Comanche

Your Silent Sentinel

User Manual

COM.4MDVR.2SDC

Thank you for choosing Comanche products. We trust that this manual is helpful to you. Should you require any further details or information please contact us on 0825533363 or email Terry on: terry@akal.co.za.

Content

1. Preface

Purpose

The purpose of the manual is to assist users to understand specifications and functions of the MDVR, so that they can install and use it correctly. Meanwhile, it facilitates technical staff to maintain the product.

Warning

Please read the following warning before you install and use the MDVR:

2. Installation and maintenance should be conducted by professionals.
3. Working voltage should be STABLE 8V~36V to avoid power damage to device.
4. Output voltage is 12V for camera only, so please do not connect with any non-recommendable equipment.
5. Connect the correct ground wires from the MDVR to the vehicle to make a loop.
6. The MDVR should be installed in dry and ventilate place, and avoiding damp condition, heat source, dust and high-intensity magnetic field.
7. Please install the MDVR at place where the vibration is weak, so that the MDVR can work more stable and longer.
8. Around where the MDVR is installed, about 20cm, it is suggested to be empty. Please leave no heavy stuff on it and keep it cooling properly.
9. Hot-plug is NOT SUGGESTED while device is on power.
10. Please maintain the storage device or SD card periodically: copy video to your computer and format your storage device.
11. Please do not open or remove any part of the MDVR without the presence of professionals.

2. Introduction

Overview of the Product

This MDVR is a high extendable cost-effective device. It adopts high speed embedded Linux system, with most advanced H.264 video encoding method and 3G, GPS technologies. It can support 4D1 25fps FULL recording, resolution by CIF/HD1/D1 optional. It integrates functions of local recording and wireless uploading the driving data to cooperate with monitoring center of alarm linkage, remote management, and video playback.

This MDVR has simple but artistic outlook, stable and anti-vibration, and easy to install (either horizontally or vertically).

Functions of the Product

FUNCTIONS	DESCRIPTIONS
Wireless Communications	Data communication via WIFI or 3G to achieve remote real-time monitoring, video download, parameter config, remote update, remote control etc.
Recording	support 1-4CH real-time audio video video recording both locally and remotely
	PAL for example: support 4CH CIF/HD1/D1, 25fps.
	Support PAL; NTSC
	OSD overlay info such as time, channel, vehicle ID, GPS, speed etc.
	Support auto overwritten and alarm recording data protect.
Storage & Playback	Support two SD storage, each max. 64GB
	Support 4CH audio video synchronous playback
	Support playback at PC
	Support remote search and playback
	Support play, pause, slow, fast etc.
Blackbox Function	Can record speed, GPS, temperature, oil level etc.
	Support 8 switching value data collect
	Support local record and vehicle data display
	Support remote real-time upload and history search and check

Product Specification

2.3.1. Parameter

Item	Parameter	Performance
System	Language	Chinese / English
	Operation System	Linux
	Interface	Imaging menu operation interface (OSD Menu)
	Password Security	2 levels: Admin; Normal user
Video	Video Input	4 composite video input
	Video Output	1 composite video input
	Video on screen	Single or quadruple video on screen
	Video standard	PAL, NTSC
	Video compression	H.264 Main profile, 100 frame / sec
Audio	Audio Input	4 audio input
	Audio Output	1 audio output
	Audio Code	G726
	Way of recording	Simultaneous recording of video and audio
Image Processing & Storage	Image format	CIF/HD1/D1 Available
	Standard of Video Stream	ISO14496-10
	Code rate of Video	CIF: 1536Kbps ~ 128Kbps ,
		HD1: 2048Kbps ~ 380Kbps ,
		D1: 2048Kbps ~ 400Kbps ,
		8 levels of image quality: Class 1 the highest resolution, and class 8 the lowest.
	Audio Code Rate	8KB/s
	Data Storage	2 SD Cards, each max.64GB
Alarm	Alarm input	8 Alarm Input

	Alarm output	2 Alarm Output
Communication Port	RS485 port	RS485*1
	RS232 port	RS232*2
	CAN port	CAN*1
	Ethernet Port	10M/100M Ethernet*1
Extend Port	Intercom port	Intercom*1
	Speaker port	Speaker*1
	Extend port	Connect control panel
	Speed port	Speed sensor*1
Wireless Modules	EVDO	EVDO module available
	WCDMA	WCDMA module available
	TD-SCDMA	TD-SCDMA module available
	WIFI	WIFI 802.11b/g/n module available
	Bluetooth	support (optional)
GPS	Build-in module, to show Geo location, speed etc. Support wreless data upload	
G-Sensor	Build-in ±8g G-Sensor	
Softwares	Vehicle Network Management System (VNMS)	Video preview, GPS information, alarm upload and command download via wireless network
	Vehicle Analysis Software (VAS)	Video playback and information of floating vehicles analysis at PC
	Server software	Server structure, management etc.
	Smartphone software	Android, Iphone, Ipad

2.3.2. Working Specification

Item	Parameter	Instruction
Power Input	+ 8V ~ + 36V	Voltage Input: + 8V ~ + 36V; If device is beyond the range for long time, self-protection mode will be activated.
Power Output	12V	Voltage output 12V (+/-0.2V 0), current

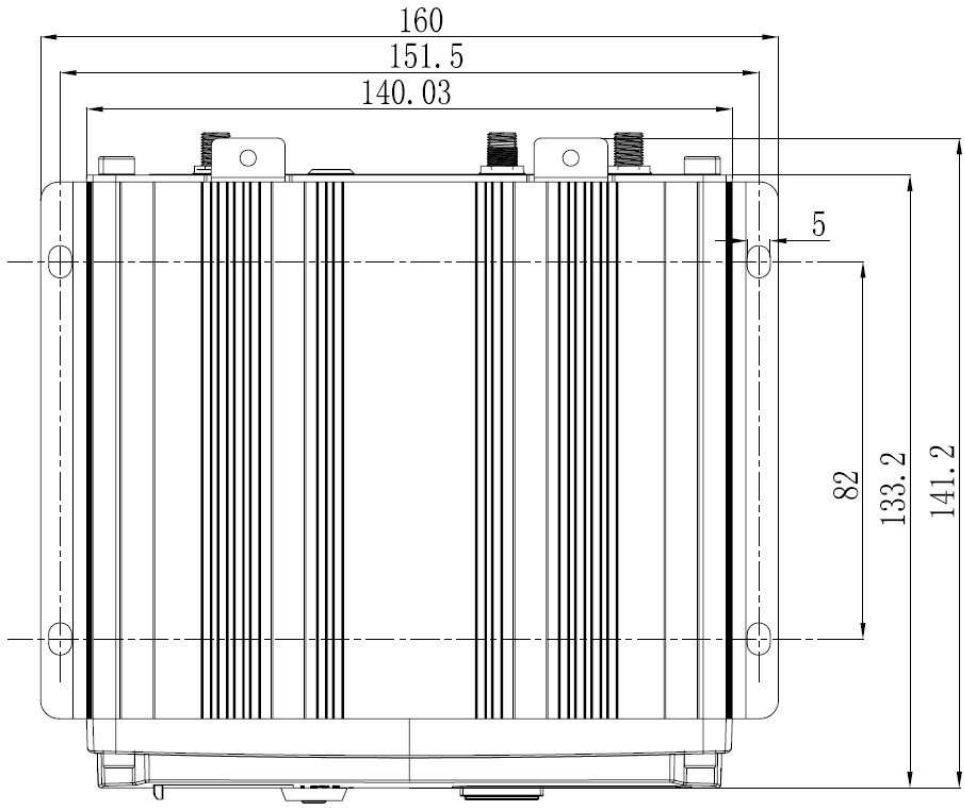
		for max.2A; Supply power for camera and/or monitor
ACC	≤6V	ACC Off
	≥7.5V	ACC On
Video Input Impedance	75Ω	Average 75Ω
Video Output Voltage	1V p-p	1V p-p CVBS signal
I/O Interface	0-4V	Alarm for low level
	> 4V	Alarm for high level
SD Card Interface	SATA Port	SD 64GB max. x1 (>level 10) For video recording, device upgrade
Working Temperature	-20°C~+80°C	Temperature in well ventilated situation

2.3.3.

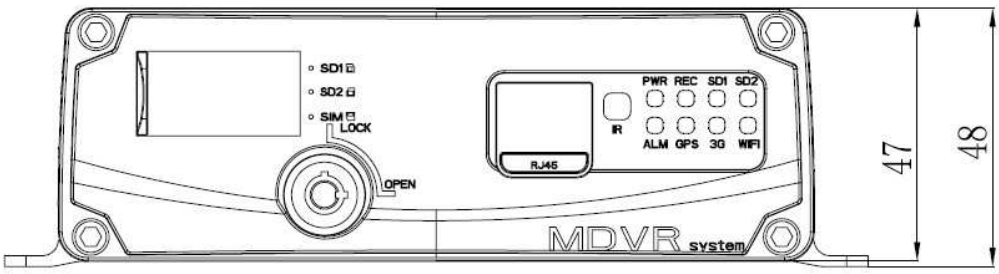
Outlook

2.4.1. Outlook of the MDVR

2.4.2.Size and Installation



2.4.3. Front End Ports and Indicator Lights

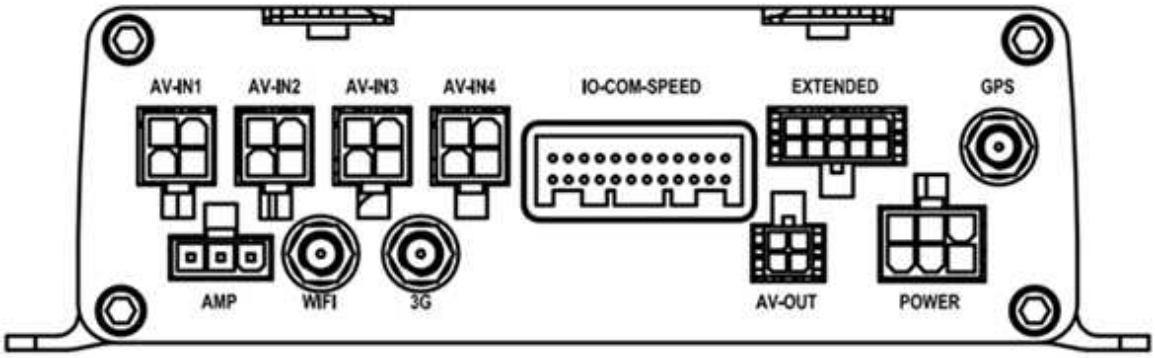


Front end ports and indicator lights as following:

Type of Panel	Item	Definition
Panel Ports	SD1/SD2	SD card slot, 2 SD cards loop recording

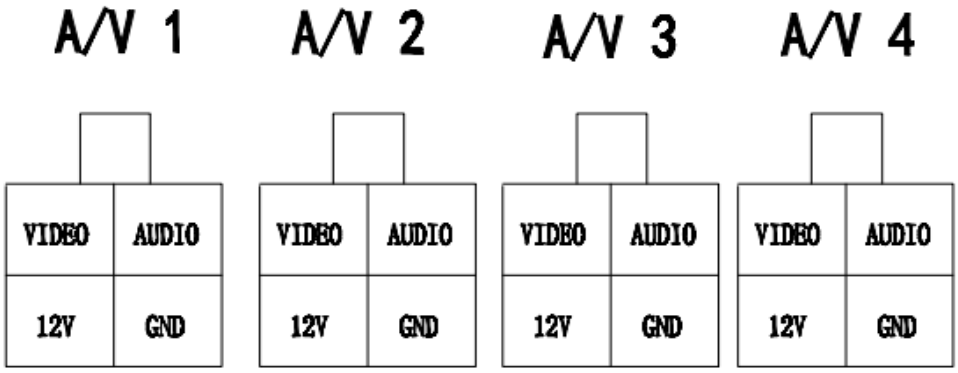
LED	SIM	3G network and dial-up
	RJ45	Ethernet port
	PWR	Power light (blue) will be on when charging
	REC	Rec light (green) will be on when recording, and be off when not recording
	SD1/SD2	SD card indicator light (green) will be on when SD card inserted, otherwise be off
	ALM	Alarm indicator light (green) will be on when alarming, otherwise be off
	GPS	GPS indicator light (green) will be on when connects to server, but it will be off when GPS module is not detected
	3G	3G indicator light (green) will be on when connects to server, but it will be off when 3G module is not detected
	WIFI	WIFI indicator light (green) will be on when connects to server, but it will be off when WIFI module is not detected
IR	IR Port	Receiving remote control
Electronic Lock		If the SD card and SIM card lock is unlocked, the MDVR will not be on. Once it is unlocked, the MDVR will be standby

2.4.4. **Back End Ports and Definitions**

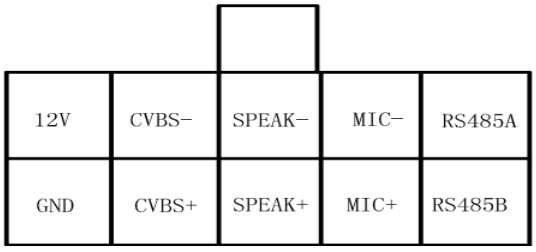


Port Definitions

A/V input Port:



EXTEND Port



IO Series Port

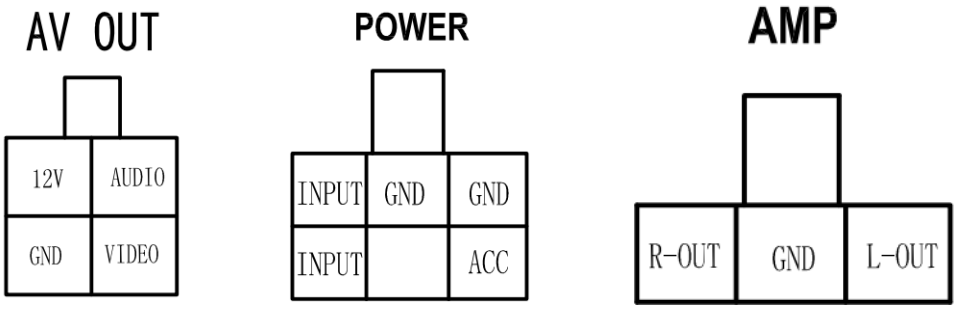
IO-COM-SPEED

12V	SPEEDB	SPEEDA	GND	ALM-IN1	ALM-IN2	ALM-IN3	ALM-IN4	ALM-IN5	ALM-IN6	ALM-IN7	ALM-IN8
GND	ALM-OUT2	ALM-OUT1	GND	RS232_RX_NO2	RS232_TX_NO2	RS232_RX_NO1	RS232_TX_NO1	CANL	CANH	RS485B-NO1	RS485A-NO1

IO-COM-SPEED (11 cables)

12V				ALM-IN1	ALM-IN2	ALM-IN3	ALM-IN4				
GND		ALM-OUT1				RS232_RX_NO1	RS232_TX_NO1			RS485B-NO1	RS485A-NO1

POWER & A/V out Port



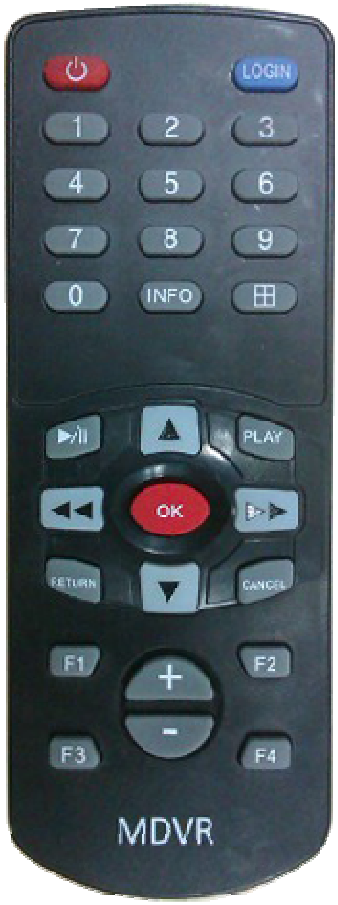
Panel Interface	Definition
AV—IN1~AV—IN4	4 channels of audio and video input ports
AV—OUT	audio and video output ports
IO—COM—SPEED	8 channels of IO alarm input, 2 channels of alarm output, 1 RS485 ports, 2 RS232 ports and pulse speed measurement port
EXTENDED	Intercom and display
AMP/CAN	Amplifier or CANBUS
POWER	Power input, DC8-36V
GPS	GPS antenna port
3G	3G antenna port
WIFI	WIFI antenna port

3. MDVR Instruction

Functions of Remote Control Keys

Button and functions introduction:

LOGIN	Press LOGIN and input password of the MDVR. NOTE password should be remembered as it cannot be retrieve or reset.
	Power button
0-9 number keys	Switch to single channel view by press 1-9. It can also be used as volume and lightness adjustment.
INFO	A shortkey to check device running status, includes: 3G/GPS, alarm, disk recording and version status etc.
	Switch 4-8-1 image.
▲ ▼ ▶▶ ▶▶	UP, DOWN, LEFT, RIGHT. It also is used to control fast and slow speed of player. The UP and DOWN also be used to switch the 1-4, 5-8 image.
【OK】	Confirm



▶/ ‖	Pause/Play when doing video playback.	
PLAY	Start to play video	
RETURN	Return to the last menu till the live video page.	
CANCEL	Cancel or backwards	
- + symbols	Space delimiter when in editing; volume adjustment	
F1, F2, F3, F4	Keys for backing up	

3.1.1. **LOGIN**

The device support 2 USER level for login: user, admin. The "user" can only check but with no right for parameter setting which "admin" has.

USERS can set password or NO password for login.

3.1.2.System Operation and Setup

NOTE:

- The herein setting mentioned should be SAVED first before being effective.
- When in the setting page, device recording will be paused.

Main menu: display of main settings, system setting, video setting, playback, management tools, external equipment, network setting, alarm setting and system information.

System setting: system management setting, including sub menu as following: time, user, switch and terminal setting.

Time setting: date and time setting

- Format of date: year/month/date, month/year/date or date/month/year, press【ENTER】 to switch among formats
- Date: displayed as the chosen format, if you input by number keys it can be proofed manually.
- Time: hour/minute/second, if you input by number keys it can be proofed manually. GPS timing: on/off, when GPS signal is available, it will begin timing once there is error of system time.
- Daylight Saving Time: on/off, setting time of start and exit according to time zone.
- Operation overtime (30~600 seconds): after logging on, it will return to preview interface if there is no signal from the remote control in set time.

Terminal setting: logging on setting

- Device number: there is an unchangeable serial number of the MDVR, which is the only ID when reporting to the surveillance center

- Name of the company: press ENTER and input
- Plate number: press ENTER and input, so the name of the vehicle will be shown in the surveillance center
- Name of driver: press ENTER and input

On/off:

- On/off mode: switch by pressing ENTER between ignition and timing mode.
- Ignition: once the car is ignited by the car key, the MDVR will be on. It can be turned off by the car key.
- Timing: the MDVR will be on only it is due time, also it will be off when time dues.
- Power off delay: it will be activated only in the mode of ignition. When the car key turns off the MDVR, it will be standby mode.

Record setting: video recording, setting of stream flow, including general setting, channel setting, sub stream flow and mirror setting

General setting: general video recording setting

- Video mode: PAL and NTSC modes available, press【ENTER】 to switch
- Record mode: record when power on, timing record or record when alarm modes available, press【ENTER】 to switch
- Auto cover: on/off, press【ENTER】 to switch

  On: when the storage is full, the earliest video will be covered by new ones

  Off: when the storage is full, the MDVR will stop recording
- Output volume (for video playback): grade 0-15 available, press【ENTER】 to switch
- Alarm recording: record videos before alarming
- Alarm recording delay: after alarm is lifted, the recording will continue for the set time

Channel setting: video recording setting for each channel

- Enable:

  On: turning on the channel

  Off: the channel will not record video and the log will not be lost even video is lost

- Resolution: D1, HD1 and CIF available, e.g.: D1 resolution is 704*576 in PAL mode, HD1 is 704*288, and CIF is 352*288.
- Frame rate: frames taken per second, in PAL mode is 1-25 frames/second, and in NTSC mode is 1-30 frames/second

  Quality: the definition of video, 1-8 grade available, Grade 1 is the best quality
- Audio recording: on/off while video taking
- Preview: on/off while video taking
- Volume: input volume of the MDVR

Sub stream setting: transmission of video stream in 3G network

- Resolution: D1, HD1 and CIF available
- Bitrate: 1/32/48/64/80/96/128/200/256/384 available
- Frame rate: auto adjust the size of frame rate according to the set bitrate

Timing setting: time period for video recording

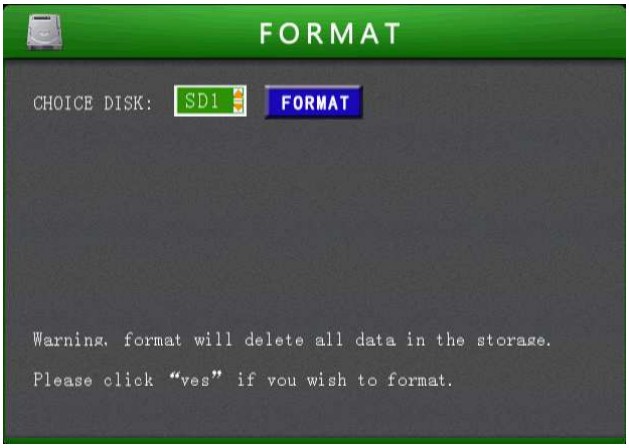
- There are 4 periods can be set for a single day.
- Everyday: set period works from Monday to Sunday.
- Setting of time period: the start time cannot be later than the finish time.

Video play: playback of videos

- Calendar: green means normal video recorded, red means alarming video recorded and blank means no video recorded.
- Record type: all/alarm
- Select disk: all/SD1/SD2
- Video can be searched by date.

Tools: format, configuration and log query

Format: formatting disc with video



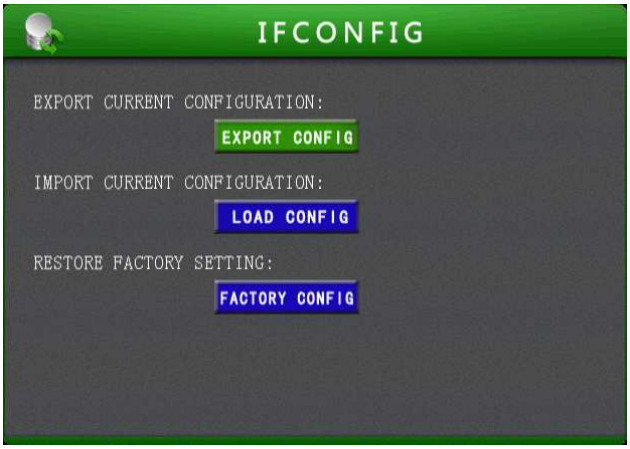
Selection of disc: SD1/SD2 will consort with the SD port marks on the front end of the MDVR. After format, the SD card will be EXT3 format.

Note: Format will clear ALL data on the SD card.

Attachment: Manual of SD card

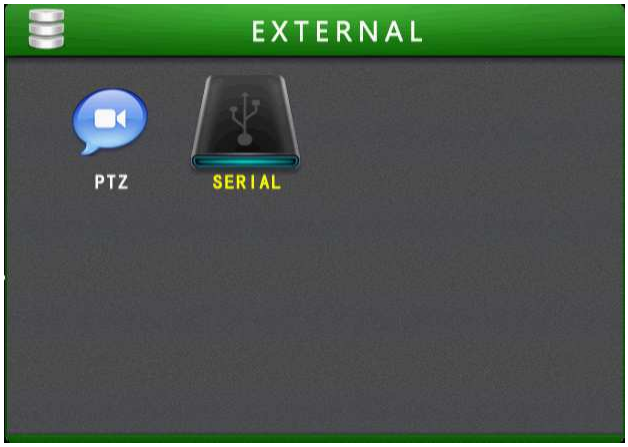
- **Auto format when power on:** when the MDVR start, SD card will start self-estimating, if the format is not ext3. During the formatting, there will be a notification at the right side of display: SD card formatting.
- **Manuel of video taking SD card on computer:** you will have to install ext3 driver (Ext2FSD-0.51.exe) on your computer to start read the SD card, otherwise you will be reminded to format your SD card. It is suggested to install Paragon Partition Manager as your format tool. A 32G SD card will take 1 hour to format.
- **SD card recovery:** ext3 files are recoverable, when the file system corrupts. When the MDVR powers on or read the SD card on a computer, it will start recovery for 0-30 minutes. While its recovery, the MDVR can log on, GPS locate and video monitor. After recovery, it can begin to record video automatically. If it recovers on the computer, the indicator light on SD card reader will be flashing until it finish. After recovery, the indicator light on SD card reader will be on and the drive of SD card will appear on the computer. Sudden power off can harm to the file system, so please make sure there is constant power supply.

Configuration: management of configuration



- Export current configuration: exporting configuration files from the MDVR to SD card, and the files can be imported to other MDVR of the same kind
- Import current configuration: import current configuration of the MDVR, and it simplifies the process of configuration to several MDVR manually.
- Restore factory setting: restore to default setting.

External management: setting of external equipment by serial ports



External management: PTZ and serial port setting

PTZ: PTZ setting

- PTZ: 2 protocols supportive at the present: PELCO-D and PELCO-P, for baud rate, data bits, stop bit, proof and address.
- PTZ operation: after setting, return to straight image and switch to PTZ channel. Press PTZ key and enter PTZ control.
- Preset: in PTZ control, you can find preset camera by up, down, left and right keys. Pressing PRESET, and select the preset number by + and – keys, then press ENTER to finish the configuration.
- Calling: press CALLING key on the remote control, and press the preset number, then press ENTER, the camera will turn itself to the preset point.
- Auto: press AUTO key on the remote control and the camera will go through preset points automatically.

Serial ports setting：2 RS232 and 1 RS485 serial ports configuration

Select external equipment at serial ports and parameters as baud rate will be default. If the external parameters disaccord from default ones, you can modify them manually and save them before you exit.

Network setting: local IP, WIFI,3G dialup, server connection setting

Center setting: connect to the center server

2 center servers can be connect at the same time and report domain server supported.

Local setting: IP of the computer

Setting of local IP, you can connect to RJ45 to Ethernet.

3G setting: 3G dialup setting

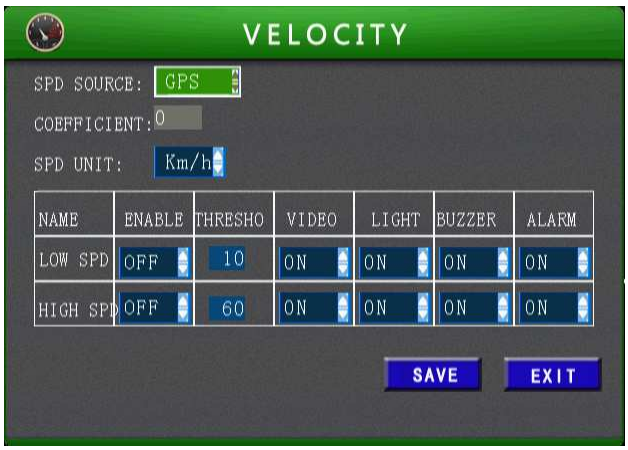
3G dial up setting, select type of module, and you may change the default setting of public network, if you intend to connect to a private internal network.

WIFI setting: WIFI module connecting to wireless router

The parameters of WIFI module connect to wireless router, static IP supportive, and you will set IP and AP in the same network segment manually.

Alarming setting: finishing setting of alarming, including I/O, speed, accelerate, and temperature alarming

Velocity:

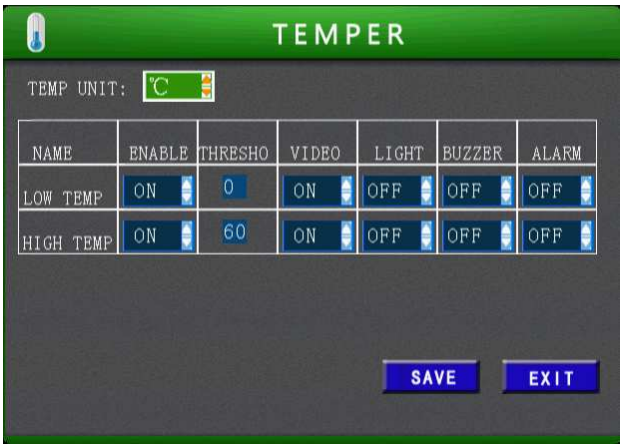


- Source of speed: select pulse signal of floating vehicles
- Coefficient: pulse rotation rate for a kilometer
- Speed unit: Km/h or MPH
- High speed: the speed surpassing the threshold value and it will alarm
- Low speed: the speed surpassing the threshold value and it will alarm
- Enable: on/off, whether it needs overspeed alarm
- Threshold value: value of high and low speed
- Video record: on/off, if it will be recording while there is a speed alarm
- Light control: on/off, if the indicator light will be on while there is a speed alarm
- Buzzer: on/off, if the buzzer will be on while there is a speed alarm

Accelerate:

- Separate alarm for x, y and z axis of accelerate
- Enable: on/off, whether it needs testing alarm
- Threshold value: it alarms when it exceeds the value
- Video recording: on/off, whether it will be recording when there is a speed alarm
- Light control: on/off, if the indicator light will be on while there is a speed alarm
- Buzzer: on/off, if the buzzer will be on while there is a speed alarm
- Testification: showing the scale of x, y and z axis in real time, and press the testification key.
- Save: every channel has to save separately.

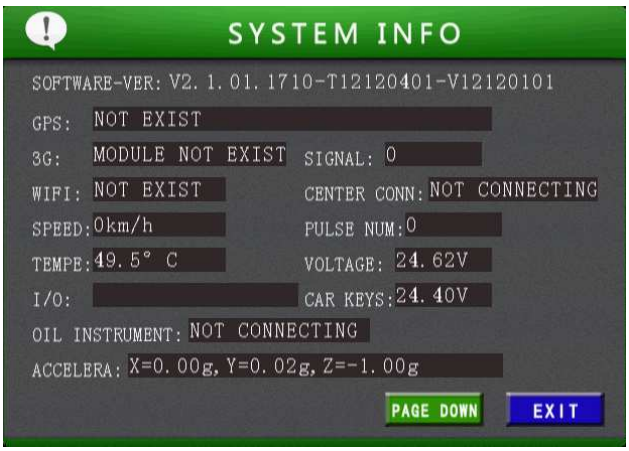
Temperature:

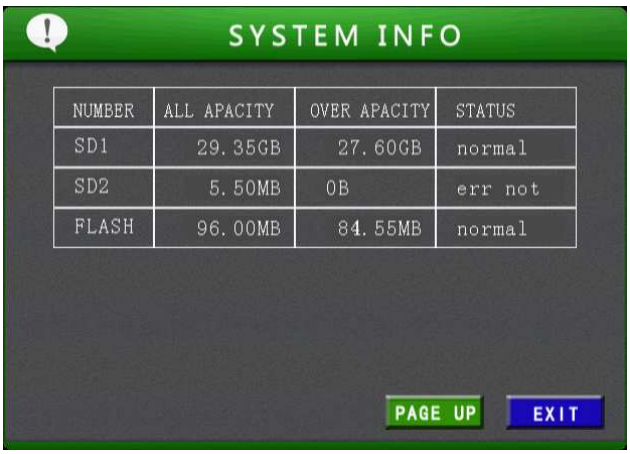


- Low temperature: when the temperature is lower the threshold value and it will alarm
- High temperature: when the temperature is higher the threshold value and it will alarm
- Enable: on/off, whether it needs temperature alarm

- Threshold value: it alarms when it exceeds the value
- Video recording: on/off, whether it will be recording when there is a temperature alarm
- Light control: on/off, if the indicator light will be on while there is a temperature alarm
- Buzzer: on/off, if the buzzer will be on while there is a temperature alarm

System information:



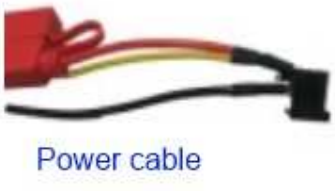


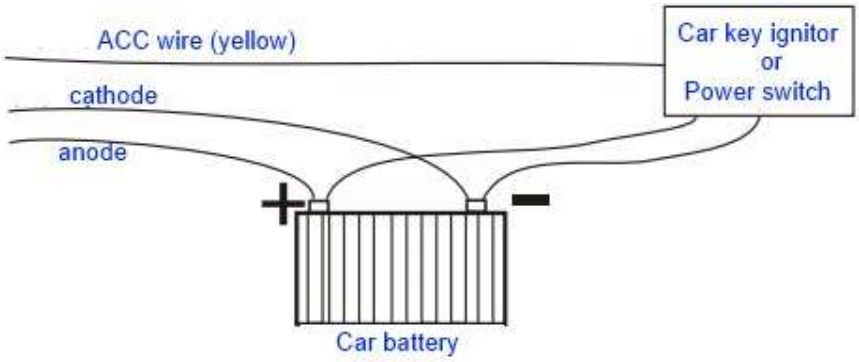
Press INFO and you can quick launch the menu to view the situation of module, connection to center server, alarm, version and storage disk.

Cable Connection

4.1. How to get DVR on power?

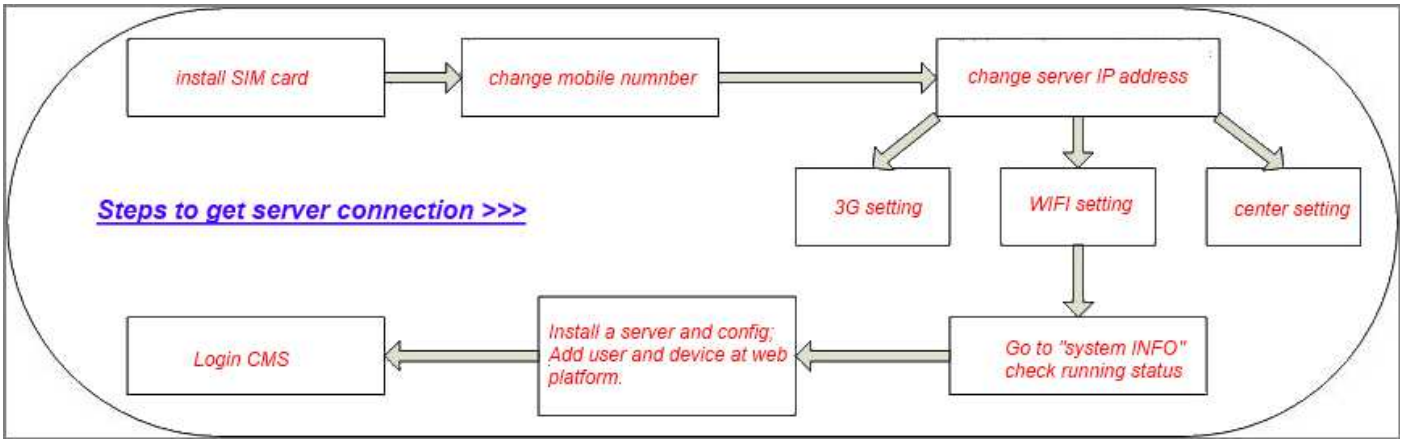
The anode (red) and cathode(black) should be directly connect with car battery. Any indirect way is not recommended.
The ACC(yellow) wire can either connect the anode of car battery directly(method A) or via the car igniter indirectly(method B). Pls note for schedule recording mode, connection should be A method.
Pls ensure power kept DC8-36V voltage with stable.
After, lock the device by the Key to boot up the MDVR.





4.2. How to get connection with server?

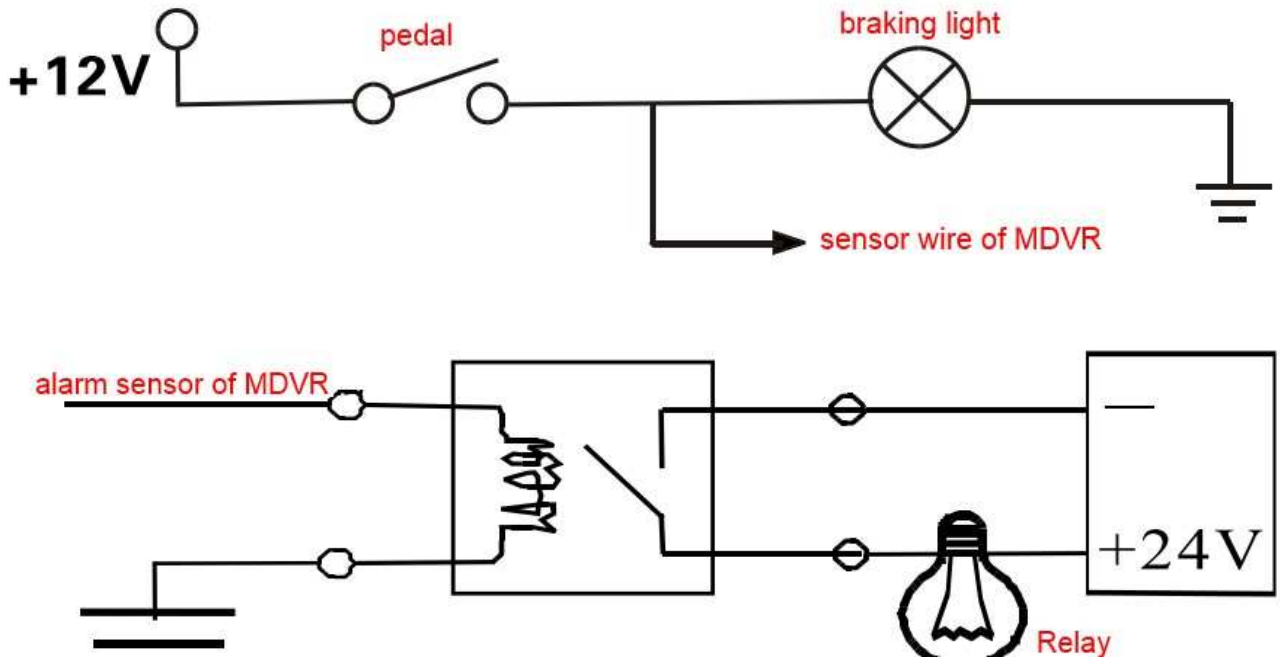
*If device has no Wifi and/or 3G, this part can be ignored.
Step1. Get 3g/wifi ready with antenna and sim cards.
Step2. Turn on DVR, enter into setting, go to "system set – terminal set", fill in the 3g sim number.
Step3. Back to setting, go to "net set – center set", change the IP with server IP address (port keep default 6608)



4.3. How to use IO alarm series port?

The device has 12 alarm input, and 2 alarm output. Alarm is triggered by high and low voltage preset for actions such as "braking, sheering, car igniter, alarm button" etc. For example, when driver pushes the pedal down, MDVR sensor a high voltage, otherwise low voltage.

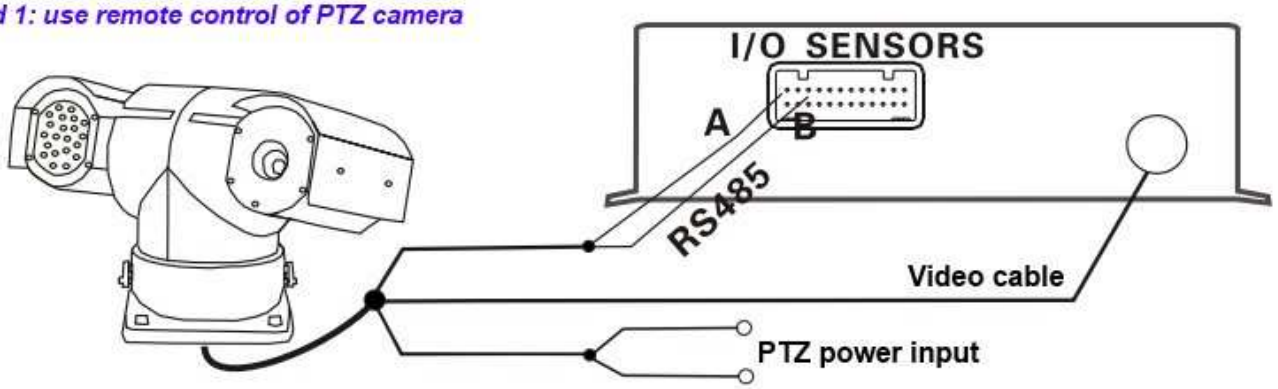
Pls note the herein alarm is of ability to accept max.200mA. To connect device of high power, an outer relay is a must for the connection.



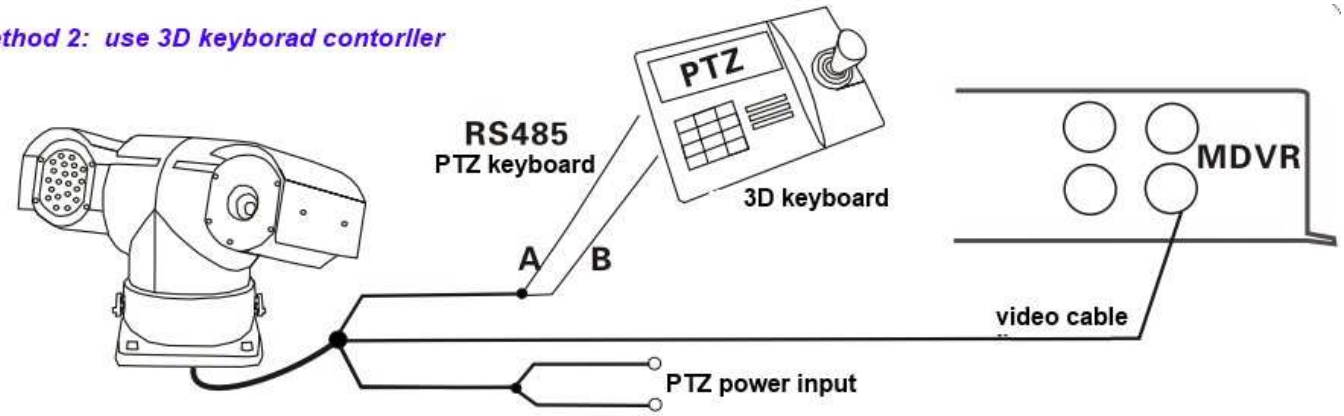
4.4. How to connect PTZ (pan/tilt and zoom) camera?

Step1. Select PTZ protocol: PELCO-D or PELCO-P
Step2.Select baud rate: values according to what's at PTZ camera.
Step3. Choose address code: values according to what's at PTZ camera
Step4. Cable connection: one 485 wire from PTZ camera to connect RS485-A of MDVR end (anode), the other wire connects RS485-B (cathode).

Method 1: use remote control of PTZ camera



Method 2: use 3D keyborad contorller



F.A.Q

5.1. Recording Questions

5.1.1. Why is it not recording video after the MDVR is on?

①. Please check if there is a SD card in the SD card slot
②. If there is a SD card, please check the status of storage disk:
Status types: nonexistence, unformatted, normal volume of under usage and normal volume of full usage
Statement of status:
a. nonexistence, if the MDVR does not detect any SD card, please detect the SD card on your computer, or change it; see if it is the problem of SD card or the MDVR.
b. Unformatted, please format it. After finish, please see if the SD card volume is properly detected
c. normal volume of under usage, please check the video recording mode and see if it is alright to start video recording
d. normal volume of full usage, please check if auto cover is enabled

5.1.2. Why is the MDVR reboot when it is onboard?

①. Frequent reboot: the MDVR gets online and offline frequently, discontinuing video recording
②. Reason to frequent reboot:
a. Unstable onboard power supply: please test input voltage when the MDVR is not working properly. (This is common case.)
b. There is problem within the storage disk: please format it or change it after you save data.
c. Problem of software of hardware: please take out the storage disk or SD card, and see if the MDVR is working properly. If not, please notify your version of software to our technical engineers. It may be recalled and repaired

5.2. GPS Questions

5.2.1. Why can't I check out GPS information in the MDVR?

①. See if the GPS module exist on the MDVR
②. Check if GPS antenna is properly connected. GPS antenna should be put on places without shelter, otherwise it may not be able to receive signals. When floating vehicle going through tunnels or high-rises, it is normal to be no signal.

5.2.2. Why can't I check out location information of vehicles?

①. Please check the update time period of the GPS on the platform software

②. Location information will be updated to the platform only GPS signal is receiving normally, so please check if the GPS signal is displayed properly on the MDVR

5.3. 3G Questions

5.3.1. Fail to 3G Dial Up

①. Check module status, dialup setting

②. Check if the antenna is connected and 3G signal strength

③. Check SIM card status and see if it is internet-capable, arrearage.

5.4. Server Questions

5.4.1. Why can't I connect to back end servers when the MDVR is working?

①. Please make sure 3G module is dial up and connect to 3G platform

②. Check the IP and server port is right, and make sure report ID is not conflicting

③. Check back end server is working properly, and see if there is other vehicle online