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# VX4AI

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## VULCAN™ SERIES

### Mobile DVR User Manual



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#### Notice

The information in this manual is subject to change without notice. AngelTrax reserves the right to develop and update current and future products, instructions and materials. Updates to instructions and materials will be available for AngelTrax customers at [www.angeltrax.com/support](http://www.angeltrax.com/support).



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The following instructions should be included in your Vulcan Series MDVR packaging. Please follow these instructions carefully when configuring camera settings for your MDVR.

## **ATTENTION:** Required Menu Settings

### **1. Set Vehicle ID.**

Menu > Setup > Registration Info > Vehicle Info

- Enter Vehicle ID in text box.
- Enter Vehicle License Plate in text box.

**SAVE**

### **2. Set Time Zone.**

Menu > Setup > Time Setup (Set Time Zone)

**SAVE**

### **3. Set Date and Time.**

Menu > Setup > Time Setup > Time Sync (Set Date & Time)

**SAVE**

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## >> TRADEMARK LEGAL NOTICE

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# Guarantee and Warnings

## 1) ELECTRICAL APPARATUS SAFETY

All installation and operation should comply with local electrical safety laws.

## 2) TRANSPORTATION

In the process of transportation, storage and installation, please avoid heavy stress, violent vibration, impact and water splashing.

## 3) INSTALLATION

Before installation, please open the package and ensure that all parts are included.

Install the equipment in accordance with the requirements. Handle equipment with care until the MDVR installation is complete.

## 4) REQUIREMENTS OF ENGINEERS AND TECHNICIANS

All installation and setup should be completed by qualified, certified technicians and engineers. **AngelTrax does not assume any responsibility caused by unauthorized modifications.**

## 5) ENVIRONMENT REQUIREMENTS

The equipment should be installed and stored in a dry place, away from flammable or explosive substances, etc. Keep gaps not less than 1.2 inches around the device to facilitate ventilation for cooling.

## 6) ACCESSORIES

For installation and use, make sure to use only the accessories provided or recommended by the manufacturer.

Insulate circuit ground and metal shell for all peripherals.

If warranty service becomes necessary, contact AngelTrax's **Technical Support Department** by phone at **1.800.673.1788** or through the **Contact Us** form on the AngelTrax website ([www.angeltrax.com/contact](http://www.angeltrax.com/contact)).

## 7) STORAGE MEDIA

Use only storage media purchased from AngelTrax in your Vulcan Series system, to ensure compatibility and proper function.

**WARNING:** *Vulcan Series microSD cards must NOT be formatted with your computer. To ensure compatibility with the unit and FlexPlay Pro 8 playback software, Vulcan Series microSD cards must be formatted through your Vulcan Series MDVR.*

# Abbreviations

Term	Description
MDVR	Mobile Digital Video Recorder
FPS	(Picture) Frames Per Second
GPS	Global Positioning System
HDD	Hard Disk Drive
IR	Infrared
AI	Artificial Intelligence

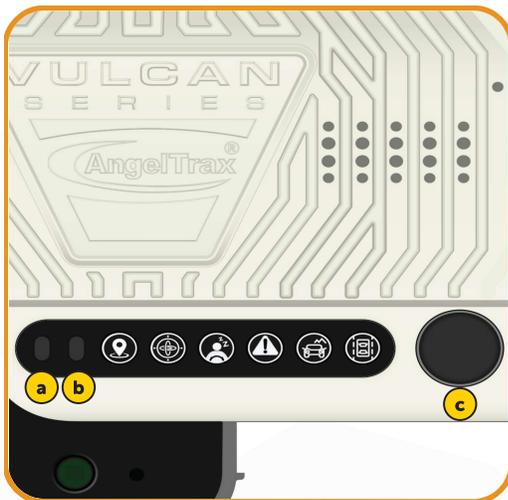
Term	Description
LAN	Local Area Network
MPEG	Picture Format
TCP/IP	TCP/IP Protocol
USB	Universal Serial Bus
MCU	Microcontroller Unit

# PRODUCT OVERVIEW

## » VX4AI ALL-IN-ONE MDVR

### VX4AI OVERVIEW

Mounted to the inside of the vehicle's windshield, the Vulcan Series VX4AI All-In-One MDVR features two built-in HD cameras: one capturing an exterior view through the windshield, the other an interior view of the cab, driver and passengers. This powerful device's built-in AI processor helps capture a definitive account of what really happens on the road by detecting certain driving events and automatically uploading them to a secure server for review. The VX4AI's privacy feature can be activated to turn off the interior camera and microphone when the vehicle is at 0MPH.



### LED INDICATORS (from left to right)

- a Recording:** Normal (green), Failure (orange), No SD card detected (orange), Privacy Status (blinking orange)
- b Server Status:** At least one server from PROCMS and Mototrax is connected (green), SIM card issue (orange), Wi-Fi is in AP mode (blinking green), SIM card is normal but no server is connected (LED off)
- GPS:** Normal (green), Abnormal (orange)
- G-force Sensor:** No driver behavior event triggered (LED off), Event triggered (orange)
- Fatigue:** No fatigue event triggered (LED off), Event triggered (orange)
- Distraction:** No distraction event triggered (LED off), Event triggered (orange)
- Front Collision:** No front collision triggered (LED off), Event triggered (orange)
- Lane Departure:** No lane departure triggered (LED off), Event triggered (orange)
- c Built-in Panic Button:** Press once for panic alarm, press twice for privacy mode, press and hold for 3 seconds for Wi-Fi mode

## » Features

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### HARDWARE FEATURES

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- Supports DC12~36V wide voltage input featuring protection for over voltage, under voltage, short circuit and over current.
- Capable of recording up to two (2) microSD cards, up to 512GB per card, with a total storage capacity of 1TB.
- Features built-in Wi-Fi module, cellular module and GPS.
- Designed for convenient operation and enhanced with built-in Easy Check.

### SOFTWARE FEATURES

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- 24-hour single-file recording mode. (Timeline mode playback makes the operation more convenient.)
- Supports dual streams for main/substream recordings.
- Built-in H.264/H.265 codec. (User can manually configure the video coding attributes.)
- A series of synchronous operations: information record, recording playback, file backup, network transmission, and more.
- Supports multiple languages.
- Adapts dynamic coding technology to adjust the dynamic change of network 4G bandwidth and ensure the fluency of monitoring video remotely via 4G network.
- Multi-information display including vehicle number, time/date information, channel information, alarm information, GPS information and speed information. User can set video recording overlay and information record.
- Supports ignition delay and shutdown recording delay.
- Supports power protection to ensure that the last video data is not lost.
- Local recording: 5MP, 1080P, 720P, WD1, and D1 resolution optional.
- Network function: supports wireless uploading of video, which can recognize the remote video surveillance, video download, remote alarming and network timing of the equipment, network setting and remote upgrade, etc.
- Upgrades all applicable items simultaneously.

## » Tech Specs

### Vulcan™ Series VX4AI ▾ All-in-One Mobile DVR

#### MDVR FEATURES

##### DIMENSIONS

- Height: 5.3 inches
- Width: 4.8 inches
- Depth: 1.9 inches
- Weight: 1.7 pounds

##### FOUR (4) A/V INPUTS

- 4 channels 1080P  
2 built-in HD channels; additional 2 channels with optional cable (1 IP + 1 HD)

##### VIDEO/AUDIO OUTPUT

- 1 channel CVBS

##### STORAGE MEDIA

##### RECORDING MEDIA

- Supports two (2) microSD cards
- Up to 512GB available, per slot (up to 1TB total)

##### IMAGE RESOLUTION

##### MAINSTREAM

- DSC: 1080@30 FPS
- ADAS: 5MP@30 FPS

##### RECORD RESOLUTION

##### MAINSTREAM

- DSC: 1080P@30 FPS
- ADAS: 5MP@30 FPS
- AHD: 1080P@30 FPS
- IPC: 1080P@30 FPS

##### SUB STREAM

- 4 x CIF@30 FPS

##### IMAGE SETTING

- Brightness, chroma, contrast, color saturation and sharpness

##### INTERFACE

##### COMPRESSION FORMAT

- Video: H.264/H.265
- Audio: ADPCM, G.711/G.726 (default: G.711)

##### NETWORK

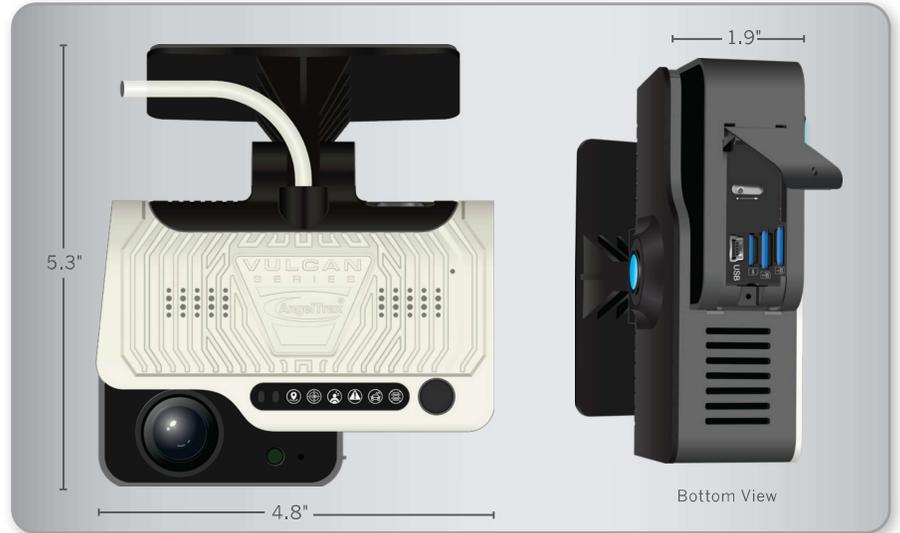
- Wi-Fi: 2.4G & 5.8G
- IEEE Std. 802.11a/b/g/n/ac
- 4G Support (For North America)  
LTE FDD: B2/B4/B5/B12/B13/B14/B66/B71  
WCDMA: B2/B4/B5

##### GPS

- GPS L1 1575.42 MHz
- BDS B1 1561.42 MHz
- GALILEO E1B/C1
- GLONASS L1OF 1602 MHz
- SBAS: WAAS, EGNOS, MSAS, GAGAN

##### NETWORK PROTOCOL

- HTTP, TCP, ARP, UDP, FTP, DHCP, DNS, IPV4, NTP



##### PORTS

- RS232 x 1, CAN x 2, Speed x 2
- USB B (with adapter)

##### DEVICE MANAGEMENT

- Built-in Easy Check module for efficient firmware maintenance and upgrades via VConnect+ Device Management App using Wi-Fi module and active Internet connection

##### DRIVER ACTION DETECTION

##### PANIC BUTTON

- Built-in
  - Panic alarm trigger: Press once
  - Record privacy: Press twice (Interior camera and microphone will stop recording while vehicle speed is 0 MPH.)
  - Wi-Fi mode: Press for 3 seconds (Switch Wi-Fi to AP mode; AP mode is for VConnect+ App connection)

##### DRIVER ACTION DETECTION WIRES

- 2 signal wires individually programmable to indicate alarm or event

##### ELECTRICAL AND OPERATING REQUIREMENTS

##### DELAY OFF SETTING

- Ignition Delay: This setting allows the MDVR to shut down after a set period of time after the vehicle is turned off.
- Shutdown Recording Delay: This setting allows the MDVR to keep recording for a set period of time after the vehicle is turned off (only used in Wi-Fi downloading).

##### OPERATING CONDITIONS

- Normal: -40°F ~ +158°F (-40°C ~ +70°C)
- Storage: -40°F ~ +185°F (-40°C ~ +85°C)
- Humidity: 15% ~ 90%

##### POWER INPUT

- DC12V (9V ~ 36V)

##### POWER OUTPUT

- 5V@1000mA (IR off)
- 12V@500mA (IR on)

##### POWER CONSUMPTION

- Operating: < 8W
- Maximum: ≤ 11.5W

##### LOW VOLTAGE PROTECTION

- DC8V (user selectable and programmed at installation)

##### HOUSING/CASING MATERIAL

- Driver facing plate: aluminum alloy
- Road facing plate: plastic

##### BUILT-IN CELLULAR MODULE

##### BUILT-IN WI-FI MODULE

##### BUILT-IN GPS

##### BUILT-IN G-FORCE SENSOR

##### AI FEATURES

- Phone detection
- Following too closely
- Seatbelt detection
- Collision warning

## » Tech Specs

### Vulcan™ Series VX4AI ▼ All-in-One Mobile DVR

#### CAMERA FEATURES

Mounted to the inside of the vehicle's windshield, the Vulcan Series VX4AI All-In-One MDVR features two built-in HD cameras: one capturing an exterior view through the windshield, the other an interior view of the cab, driver and passengers. This powerful device's built-in AI processor helps capture a definitive account of what really happens on the road by detecting certain driving events and automatically uploading them to a secure server for review. The VX4AI's privacy feature can be activated to turn off the interior camera and microphone when the vehicle is at 0MPH.

#### INTERIOR FACING CAMERA

- 2.1mm focal length
- 2MP 1/2.8" CMOS sensor
- Infrared
- Signal to noise: ≥ 48dB

#### EXTERIOR FACING CAMERA

- 2.8mm focal length
- 5MP 1/2.7" CMOS sensor
- Signal to noise: ≥ 39dB

#### IMAGE FRAME RATE

- 1-30 FPS

#### SHUTTER SPEED

- 1/30s - 1/100000s

#### LED INDICATORS

- Recording: Normal (green), Failure (orange), No SD card detected (orange), Privacy Status (blinking orange)
- Server Status: At least one server from PROCMS and Mototrax is connected (green), SIM card issue (orange), WiFi is in AP mode (blinking green), SIM card is normal but no server is connected (LED off)
- GPS: Normal (green), Abnormal (orange)
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- Distraction: No distraction event triggered (LED off), Event triggered (orange)
- Front collision: No front collision triggered (LED off), Event triggered (orange)
- Lane departure: No lane departure triggered (LED off), Event triggered (orange)



#### AUDIO

- Built-in noise-gated microphone
- Built-in speaker
- Built-in audible alarm with on/off switch (accessible only in firmware) alerts driver of event

#### IMAGE CONTROL

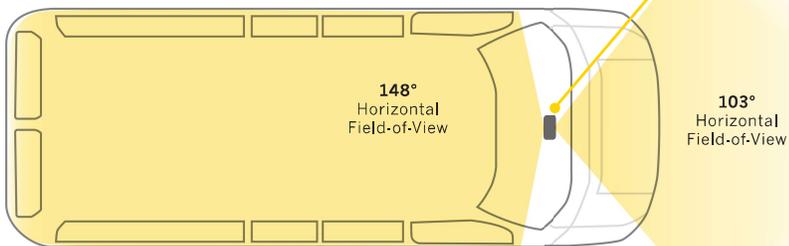
- Wide Dynamic Range
- Backlight Compensation: Supported

#### PRIVACY BUTTON

- Deactivates microphone and interior camera for driver privacy (activated only when vehicle speed is 0MPH; camera will switch to normal record mode when speed exceeds 5MPH)

#### WI-FI SWITCH

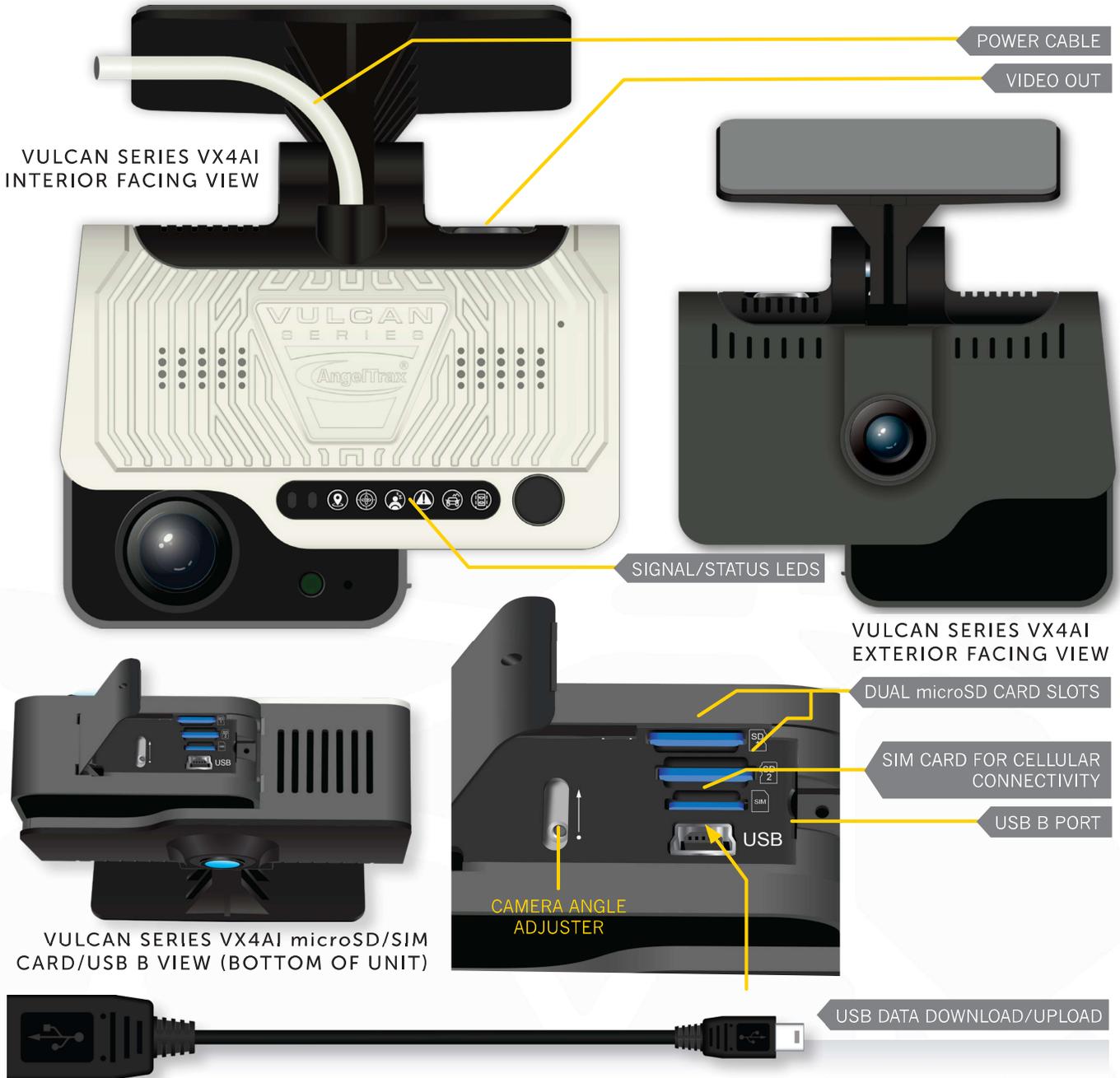
- Enables recording unit's Wi-Fi to switch to AP mode for system configuration and maintenance



## » Wiring Diagram

### Vulcan™ Series VX4AI ALL-IN-ONE HD/IP MDVR with Dual Built-in HD Cameras

MDVR INSTALLATION WIRING GUIDE



#### STANDARD ACCESSORY PACKAGE

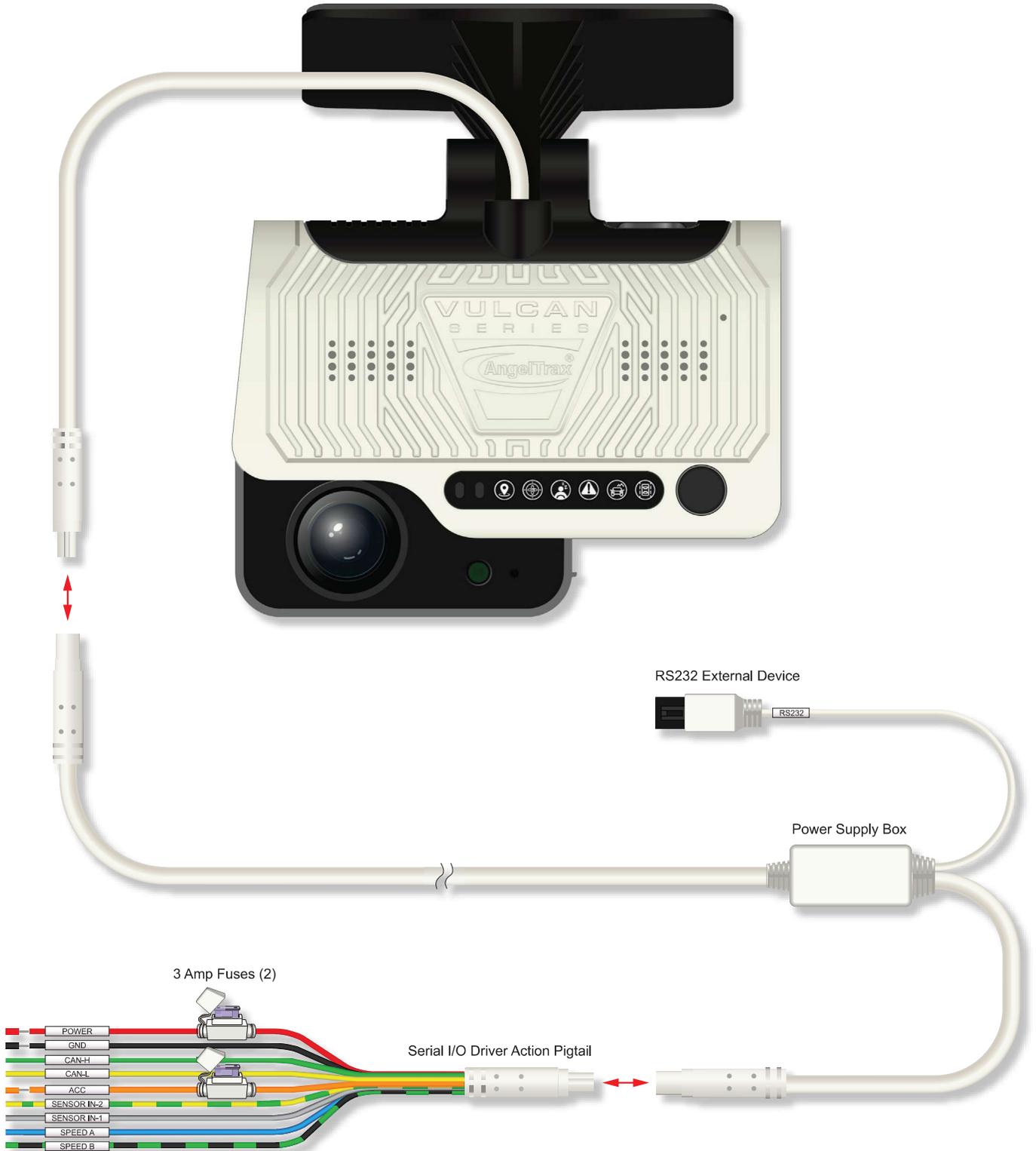
- VIDEO OUT CABLE RS765-6 PIN
- SERIAL I/O DRIVER ACTION PIGTAIL with 3 Amp Fuses (2)
- POWER SUPPLY BOX and Extension Cable
- USB A FEMALE TO MINI USB B ADAPTER CABLE
- VULWL1 Warning Labels
- Small Screwdriver (for Accessing microSD/ SIM card/USB B door)
- Alcohol Wipe
- Mounting Screws (2)
- Panel Tool for Installation

Specifications, features and applications of use are subject to change without notice. ▼ 3/7/2022

## » Wiring Diagram

### Vulcan™ Series VX4AI

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## » Getting Started with VConnect+

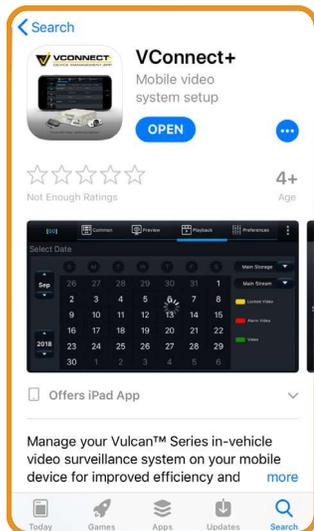
### FULLY MOBILE

Using the VConnect+ app on your mobile device, you will be able to conveniently check the system's status, see multi-channel camera views in real time, prepare video for external SD card transfer, and configure firmware updates and settings backups. VConnect+ also allows for real-time views during camera installation for optimum camera placement, right on your mobile device.



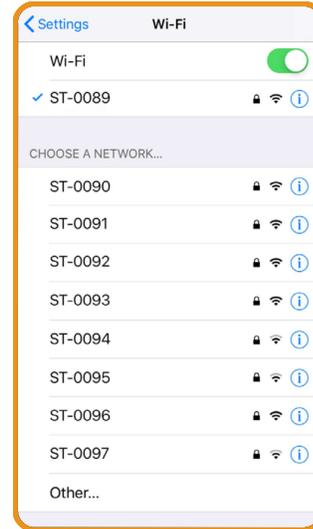
### 1 DOWNLOAD THE APP

Download the VConnect+ app to your mobile device from either the iOS App Store or Google Play Store.



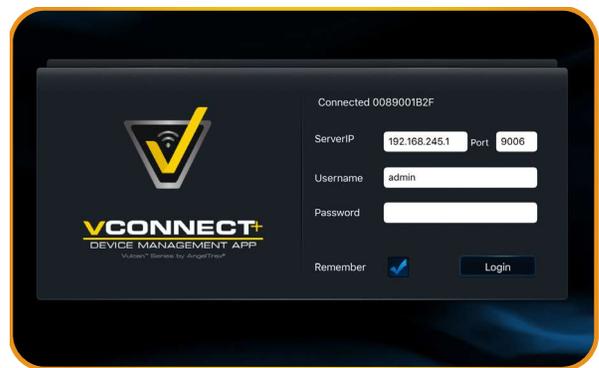
### 2 CONNECT TO WI-FI

Go to the Wi-Fi settings in your mobile device and connect to the module's Wi-Fi signal. The signal name will be **ST-**, followed by the vehicle's ID.



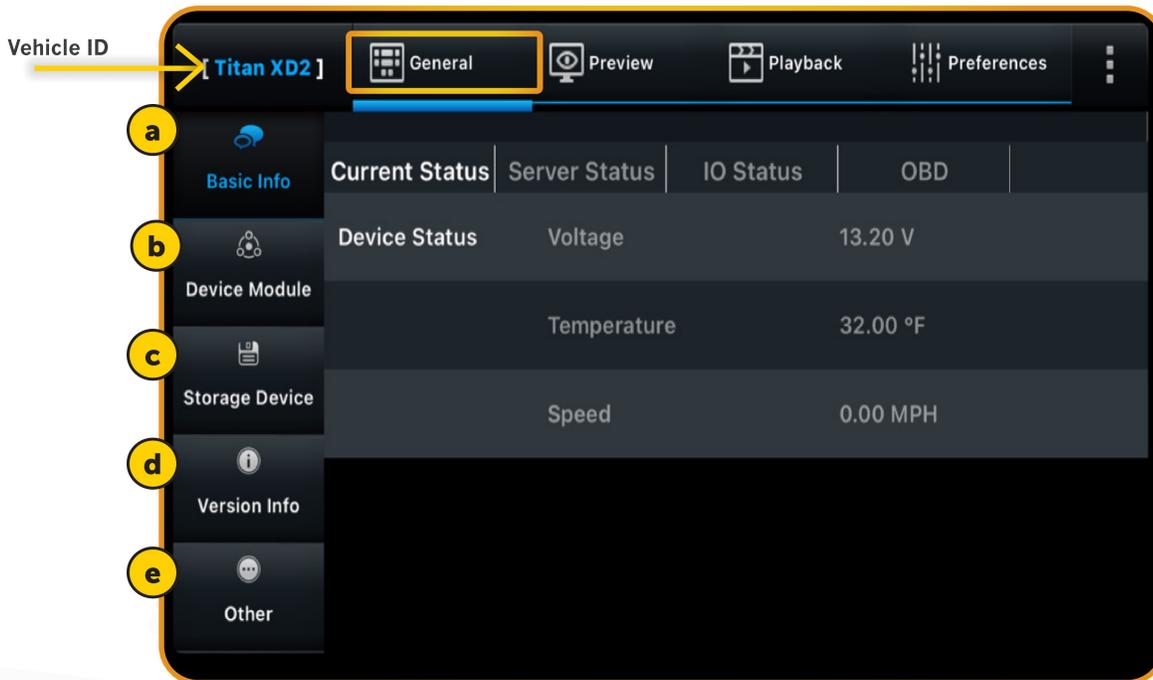
### 3 ENTER CREDENTIALS

- Open the VConnect+ app.
- The server IP fields will load automatically once connected to Wi-Fi signal.
- Enter the username and password for your Vulcan Series system.
- Select **Login**.



## » VConnect+ General

After logging in, you will be directed to the **General** interface. Use this menu to review the system’s conditions, modules and storage, as well as manage the system’s versions, logs and data files.



### **a** BASIC INFO

Assess the system’s current and past status, server status, IO status and onboard diagnostics (OBD).

### **b** DEVICE MODULE

Review the status of the system’s active modules, including Communications, Wi-Fi and Satellite.

### **c** STORAGE DEVICE

Inspect the available storage remaining on the internal HDD.

### **d** VERSION INFO

Assess the system’s firmware, MCU and GPS.

### **e** OTHER

Import and export miscellaneous system logs and parameter settings.

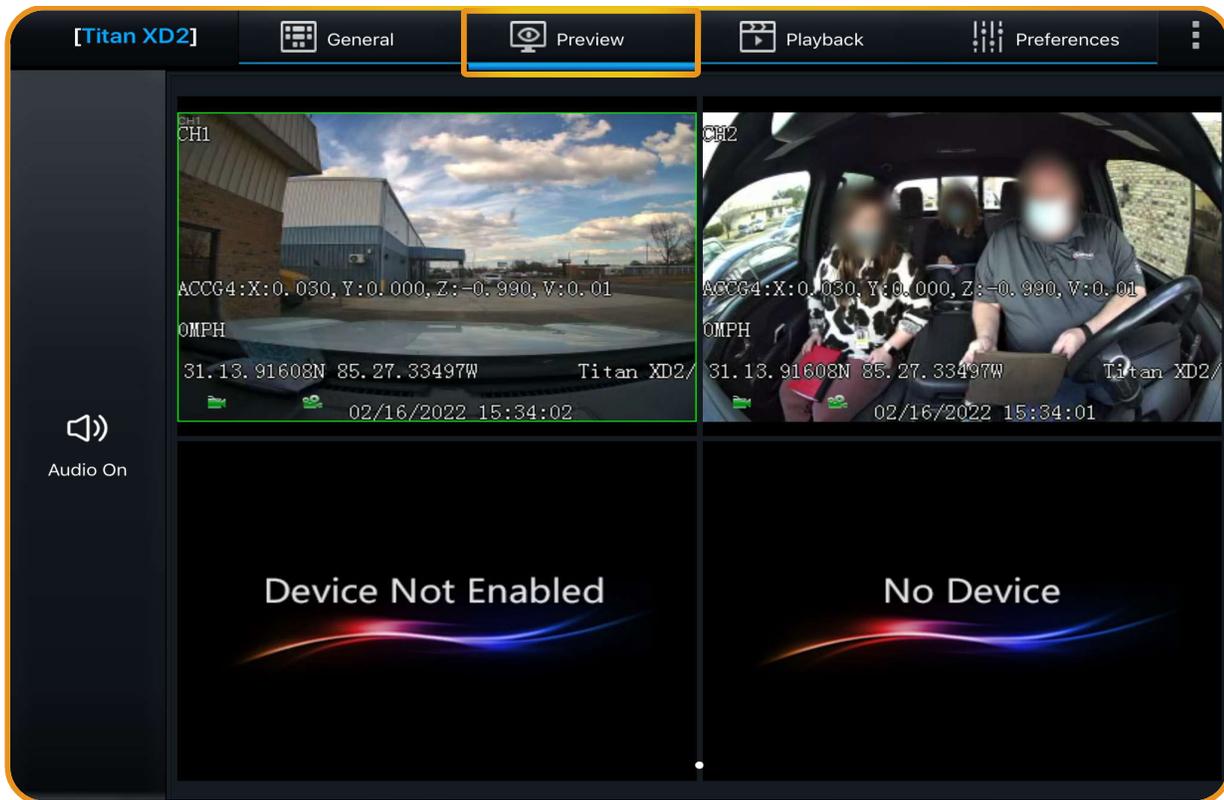
**CAUTION:** Settings are pre-set. Please do not make any changes to settings unless instructed by AngelTrax Technical Support.

## » VConnect+ Preview

The **Preview** interface displays live views of any cameras connected to the system. Use Preview to inspect camera fields of view and lens articulation during installation. In the image below, channels 1 and 2 display views from the VX4AI's two built-in cameras. To set up cameras 3 and 4, please contact AngelTrax's **Technical Support Department** by phone at **1.800.673.1788** or through the **Contact Us** form on the AngelTrax website ([www.angeltrax.com/contact](http://www.angeltrax.com/contact)).

- Swipe left to right to view more channels, if applicable.
- Toggle the sound icon to test the audio feedback.
- Double-tap a channel to expand to full view.
- Select **Picture Adjustment** to modify the preview's color adjustments.
- Double-tap again to return to the multi-channel view.

**NOTE:** To view channels 3 and 4 you will need the optional cable.



## » VConnect+ Playback

The **Playback** interface catalogs in a calendar format video that has been written to the hard drive. Follow the instructions in steps 1 through 7 below to learn how to select, clip and export video to an external storage device.

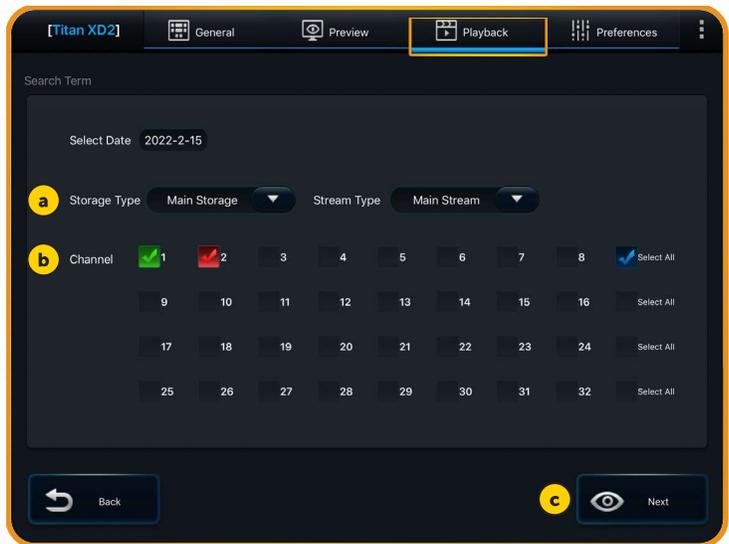
### 1 SELECT A DATE

- a** Select a storage type and stream type.
- b** Use the month and year filters to search for video.
- c** Select a date with video from the calendar.



### 2 ENABLE CHANNELS

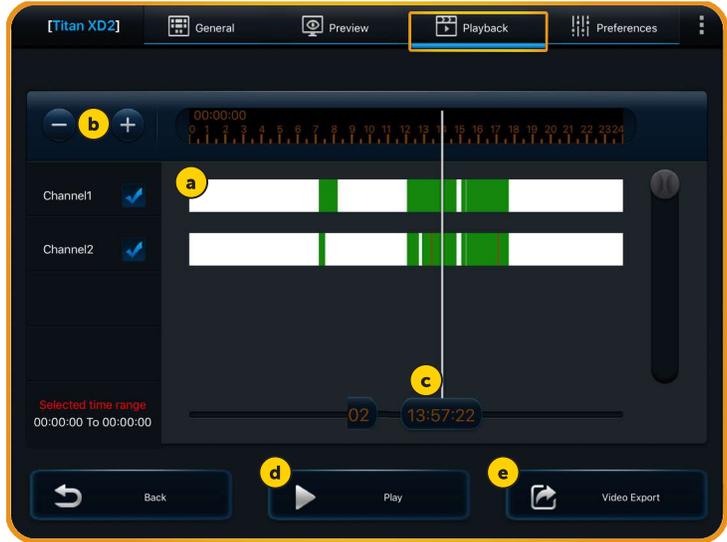
- a** Finalize the storage type and stream type.
- b** Select which channels you want to export.
- c** Select **Next**.



## » VConnect+ Playback

### 3 SELECT AN EVENT

- a** Search for an event in the timeline by scrolling left to right.
- b** Use the **Plus** and **Minus** buttons to expand or condense the timeline.
- c** Drag the slider over the chosen event.
- d** Select **Play** to preview recorded video to verify selection. To preview a single channel, enable the desired channel and disable the other(s).
- e** When you have located the desired event, select **Video Export**.



### 4 SET THE START TIME

- a** Choose the start time of your video clip. Consider how much lead time you need before the actual event occurs.
- b** When you are satisfied with the start time, select **Start Time** to mark the beginning of the video clip.



### 5 SET THE END TIME

- a** Drag the slider to the end time of your video clip.
- b** Select **Play** to preview recorded video to verify selection.
- c** Review the selected time range.
- d** When you are satisfied with the length of the video clip, select **End Time**.



## » VConnect+ Playback

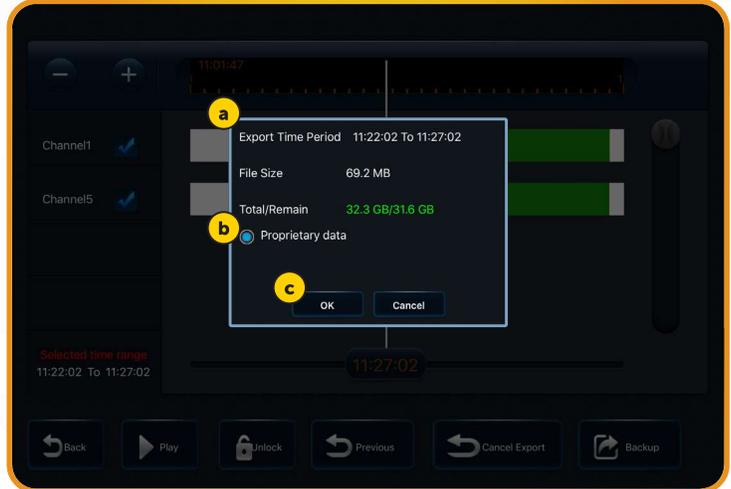
### 6 UNLOCK OR BACKUP VIDEO

Once you have selected your desired video clip, you can **Unlock (6a)** the video or **Backup (6b)** the video to the server to finalize the export.



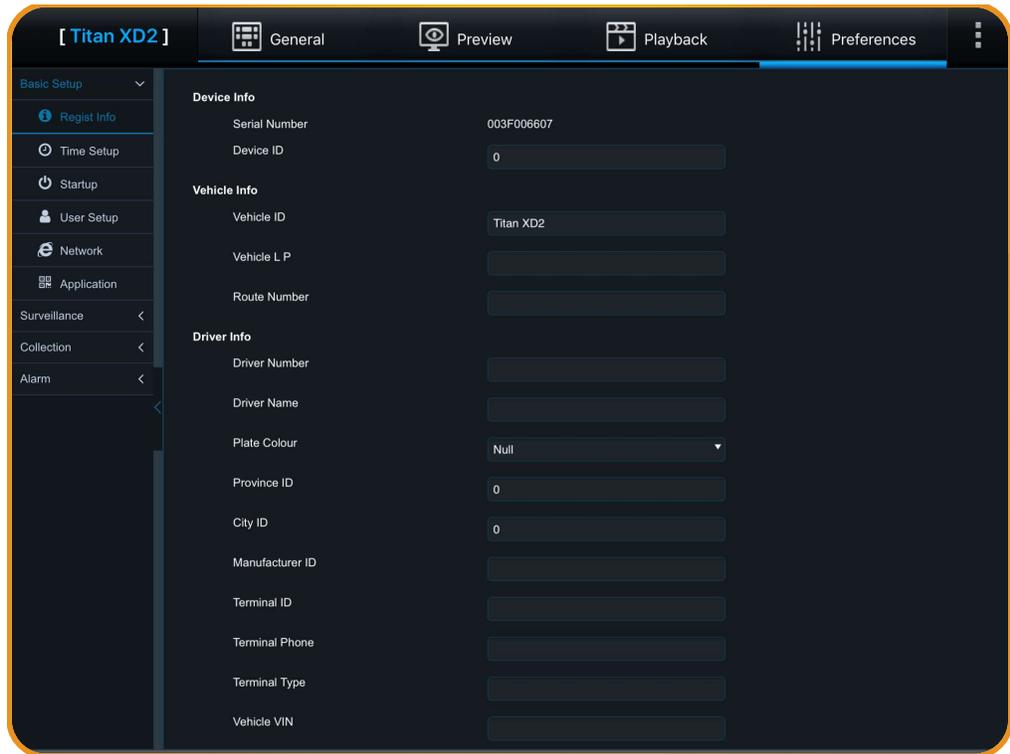
### 7 FINALIZE EXPORT

- a** Review your final export time range, file size and the total storage versus remaining storage left on the external storage media.
- b** Elect to export the video clip with **Proprietary data**, which is the video's metadata, shown in the frame.
- c** Select **OK** to export your video.



## » VConnect+ Preferences

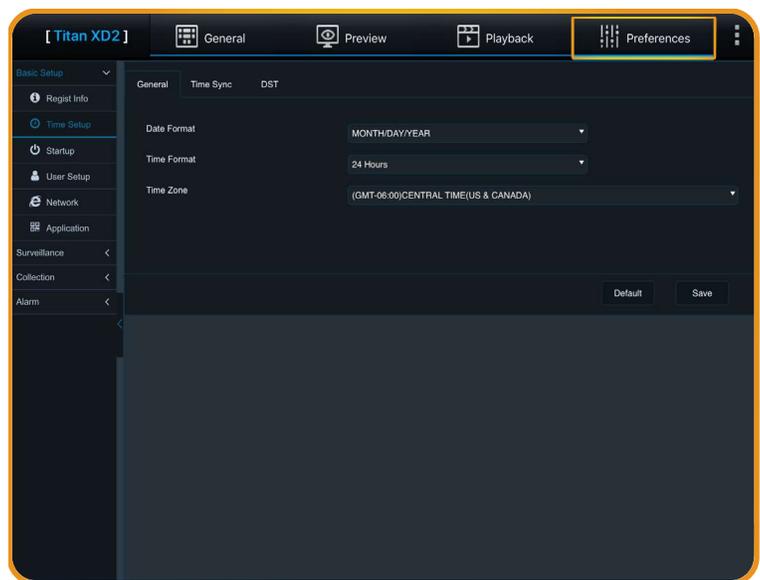
The **Preferences** interface is where you will Register Your Device by entering your Device ID, Vehicle Info and Driver Info. You will also use this for Time Setup.



### TIME SETUP

Select the correct **Time Zone**; your device will automatically set the time and date based on the data provided by the system's built-in GPS.

You may also manually set your time and date format.



## FAQ/Troubleshooting

### 1) The system will not start.

This problem may be caused by an incorrect power connection.

- Check the input power, whether the power wire is connected correctly to a 12V or 36V constant source, whether the ground wire is connected back to the battery, and whether the fuse on the power wire is in good condition.
- Check whether there is voltage (more than 7V) on power input ACC signal wire.

### 2) The MDVR restarts continually.

- Check the MDVR for sufficient voltage. If the voltage is lower than the MDVR's required start-up voltage, the device will continue to restart.
- A malfunction of the microSD card may cause the failure to start. Remove the microSD card and check for damage.

### 3) The device cannot record.

- Verify at least one microSD card is installed and making contact in the MDVR.
- Check the microSD card to make sure it is installed, is in good contact and can be read normally in the computer.
- Check whether the microSD card is formatted. If not, format the microSD card in the MDVR.
- Check for video signal input into the MDVR from the camera and whether there is video/image onscreen.

**WARNING:** *Vulcan Series microSD cards must NOT be formatted with your computer. To ensure compatibility with the unit and FlexPlay Pro 8 playback software, Vulcan Series microSD cards must be formatted through your Vulcan Series MDVR.*

### 4) Audio is not included in the video files.

- Check whether the camera features audio collection.
- In the MDVR menu, access Video Channel Settings and make sure Audio is set to ON.
- There must be video input into the channel for recording and it must record normally.

### 5) The GPS is functioning abnormally.

- Please contact AngelTrax's **Technical Support Department** by phone at **1.800.673.1788** or through the **Contact Us** form on the AngelTrax website ([www.angeltrax.com/contact](http://www.angeltrax.com/contact)).

### 6) The device cannot be shut down when in ignition ON/OFF mode.

- Make sure the ACC signal wiring is correct and check the voltage for ACC signal line after the key is turned off.
- If the device has been set with schedule recording, it cannot shut down during the pre-set recording time.

### 7) What are the defaults for the login user name and password for a new MDVR?

- The default user name and password are both "admin." The device password can be set as empty or "null."

### 8) How do I update the firmware?

- Please contact AngelTrax's **Technical Support Department** by phone at **1.800.673.1788** or through the **Contact Us** form on the AngelTrax website ([www.angeltrax.com/contact](http://www.angeltrax.com/contact)).

### 9) In the ON/OFF of basic settings, why is the low voltage protection set at 8V?

- After testing, when the battery is lower than 8V, the voltage will lower down quickly. Therefore, the lowest voltage is set at 8V. When it is lower than 8V, the MDVR device will recognize it as external power-off and begin shutdown.



