MVT-9 gives warnings to the drivers as well as transmitting video data to the MOVON server/platform The final decision to maneuver / control shall be made by drivers themselves.**
- The safety function performance might be affected by driver status, road environments, weather conditions and installations.
- Customer service incurred by controlling while driving or damaging / revamping will not be guaranteed by MOVON's policy.
- MOVON shall NOT be responsible for any problems and/or damages that may occur from not using genuine or MOVON authorized parts and accessories. It is strongly recommended to use parts and accessories (including micro SD card) provided by MOVON or MOVON authorized seller to avoid any problems and/or damages.
- The information may not be up-to-date on the user manual for upgrading or editing purposes. The manual can be modified at any time without notification in order to enhance software.
- The product software may be modified for better performance without informing in advance. Please refer to the <http://www.movon.co.kr> for latest information.

Warnings / Cautions : Violating the following precautions may result in personal injury, death, or property damage.

- Do not install in disregard of installation instruction. It is recommended to go to authorized workshop.
- Do not use damaged/modified cables or voltage out of the rated voltage.
It may cause injury, death or property damage.
- Do not modify nor disassemble the product and cables. It can cause explosion or fire resulted in injury or property damages.
- Do not use chemical on the device. It can cause fire or electric short, or malfunction of the device.
- Do not attach MVT-9 in which it can obstruct the driver's view.
- Do not operate while driving, it is prohibited by law. If necessary, operate after stopping at a secure area.
Do not apply excessive force when pushing the buttons on the device.
Do not leave the product where infants, children or pets can reach it.
- Operating temperature is -4°F ~ 158°F (-20°C ~ 70°C).
MVT-9 may not operate properly and be damaged in excess of the temperature.
- The functions may not work properly due to camera location and angle, and weather conditions.
- Recorded videos are only for personal use purpose. The video quality is not guaranteed to prove specific images.
- If the product is damaged or the power supply is cut due to an accident, video may not be recorded.
- Foreign substance or finger print on the lens may cause improper safety function performance.
If recorded videos are broken due to users mishandling, the damaged video is not guaranteed to recover.
- Do not separate micro SD card from MVT-9 while the power is on. Separate after turning off MVT-9 if necessary.

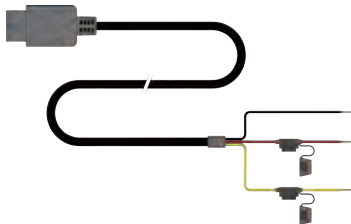
1. Package Contents



MVT-9



Micro SD card
(64GB)



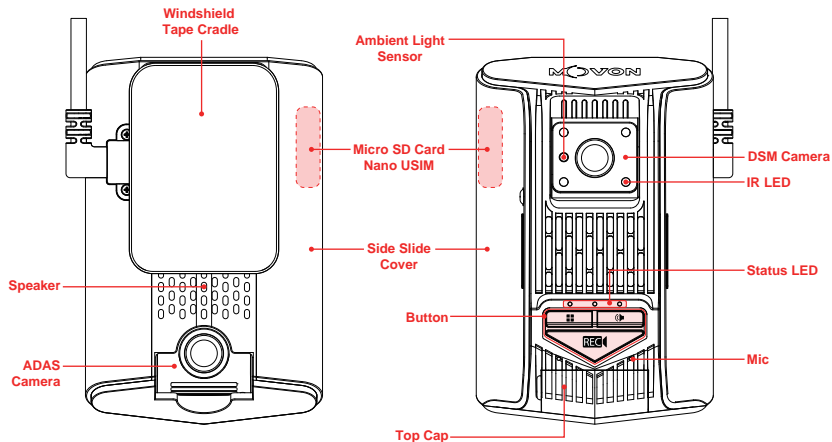
3 wire cables
Power/GND/ACC



Locking Screw Tool

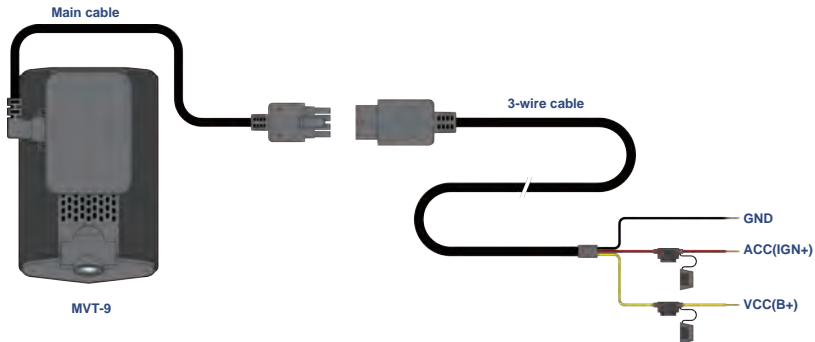
2. Product Overview

2.1 Parts Description



2. Product Overview

2.2 Parts Descriptions (Main Cable)



P1: Vehicle Connecting

Connection	Items	Specifications	Notes
Vehicle power (3-wire)	VCC (B+)	8~36V	Vehicle Power
	ACC (IGN+)	8~36V	Vehicle Power
	GND	Ground	Vehicle Ground

* The fuse on the cable uses 3A

3. SW UI & SCENARIOS

3.1 LED Status

			LED		
			Record	Status	Communication
			GREEN	2 COLORS	BLUE
Start-up / On & Off	Bootting step1	Bootting start	Off	Green On	Off
	Bootting step2	Super-cap charging	Off	Green slow flashing	Off
	Bootting step3	Before recording	Don't care	Green fast flashing	Don't care
F/W upgrade	Firmware upgrade		Flashing	Green On	Flashing
System Error	System error at start-up		Flashing	Red flashing	Flashing
High-temp. operation	Operating at high temperature		Don't care	Green On Red flashing	Don't care
Recording	Normal Recording		On	Green On	Don't care
	Event Recording		On	Green On	Don't care
	DRV Recording		On	Green On	Don't care
Recording Error	No SD, Read Fail		Slow Flashing	Green On	Don't care
	Write Fail, SD Full		Flashing	Green On	Don't care
Recording Off	Recording setting is turned off		Off	Green On	Don't care
SD Format	SD Format, recovery		Fast flashing	Green On	Don't care
Communication (3G, LTE)	Network Communication Ready		Don't care	Green On	Fast flashing
	Network Communication Connected		Don't care	Green On	On
	Network communication Error, SIM Error		Don't care	Green On	Flashing
	Server Connection Error		Don't care	Green On	Slow flashing
	Communication Off		Don't care	Green On	Off
Status	App setting		Don't care	Yellow flashing	Don't care
	BT device registration		Don't care	Flashes green and red alternately	Don't care
	Powering down		Off	Red flashing	Off
	Sleep Mode 1		Off	Green and red lights up at the same time	Don't care
	Sleep Mode 2		Off	Green and red blink very slowly at the same time	Off
	Factory Mode		Flashing	Flashing green and red at the same time	Flashing
	Power Off		Off	Off	Off

3. SW UI & SCENARIOS

3.2 Buttons

- * Please note that all the buttons are used separately.
- * Make sure to review the chart below before a settings adjustment.



FUNCTIONS		BUTTONS		
		MULTI	PANIC	VOLUME
PANIC (REC)		—	PRESS	—
HOTSPOT ON/OFF (Wi-Fi)		HOLD (7 secs)	—	—
VOLUME		—	—	PRESS LEVEL 1~5 (Loop)
SYSTEM REBOOT		HOLD (10 secs)		
SYSTEM DEFAULT	STEP 1	HOLD (3 secs)		—
	STEP 2	HOLD (3 secs)	—	HOLD (3 secs)
	STEP 3	—	HOLD (3 secs)	
BLUETOOTH PAIRING		PRESS	—	—

4. RECORDING

Recording Settings

* DRV Recording Unit: Change recording unit according to settings

* Default settings : FHD High1080p x 30fps (Micro SD card 64GB)

Folder	Mode	Trigger	Recording Duration	
			FHD High(1080p x 30fps)	FHD Super(1080p x 30fps)
NOR	Normal	1 minute in a loop (Configurable)	38 secs / 5 hours	31 secs / 4 hours
EVT	G-sensor	G-sensor event	CONFIGURABLE (Recording Ratio)	CONFIGURABLE (Recording Ratio)
	ADAS	ADAS event		
	DSM	DSM event		
	PANIC	PANIC event		
	E-CALL	E-CALL event		
DRV	DRV	Loop	100 hours	100 hours

Caution & Note:




- Depending on your environment, actual recording duration and Micro SD card lifespan may vary.
- For stable performance, it is recommended to format the Micro SD card every 2-3 weeks.
- Formatting will delete all data in Micro SD card. If you want to keep the data, please back up in advance.
- If it fails to format the Micro SD card more than twice, please try with PC.
- When you remove the Micro SD card, please make sure the device is completely off.
- Micro SD card is a consumable accessory. MOVON does not guarantee a certain period of lifespan of Micro SD card. It is recommended to check the status of Micro SD card on a regular basis and if Micro SD card is not working properly, please contact the seller and purchase a new Micro SD card.

5. AI FEATURES

5.1 ADAS Features

Driver Safety and Monitoring helps drive safely by using a machine vision recognition technology to prevent drowsy or reckless driving.

Main Features


	Lane Departure Warning (LDW) Warning when the driver changes lanes in a solid lane Set speed above 40km/h LDW Freq LC (FLC) Warning when changing lanes frequently (regardless of lane type) Operation when changing lanes over the set number of lane changes per second
	Forward Collision Warning (FCW) Warning in situations where there is a risk of collision with the vehicle in front. Operates above 30km/h Forward Collision Warning 2 (FCW2) When changing lanes, it warns you if there is a risk of collision with the vehicle in front.
	Forward Proximity Warning (FPW) Alerts the driver when a vehicle is within the set range Operates within 0 ~ 30km/h
	Pedestrian Collision Warning (PCW) Alerts the driver when a pedestrian is nearby the vehicle and approaching towards pedestrian Operates within 0 ~ 50km/h
	Front Vehicle Start Alarm (FVSA) While stopped, it detects the movement of the vehicle in front and provides a warning if the vehicle stops after 2 seconds
	Headway Monitoring Warning (HMW) Attracts the driver's attention to keep the safe distance from the host vehicle to front vehicle by warning the driver

5. AI FEATURES

5.2 DSM Features

Driver Safety and Monitoring helps drive safely by using a machine vision recognition technology to prevent drowsy or reckless driving.

Main Features

	Drowsiness Alarm occurs if you close your eyes for a certain period of time while driving
	Distraction Alarm occurs if you do not look ahead for a certain period of time while driving
	Yawning Alarm occurs if you yawn while driving
	Phone Use Alarm occurs when using a mobile phone while driving
	Smoking Alarm occurs when smoking while driving
	Seat-belt Reminder Alarm occurs when the belt is not worn
	Driver ID Detection An alarm occurs when a person other than the registered driver sits in the seat

6. TECHNICAL SPECIFICATIONS

MVT-9 Technical Specifications

Application Processor		ARM Cortex A53 Octa-core@2GHz
Memory	eMMC	16GB eMMC
	SDRAM	2GB LPDDR3
Resolution		FHD@30fps
Camera Angle	ADAS	FOV=122.4 °
	DSM	FOV=131.7 °
MCU		ARM Cortex-M4, 32-bit
Network	NA:	
	LTE FDD band support:	B2/B4/B5/B7/B12/B13/B25/B26
	3G band support:	B2/B4/B5
	EM:	B1/B2/B3/B4/B7/B8/B20
	LTE FDD band support:	B38/B40
	3G band support:	B1/B2/B4/B5/B8
	GSM:	GSM850/GSM900/DCS1800/PCS1900
	AP: Asia-Pacific countries:	TBD
Wi-Fi		IEEE 802.11 b/g/n
Bluetooth		BT 4.2LE
GNSS		GPS, GLONASS
Antennas		LTE Main, LTE DRX, GNSS, Wi-Fi/BT
IMU Sensor		6-Axis Motion Tracking™ IMU - Gyroscope
LEDs		LED x 3
Buttons		Multifunction, Volume, REC button (Panic)
USB port		USB C-Type
Speaker	Nom. 1W / Max. 1.5W micro speaker	
	89dB±3dB	
Microphone		MEMS microphone -42dBV sensitivity, 59dBA SNR
Storage		Micro SD card is supported up to 128GB
SIM		Nano SIM card slot
Super Capacitor		6.0V/7.5F
Power Supply		B+, ACC(IGN+), GND
Input Voltage		DC 12V or 24V
Temperature	Operating -20°C ~ 70°C (-4°F~158°F)	
	Storage -40°C ~ 90°C (-40°F~194°F)	

MOBIL APPLICATION USER GUIDE



STEP 1

Turn your vehicle on, and wait for the MVT-9 to boot up. You will see LED lights sequence as follows: solid green



STEP 2

Press the Multi button to enable Bluetooth and Wi-Fi. The green and red LED light will start blinking.



STEP 3

From the mobile device, select the serial number that corresponding to the device.

STEP 4

When the Bluetooth is completely connected, and tap the "Join". Then it will automatically connect to Wi-Fi. You may allow the Wi-Fi access to enter the Main Menu of mobile app.



7. LIMITATIONS & LIMITED WARRANTY

7.1 Limitations

MVT-9 doesn't guarantee 100% accuracy in detecting driver status or providing warnings for all potential accident causes behind the wheel.

MVT-9 doesn't give alerts until it recognizes the driver's face. If the driver closes eyes or opens them little on purpose during face detection process, it will trigger false alerts while driving. Depending on the driver's facial characteristics, MVT-9 may not detect/recognize the driver properly.

Direct sunlight to the camera lens or the driver's face can adversely affect MVT-9's recognition performance. In case of partial or full blockage of the vision sensor, its ability to detect may be limited or MVT-9 may not work properly.

The glasses or sunglasses could reflect the sunlight or surroundings. This will prevent MVT-9 from detecting eyes and lower MVT-9's performance accuracy. Also, any object that covers the driver's face, such as a eyepatch, hat, cap, mask, muffler, or other items could affect the performance as well.

The dirt, scratch, or a fingerprint on the camera part can affect recognition performance. Do not touch this part with bare hands or anything sharp. If there is dirt or fingerprint, wipe it up gently with soft and dry cloths.

The MVT-9 is designed to operate on the paved roads with lanes which are clearly marked. The MVT-9 cannot recognize better than the driver. It is the driver's responsibility to be alert and aware at all times while driving.

The MVT-9 detects the visible vehicles ahead and the crossing, oncoming and passing vehicles cannot be detected. The MVT-9 doesn't guarantee 100% accuracy in detecting vehicles, driving lanes or in providing warnings for all potential accident on the road. The inclement weather condition can adversely affect the MVT-9's recognition performance. In case of partial or full blockage of the vision sensor's view, its ability to detect may be limited or the MVT-9 doesn't work.

7. LIMITATIONS & LIMITED WARRANTY

7.2 Limited Warranty

The term of this product warranty is 1 year from the purchase date.

This MVT-9's Limited Warranty is non-assignable and covers the original purchaser of the MVT-9 installed on the vehicle for which the MVT-9 was purchased against defects in material or workmanship for a period of one year from the date of purchase.

The sole obligation of MOVON Corporation under this Limited Warranty is to repair or replace, at MOVON's discretion, any VIDEO TELEMATIC product that is determined by MOVON to have been defective in materials or workmanship. MOVON will not be responsible for conditions arising as a result of installation.

The following are excluded from warranty coverage: (a) Damage from misuse, negligence, improper installation or accident, (b) Installation on a vehicle other than the vehicle for which this TELEMATIC product was designed, (c) Repair or alteration of this TELEMATIC product by any party other than MOVON.

Micro SD card is a consumable accessory. MOVON does not guarantee a certain period of lifespan of micro SD card. It is recommended to check the status of micro SD card on a regular basis and if micro SD card is not working properly, please contact the seller and purchase a new micro SD card.



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