10-8 HD4SD
4-Ch Dual SD HD MDVR

Installation / User Manual
Warranty & Return Information

**All Products**
- Three (3) year free replacement of any failed component.

**Car Camera Components**
2. Visit [10-8video.com](http://10-8video.com) and click on the **Support Section** to request a RMA.

**Shipping Address**
10-8 Video LLC  
1423 Huntsville, Hwy. Suite F  
Fayetteville, TN 37334

**Phone Numbers**
(888) 788-1048 • (931) 233-8550  
(931) 233-1263 (FAX)

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Safety

Installation Safety

WARNING: This product utilizes high voltage. Any unauthorized modifications or damage to the products may result in electrical shock.

1. To extend the life of the product, install it in a place free of, or with minimal vibration.
2. To ensure proper heat dissipation, install the DVR in a well ventilated area (such as the vehicle’s center console).
3. Handle all components with care. Inspect regularly for damage to components and cabling.
4. Install the device horizontally and protected from water, humidity and lightning.
5. Do not drop the device.
6. Do not apply excessive force to any of the components contained within this kit.
7. Please follow the procedures from this installation manual.

Avoid Electric Shock and Fire

1. This device uses a 8V-36V DC power supply. Please note the positive and negative terminals during installation to prevent a short circuit.
2. Power off the device before connecting any peripheral.
3. Do NOT touch the power supply or device with wet hands.
4. Do NOT spray any liquid on the device to prevent an internal short circuit or fire.
5. Do NOT place any other device directly on top of the camera(s).
6. Do NOT disassemble the housing without authorization to avoid damage, electrical shock or possible death.

Transport & Handling

1. To prevent damage to the device during transport, handle the device with care. The original packing materials and box are suggested.
2. Power the device off before handling or replacing a part to prevent any damage.

Daily Operation

You, as the driver, are solely responsible for the safe operation of your vehicle and the safety of your passengers according to the US and local traffic regulations.

WARNING: Do not use any features of this system to the extent it distracts you from safe driving. Your first priority while driving should always be the safe operation of your vehicle.

10-8 Video cannot accept any responsibility whatsoever for accidents resulting from failure to observe these precautions or safety instructions.
Product Overview

Product Description

The 10-8 HD4SD is a dual SD card HD MDVR especially designed for use in vehicles. If features four (4) channels of D1/960H/720P video and audio recording and playback, four (4) channels of AHD 720P and one channel of IPC HD video via a full frame recording camera. It also utilizes one of the most advanced H.264 video encoding/decoding codecs in the industry today.

The mobile MDVR is powered by an ARM DSP fast dual-core processor running on an embedded Linux OS. It also features 3G/4G network capabilities, GPS, WiFi, fail-safe protection, HDD shock absorption, HDD heating and a wide voltage range.

All of these features, along with its easy-to-use and powerful interface software, gives the 10-8 HD4SD excellent functionality, scalability, stability and makes it a great value. Proof of this is its extensive use in public buses, logistic vehicles, school buses, police cars, financial convoy trucks and fuel tankers.

Features

- H.264 video compression encoding supported, PAL: 100fps@AHD 720P
- 4 Channels of D1/960H/AHD 720P simultaneous audio & video recording /replay.
- 4-way AHD 720P & 1-way IPC 1080P HD camera with full-frame recording.
- Air cushioning system providing reliability and strong anti-shock properties.
- 8-second delay recording in case of power failure.
- Built in 3G/4G network, GPS WiFi (optional)
- Supports two (2) SD cards - each 128 GB capacity.
- Scales well with 1 RS485 interface and 2 RS232 interfaces.
- 8V-36V wide voltage supply, 12V POE power supply supported
- Good shock resistance, easy installation and 360° installation supported.
- High/low temperature resistant, operates from -13°F to +158°F.

Technical Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Language</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Operating Interface</td>
<td>OSD Menu</td>
</tr>
<tr>
<td></td>
<td>Password &amp; Security</td>
<td>Permissions setting of administrator &amp; user</td>
</tr>
<tr>
<td></td>
<td>Video System</td>
<td>NTSC or PAL</td>
</tr>
<tr>
<td></td>
<td>Operation</td>
<td>IR remote control</td>
</tr>
<tr>
<td></td>
<td>GPS</td>
<td>Yes - with on-screen display speed/coordinates</td>
</tr>
<tr>
<td></td>
<td>Google Map on On-screen Display</td>
<td>Yes - Moving map synced to video</td>
</tr>
<tr>
<td></td>
<td>Crash Sensor</td>
<td>Yes - with pre/post record and user selectable G-limits</td>
</tr>
<tr>
<td></td>
<td>Signal Loss Alarm</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Power Shutdown Recover</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Security Protection</td>
<td>Yes - Locking SD Cover</td>
</tr>
<tr>
<td></td>
<td>Pre/Post Alarm Recording</td>
<td>Yes - User-defined limits</td>
</tr>
<tr>
<td>Video</td>
<td>Video Input</td>
<td>• 4 channels support CIF/HD1/D1/960H/720P AHD camera</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RJ45 x 1 for IP camera connection</td>
</tr>
<tr>
<td></td>
<td>Video Output</td>
<td>2 Video outputs (1 - φ3.5 phone jack &amp; 1 - 24PIN connector)</td>
</tr>
<tr>
<td></td>
<td>Video Display</td>
<td>Single screen to five (5) screens</td>
</tr>
<tr>
<td></td>
<td>Video Standard</td>
<td>PAL or NTSC</td>
</tr>
<tr>
<td></td>
<td>Image Compression</td>
<td>H.264 Main Profile</td>
</tr>
</tbody>
</table>
Specifications

Front Camera Specifications

Key Features:
- Latest SONY IMX225 1/3" CMOS image sensor
- 1.3MP 720p max resolution
- Powerful NextChip 2431H DSP with wide dynamic range for strong light suppression
- Built-in removable IR-Cur filter for 100% color reproduction and low light sensitivity
- Auto switching to B&W at low light for better image quality
- 3.0 MP HD crystal 6mm lens
- All-in-one round type waterproof connector for video, audio and power
- Die cast compact metal case with top mount screw hole, easy to install

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor</td>
<td>SONY IMX225 1/3&quot; CMOS Sensor</td>
</tr>
<tr>
<td>Minimum Illumination</td>
<td>0.001Lux / (F1.2, AGC ON) / 0 Lux when IR is on</td>
</tr>
<tr>
<td>Shutter</td>
<td>1/25 seconds - 1/100000 seconds</td>
</tr>
<tr>
<td>Camera Lens</td>
<td>6mm HD Lens (3MP)</td>
</tr>
<tr>
<td>IR-Cut</td>
<td>Built-in removable IR-Cut filter</td>
</tr>
<tr>
<td>Day/Night</td>
<td>Automatically switches to black &amp; white at night</td>
</tr>
<tr>
<td>Max Image Resolution</td>
<td>1280 x 720</td>
</tr>
<tr>
<td>Number of Pixels</td>
<td>1.3MP or 720P</td>
</tr>
<tr>
<td>Frame Rate</td>
<td>30fps</td>
</tr>
<tr>
<td>Wide Dynamic Range</td>
<td>Digital wide dynamic range</td>
</tr>
<tr>
<td>Interface</td>
<td>Waterproof metal round type all-in-one AV+power</td>
</tr>
<tr>
<td>Case</td>
<td>Zinc die cast body</td>
</tr>
</tbody>
</table>

Rear Camera Specifications

Key Features:
- Latest SONY IMX225 1/3" CMOS image sensor
- 1.3MP 720p max resolution
- Powerful NextChip 2431H DSP with wide dynamic range for strong light suppression
- Built-in removable IR-Cur filter for 100% color reproduction and low light sensitivity
- Auto switching to B&W at low light for better image quality
- 12 x IR LED for totally dark environment night-vision view
- Built-in high sensitivity microphone for audio picking-up
- Super wide angle 1.8mm lens for large area coverage
- All-in-one round type waterproof connector for video, audio and power
- Die cast compact metal case with metal bracket

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor</td>
<td>SONY IMX225 1/3&quot; CMOS Sensor</td>
</tr>
<tr>
<td>Minimum Illumination</td>
<td>0.001Lux / (F1.2, AGC ON) / 0 Lux when IR is on</td>
</tr>
<tr>
<td>Shutter</td>
<td>1/25 seconds - 1/100000 seconds</td>
</tr>
<tr>
<td>Camera Lens</td>
<td>6mm HD Lens (3MP)</td>
</tr>
<tr>
<td>IR-Cut</td>
<td>Built-in removable IR-Cut filter</td>
</tr>
<tr>
<td>Night-vision</td>
<td>12 x Dark Blue IR LED</td>
</tr>
<tr>
<td>Max Image Resolution</td>
<td>1280 x 720</td>
</tr>
<tr>
<td>Number of Pixels</td>
<td>1.3MP or 720P</td>
</tr>
<tr>
<td>Frame Rate</td>
<td>30fps</td>
</tr>
<tr>
<td>Wide Dynamic Range</td>
<td>- None -</td>
</tr>
<tr>
<td>Audio</td>
<td>Built-in Microphone</td>
</tr>
<tr>
<td>Interface</td>
<td>Waterproof metal round type all-in-one AV+power</td>
</tr>
<tr>
<td>Case</td>
<td>Zinc die cast body</td>
</tr>
</tbody>
</table>
Specifications

Technical Specifications (Continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio</td>
<td>Audio Input</td>
<td>4 Channels</td>
</tr>
<tr>
<td></td>
<td>Audio Output</td>
<td>2 Channels (1 - ø3.5 phone jack &amp; 1 - 24PIN harness connector)</td>
</tr>
<tr>
<td></td>
<td>Recording Mode</td>
<td>Synchronous video &amp; audio recording</td>
</tr>
<tr>
<td>Recording and Storage</td>
<td>Video Resolution</td>
<td>• Supports 4 channels CIF/HD1/960H/720P AHD camera video input</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Supports 2 channels 720P AHD + 2 channels 960H analog mixing video inputs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Supports 1 channel 720P/1080P IPC + 4 channels 960H/D1/CIF video inputs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: 4 channels 720P AHD or 1 channel 720P/1080P IPC + 4 channels 960H video inputs (Need high speed SD card(s) (&gt; 80MB/s) for HD recording)</td>
</tr>
<tr>
<td></td>
<td>Video Coding</td>
<td>ISO14496-10</td>
</tr>
<tr>
<td></td>
<td>Video Bit Rate</td>
<td>• CIF: 1536Kbps–128Kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• D1: 2048Kbps–400Kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 960H: 2048Kbps–400Kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 720P: 4096Kbps–400Kbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eight(8) image quality levels are available with Level 1 = Best and Level 8 = lowest.</td>
</tr>
<tr>
<td></td>
<td>Audio Bit Rate</td>
<td>8Kbps</td>
</tr>
<tr>
<td></td>
<td>Storage</td>
<td>Two (2) SD card storage slots, supports up to 128GB / card.</td>
</tr>
<tr>
<td>Alarm</td>
<td>Alarm Input</td>
<td>Eight (8) channels. Alarm activated by low voltage (≤ 1V) or high voltage (≥ 5V)</td>
</tr>
<tr>
<td></td>
<td>Alarm Output</td>
<td>One (1) channel, 12V output</td>
</tr>
<tr>
<td>Communication Ports</td>
<td>RS485 Interface</td>
<td>One (1) RS485 interface</td>
</tr>
<tr>
<td></td>
<td>RS232 Interface</td>
<td>Two (2) RS232 interfaces</td>
</tr>
<tr>
<td>Wireless Communication</td>
<td>3G</td>
<td>Built-in 3G (HSUPA/HSDPA/WCDMA/EVDO/TD-SCDMA) module (optional)</td>
</tr>
<tr>
<td></td>
<td>4G</td>
<td>Built-in 4G (FDD-LTE/TDD-LTE) module (optional)</td>
</tr>
<tr>
<td></td>
<td>WIFI</td>
<td>Built-in WiFi (2.4 / 5.8 Ghz) module (optional)</td>
</tr>
<tr>
<td>GPS</td>
<td>Built-in GPS module. Real time geographic coordinates, speed information.</td>
<td></td>
</tr>
</tbody>
</table>
| Acceleration Sensor | External and built-in acceleration sensor G-sensor (optional) |}

Software

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Windows XP / Vista / 7 / 8 / 8.1 / 10</td>
<td></td>
</tr>
<tr>
<td>Playback</td>
<td>Play back video file in PC and analyze vehicle status.</td>
<td></td>
</tr>
<tr>
<td>IVMS (Server &amp; Client)</td>
<td>Wireless real-time video &amp; audio streaming playback, including triggered by GPS, alarm, etc.</td>
<td></td>
</tr>
<tr>
<td>Maps &amp; G-Sensor Data</td>
<td>On-screen Google Maps with speed &amp; G-sensor readings</td>
<td></td>
</tr>
<tr>
<td>Searchable</td>
<td>Searchable by event date/time</td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>Export from proprietary format to common AVI</td>
<td></td>
</tr>
<tr>
<td>CMS</td>
<td>The central management software can preview, upload and center command issuance and parameter configuration.</td>
<td></td>
</tr>
<tr>
<td>Software Upgrade</td>
<td>This device can be upgraded through SD card.</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainframe</td>
<td>6-11/16in.(w) x 2in.(h) x 5-5/8in.(l) 170mm(w) x 50mm(h) 142mm(l)</td>
<td></td>
</tr>
<tr>
<td>Including Cover</td>
<td>6-11/16in.(w) x 2in.(h) x 7-3/8in.(l) 170mm(w) x 50mm(h) 187mm(l)</td>
<td></td>
</tr>
</tbody>
</table>

Electrical Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>+8~+36V</td>
<td></td>
</tr>
<tr>
<td>Power Output</td>
<td>12V</td>
<td></td>
</tr>
<tr>
<td>ACC Detection</td>
<td>≤ 4V - Power off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 5V - Power on</td>
<td></td>
</tr>
<tr>
<td>Video Input Impedance</td>
<td>75Ω</td>
<td></td>
</tr>
<tr>
<td>Video Output Voltage</td>
<td>2Vp-p</td>
<td></td>
</tr>
<tr>
<td>I/O Interface</td>
<td>1V or below - Low Level Alarm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5V or above - High Level Alarm</td>
<td></td>
</tr>
<tr>
<td>Working Temperature</td>
<td>-13°F–158°F in a well-ventilated place</td>
<td></td>
</tr>
</tbody>
</table>
System Schematic

Introduction to Mainframe

FIG. 1
DVR Mainframe

NOTE: Actual camera appearance may vary from illustration.
Hardware: Installation

DVR Remote Control

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menu</td>
<td>Check Information</td>
</tr>
<tr>
<td>Up</td>
<td>Cancel</td>
</tr>
<tr>
<td>Left</td>
<td>SD Card Info</td>
</tr>
<tr>
<td>Right</td>
<td>Play</td>
</tr>
<tr>
<td>Down</td>
<td>Pause</td>
</tr>
<tr>
<td>Return</td>
<td>Stop</td>
</tr>
<tr>
<td>Information</td>
<td>Fast Forward</td>
</tr>
<tr>
<td>Enter/Select</td>
<td>Rewind</td>
</tr>
</tbody>
</table>

FIG. 2
DVR Remote

Button Function

- **Info**: Check Information
- **Quad 1,2,3,4**: While in the monitor view use the Quad button to switch between the quad (4) view(four views at once) and a single view. You can press 1/2/3/4 to display channel 1, channel 2, channel 3, and channel 4 respectively while in single view mode.
- **Retrn**: Return to the previous menu and finally exit from the setup menu to the monitoring interface.
- **PLAY**: Press this button to start playing (search the video file to be played and select, then press the button to play it)
- **Fast Forward**: Forward in four (4) modes: 2X, 4X, 8X, 16X
- **Rewind**: Rewind in four (4) modes: 2X, 4X, 8X, 16X
- **F1**: The F1 button starts a functionality test

Device and Installation

1. Installation

Step 1: **Open the protective cover.**

Turn the electric lock located on the front panel counterclockwise to unlock it and open the protective cover.

As indicated on the panel, use the supplied key to turn the electric lock clockwise to unlock and open the protective cover.

FIG. 3
Electronic Lock
Hardware: Installation

Step 2: Install SIM and SD card (FIG. 4)

As indicated on the panel, install SD card with its face up into its slot. Two SD cards are supported (maximum 128GB for each). Then insert the SIM card (if equipped) with its face up and the “cut” forward into the SIM slot and press it into place. Note the front and back face when inserting the SIM card.

Depending upon the device’s communication configuration, install the related SIM card for either the 3G or 4G capabilities if you have purchased one of these options.

Step 3: Lock the electronic lock. (FIG. 4)

After all the SD cards and SIM cards are installed, pull the protective cover to the right side and close it. Then turn the electronic lock counter-clockwise to lock it. The device can now be powered on.

Caution: Do not remove SD cards while the device is still on. Data loss could occur.

The device will not power on unless the protective cover is closed and the electronic lock is in the locked position.
Step 4: Installing the MDVR

The MDVR can be installed in any direction; there is no need for any part of the device to be pointed in a specific direction.

Install the MDVR into a convenient location inside your vehicle noting the mounting hole positions in the diagram below (FIG. 6).

Even though the device can be mounted in any direction, mounting the device horizontally will ensure it will work even under extreme conditions. A horizontal mounting will help protect it against water, humidity and condensation collecting in the housing and causing a motherboard short circuit.

Step 5: Install the GPS, 3G/4G and/or WiFi Antenna (if equipped)

Depending upon your device’s options, connect the corresponding GPS, 3G/4G and or WiFi antenna(s) to their corresponding interface(s) (see FIG. 2) on the rear panel of the MDVR. Keep your wires organized and arranged properly to maintain the most optimal signal conditions and to protect the signal from external interference.
Step 6: Connect the power cord.

Connect the 6-pin white plug to the 6-pin power input port on the rear panel of the MDVR. The red and black cables are directly connected to the battery of the vehicle, i.e. positive terminal and negative terminal respectively, or to the main power.

The yellow cable is connected to ACC, the vehicle control circuit switch (used to start the vehicle’s motor). The unit will automatically power on when the car key is in the ON position and power off when the key is in the OFF position.

When the device is not installed in a vehicle (such as monitoring systems in a bus station, logistics transfer) or under testing conditions, you can use a switching power above DC12V-5A to supply the MDVR the proper signal. In this case, twist the red and yellow cables together into a single cable and connect it to the positive terminal. The black cable is then connected to the negative terminal separately.

1. Check that the battery provides voltage between 8V~36V before connection to prevent damage to the device.

2. Be aware of where each of the ends of each wire are after you have connected it to the battery to prevent the cable damaging the device from a short circuit.

3. We recommend connecting the yellow wire to the ignition cable, otherwise the shutdown feature will not function correctly.

4. We recommend connecting the device directly to the vehicle’s battery. If this is not possible, connect to the vehicle’s fuse box, bypassing the ground connection which may influence the normal operation of the MDVR due to negative pulses.

5. The wire that connects the power cable harness to the vehicle’s battery should be a minimum diameter of 1.5mm or above.
Hardware: Installation

Step 7: Connect the A/V Output Cable

This product features two video outputs (one is a φ3.5 phone jack on the front panel and the other is a 4PIN BNC connector in the rear).

Use the rear A/V cable for most mobile installations.

Step 8: Connect the alarm input and output cables.

Note that the input alarm wires are labeled as to where they will be used in a typical installation:

- **Blue ‘Mic Trigger’**: Blue wire from wireless mic cradle already connected to harness.
- **Orange ‘Lights’**: Connect to 12v wire that will be ‘Hot’ when emergency lights are activated.
- **Orange ‘Manual SW’**: Connect to an unused switch in the controller box, or if needed a manual switch with 12v. This is to allow the officer to activate recording, as needed, without emergency equipment activated.
- **Orange ‘Wireless Mic’**: Already connected to wireless mic charge cradle via harness.

The over-speed alarm feature can be enabled by simply configuring settings via the Setup Menu → Alarm → Speed. A GPS signal is required to produce a reading to trigger the alarm.
Hardware: Installation

900mhz Mic Installation

1. Connect the large white connector (#1) of the DVR alarm harness to the matching receptacle in the rear of the DVR.

2. Connect the Red power lead (#2) from the 900mhz harness to an Always ON power source.

3. Connect the Black GND lead (#3) to a vehicle ground terminal.

4. Connect the RJ-45 connector (#4) that is closest to the large black junction block to the female RJ-45 receptacle on the side of the mic cradle.

5. Connect the other RJ-45 plug into the female RJ-45 receptacle (#5) of the DVR Alarm Harness.

6. Connect the red RCA male lead (#6) from the DVR Alarm Harness to the RED female RCA lead (#7) of the Camera 1 Harness.

900mhz Mic Antenna

1. Plug the antenna into the gold plug on the top of the cradle.

2. Secure by tightening the lock nut.

3. Run the wire down under the dash or other hidden location, somewhere toward the front of the vehicle.

Velcro or double-sided tape works great for securing the antennae end to a flat surface on the vehicle.
Hardware: Installation

**Mirror Monitor**

1. Mount the mirror/monitor over the existing mirror.

2. Run wires to DVR and connect the 4-pin male connector to the corresponding female 4-pin connector on the large white connector.

   A good place to run the wires for the mirror is to tuck them in the front edge of the headliner and down the passenger side pillar post. The covers on most modern pillar posts snap in to place and are easily removed with plenty of room.

3. Run the wires down along the door edge and under the glove box to the location of the DVR.

**FIG. 10**
Mirror Installation
Hardware: Installation

**Camera Mount**

The mount is an excellent commercial mount and is very strong when properly attached to the windshield.

1. Locate the mounting location of the camera - high and just right of center on the windshield.

   - **Info**
   - This is normally to the rear and slightly to the right of the rear view mirror/monitor.

   - **Info**
   - Leave just enough room for the camera to rotate 180 degrees in either direction.

2. Clean the glass where the mount is to be placed.

3. Press in on the center button of the mount and pull the locking lever up and over the center button to lock it in place.

   - Press in button.
   - Pull lever over button.
   - Locked position.
Hardware: Installation

**Front Camera**

1. Run the included cable along side the mirror/monitor cable to the DVR.

2. Plug the **BNC video connector** from the camera to the **BNC video-in cable** from the DVR.

3. Adjust the large locking wheel (FIG. 9) above the camera so that the camera can be rotated easily, yet stay in place while driving.

   *NOTE: Actual camera appearance may vary from illustration.*

   **Hold the camera firmly while adjusting the wheel.**

   ![Locking Wheel](image)

   **FIG. 11**
   Front Camera* Mount System

   **FIG. 12**
   Front Camera Installation
Hardware: Installation

Rear Camera

The 10-8 rear camera is a true Day/Nite camera with automatic infrared and B/W functions. It also features an included internal microphone to capture sounds and conversations in the interior of the vehicle. The microphone is very sensitive and can pick up even slightest sounds from the rear seat.

Mounting options for this camera will vary greatly from vehicle to vehicle and will depend on type of vehicle and if there is a rear divider in the vehicle. The camera is supplied with a fully articulating universal mount.

The location of the camera should give the best view of the rear/transport area of the vehicle.

If the vehicle has a cage, we suggest the camera be mounted high as possible and to one side pointing across the rear area to be viewed. If there is no cage, another choice would be high in the center of the vehicle in the front and pointing rearward, mounting just to the rear of the windshield.

Once a location has been found, run the supplied cable from the camera to the DVR. The cable will differ from the front camera as there are four (4) connections on each end instead of two (2). These additional connections (Power & Audio) are for the external microphone. Connect the cable to the ‘Rear Cam’ section at the rear of the DVR.

G-Force Sensor

The G-Force sensor is integrated into the DVR and configured at the factory.

GPS System

The magnet backing is very strong for mounting on the roof. It can also be mounted in the vehicle, under the windshield.

1. Mount the antennae.

2. Route the cable back to the DVR and attach to the port labeled GPS.

The GPS receiver will display your vehicle speed and coordinates at all time on the system monitor. In addition, GPS coordinates are imbedded in all recordings made on the system. During playback on a computer, the user can elect to display a map showing the actual location of the vehicle as the video is played.

After installation the G Sensor needs to be ‘zeroed’. Do this by going to Menu > Vehicle > G Sensor. Highlight ‘Adjust’ to zero out the sensor.

Setting the GPS Speed Trigger

Locate the GPS settings by pressing the Menu button on the remote then selecting Alarm > Max Speed. It is preset to 80 MPH. When the vehicle is travelling at a rate greater than this setting, the DVR will begin to record and record as long as the vehicle is over this speed setting.
Software Settings Overview

After the power supply is connected to the vehicle’s start circuit, ensure the device will automatically start when the vehicle is started. This verifies the power supply is properly connected to the peripherals.

After the vehicle starts, the system will enter the *Quad View*. Here you can press the *Login* button on the remote control to input the Admin password (888888 by default) to enter the setup menu and configure related settings.

The setup has seven (7) options including: General, Record, Alarm, Tools, Peripherals, Search and System Info (as shown in FIG 13). The following section will individually introduce individual settings.

**The 10-8 System will come pre-configured and suitable as-is for most departments. The only settings that will need to be set is the date/time for your area and the Vehicle Info screen.**

Software General Setup

**Step 1: Basic Setup**

From the *Setup* menu, select the *General* option and press the “ENTER” button to enter the *General* interface, where you can set your desired date and time, vehicle information, user management, network and display.

![FIG. 14
Basic Setup (General Options) Menu](image)

**FIG. 13
Setup Menu**
DVR: Setup (General)

Step 2: Set Date & Time
From the General menu, select “Date & Time” to enter its interface.

If GPS timing mode is selected, the time will be updated at the “Timing Time”.

You can select timing mode/ignition mode. By default, ignition mode is used, where you can set the recording delay time after shutdown.

FIG. 15
Date/Time Setup Menu

To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.

Step 3: Set Vehicle Info
Press the “Return” button to return to the General menu to enter the Vehicle Info menu. To facilitate unified management of vehicles on the server, it is recommended to completely fill in vehicle information.

The server will monitor and manage vehicles through device number. When vehicles are managed via a 3G/4G network, please ensure the uniqueness of the device number.

FIG. 16
Vehicle Info Setup Menu

1. The report can be found in the CMS client only when the mileage statistic is enabled.

2. To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.
DVR: Setup (General)

Step 4: User Setup
Press the “RETURN” button to return to the General menu to enter the User Setup menu and to enable the password feature. The original admin password is 888888. If the password is changed the password will be required when re-entering the system setup menu.

1. You can add or delete a user or set user permissions.
2. To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.

Step 5: Display Setup
Press the “RETURN” button to return to the General menu to enter the Display Setup interface.

Select PAL/NTSC according to the proper format in your region. Use NTSC in the US.

1. When viewing videos on the screen you can choose whether to have the date & time, speed, HDD temperature, vehicle number, I/O alarm state and GPS information on or off during video recording or playback.
2. Select PAL/NTSC for the output format as required. To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.
Software Recording Setup

Step 1: Enter the Recording Setup Interface
Press the “RETURN” button twice to return to the Setup Menu, where you can configure recording settings, including general settings, main code, sub-stream, recording schedule, mirror recording, SD recording and alarm recording.

Step 2: Record Basic Setup Interface
From the Record Setup Menu, select the General options and press the “ENTER” button to enter the Record Basic Setup interface. Here you can select the desired recording method.

When this option is enabled, the oldest videos will be overwritten as needed when SD space is limited. This is the recommended setting so that no events are missed.

1. When the alarm record option is selected, you can set the pre-record time, alarm record delay time, alarm output time and alarm lock time. When timing record is selected, you MUST set the recording schedule (for details see Step 5).

2. It's recommended to set the record segment time to 15/30 minutes due to read/write speed limitations of the SD card.
Step 3: Channel Mode

This product is a hybrid HD vehicle MDVR allowing connections from various types of cameras. Table 1 shows interface definitions of various analog cameras. The standard interface is for IP cameras. A user must select a camera type according to the hardware connection used and configure the proper corresponding settings in the software.

### Table 1
Camera Connection Modes

<table>
<thead>
<tr>
<th>Connection</th>
<th>Pin 1</th>
<th>Interface Definition</th>
<th>Pin 2</th>
<th>Interface Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>12V OUT</td>
<td>3</td>
<td>A-IN</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>GND</td>
<td>4</td>
<td>V-IN</td>
</tr>
</tbody>
</table>

After connecting the camera according to the above methods, go to the **Setup menu → Record Setup → Channel Mode** interface, where you can set video resolution, frame rate, picture quality, and audio recording for each channel.

1. The frame rate is adjusted according to the image format. The higher the frame rate, the better the timelines will be.
   - PAL is adjustable between 1-15 frames per second (fps); NTSC is adjustable between 1-30 fps.
2. Level 8 indicates the lowest picture quality. The higher the picture quality is, the netter the video definition will be.

### Table 2
Software Settings

<table>
<thead>
<tr>
<th>Connection Mode</th>
<th>Connection Diagram</th>
<th>Model 10-8 HD45D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection of a single analog camera</td>
<td><img src="image" alt="Connection Diagram" /></td>
<td>4 ways of D1/960H/720P AHD video inputs available.</td>
</tr>
<tr>
<td>Mixed connection of analog and network cameras</td>
<td><img src="image" alt="Connection Diagram" /> + <img src="image" alt="Network Camera" /></td>
<td>Max 4 ways of 720P AHD video inputs + 1 way of IPC HD video inputs available, with connection to a switch also possible.</td>
</tr>
</tbody>
</table>

To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.
Step 4: **Sub-Stream Setup (WiFi Option Only)**

Press the “RETURN” button to return to the *Record Setup Menu*, then enter the *Sub-Stream* settings interface.

This setting is directly related to definition and fluidity of the video on the CMS software. The higher the resolution, frame rate and bit rate are, the better looking the video will be. However, this requires more storage space, memory and bandwidth. So far, 3G networks allow only transmission of CIF in real-time. CIF and QCIF can be set for each sub-stream.

![FIG. 22](image)

**FIG. 22**

Sub-Stream Setup Interface

You can set each sub-stream to a fixed-bit rate (CBR) or Variable Bit Rate (VBR), 16-384bit/s rates are available. 96bit/s is the default.

1. Either CIF or QCIF is optional for sub-stream resolution. Currently, the maximum CIF real-time transmission capabilities are only available via a 3G network.

2. To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.

Step 5: **Recording Schedule**

(to be set in timing record mode NOT recommended for Department use)

Press the “RETURN” button to return to the *Record Setup Menu*, then enter the *Recording Schedule* settings interface.

If “Timing Record” mode (not commonly used) is selected under *Record Mode* in the *General Options*, you must set the record time frame here (two time frames can be selected).

![FIG. 23](image)

**FIG. 23**

Recording Schedule Setup Interface

1. The *Recording Schedule* can only be set when the “Timing Record” mode is selected under *Record Mode* in the *General Options*.

2. To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.
Alarm Setup

Step 1: Enter the Alarm Setup interface.
Press the “RETURN” button to return to the Setup Menu, and select the Alarm Setup interface. Here you can set the sensor, speed, acceleration, temperature, motion detection, linkage settings and other alarm modes. The alarm feature can only be used when an external sensor is connected.

Different types of recordings are created depending which alarm type you choose for each alarm setting.

- If an “Event” is selected for the alarm type, a normal recording is conducted.
- If an “Alarm” is selected for the alarm type, an alarm recording is conducted.
- The “threshold” indicates the point at which an alarm is triggered.

Step 2: Sensor Setup
This device provides eight (8) SENSOR-IN inputs and can be set with a high level alarm. From the Alarm Setup menu, select the “Sensor” icon, and press the “ENTER” button to enter the sensor alarm options. Set the alarm “Enable” to “ON” and name the sensor as required.

You can select the video monitoring channel corresponding to this sensor. When the alarm is triggered, the monitor will automatically pop up this channel and magnify the video image on this screen.

When Enable is set to “ON”, it generally takes a high level over 5V to trigger the alarm.

<table>
<thead>
<tr>
<th>IO</th>
<th>01</th>
<th>Name</th>
<th>01</th>
<th>Link To CH1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable</td>
<td>OFF</td>
<td>E-Level</td>
<td>High</td>
<td>Type</td>
</tr>
<tr>
<td>OutDelay</td>
<td>20s</td>
<td>Max g Char</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Output delay indicates that the alarm output is set in the alarm linkage, i.e. when the alarm is off, the alarm outputs within the set delay time.
2. Be sure to use the Link To setting to assign this sensor alarm to a specific input channel to monitor.
3. To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.
DVR: Setup (Alarm)

Step 3: Speed Setup
Press the “RETURN” button to return to the Alarm Setup menu, and then select the Speed Setup interface. If the temperature alarm feature is enabled, this information can be transmitted to the central CMS system.

Step 4: G-Sensor Setup
Press the “RETURN” button to return to the Alarm Setup menu, and then select the G-Sensor Setup interface. When transient acceleration is high during braking, turning, acceleration or collision, the sensors will indicate that the threshold value has changed quickly.

To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.

FIG. 26
Speed Setup Interface

FIG. 27
G-Sensor Setup Interface

This setting will trigger a recording when the vehicle reaches the set speed. Low speed is not used in normal use.

The G-sensor alarm requires calibration when initially set. Stop the vehicle on a flat, level surface to set it.
DVR: Setup (Alarm)

Step 5: Temperature Setup (NOT currently used)

Step 6: Motion Detection Setup (NOT currently used)

How to Set a Detection Area:

1. Select “Setup”, and press the “Enter” button on the remote to enter the motion detection setting interface.
2. Select the first block (yellow), and then the motion block will change to blue after you press the “Enter” button confirming its placement.
3. Select the second block and press the “Enter” button. The rectangular area formed by the diagonal of these two blocks is shown.
4. Press “Return” to return to the previous menu and press the “Save” button.

Environmental changes may be detected more easily when the sensitivity is set high; however, change of brightness and color will also trigger an alarm.

FIG. 28
Temperature Setup Interface

FIG. 29
Motion Detection Setup Interface

You can use your remote control within the detection area to select two points as a diagonal to define a detection area. Within the user defined area, when there is an object moving, the system will give an alarm when it is detected. A user can search motion detection alarm events under “Configuration → Log Search”, naming “CHL MD alarm”.

FIG. 28
Temperature Setup Interface

FIG. 29
Motion Detection Setup Interface
DVR: Setup (Alarm)

Step 7: Linkage Setup

Press the “RETURN” button to return to the Alarm Setup menu, and then select the Linkage Setup interface. This device provides two alarm outputs.

You can select none/output 1/output 2 from the linkage setup menu. 12V of high level is generated to drive other optoelectronic devices when the related alarm is triggered. (For detailed connection methods, please refer to the alarm input/output cable connection section.

![Linkage Setup Interface](image)

**FIG. 30**
Linkage Setup Interface

1. Enabling or disabling of write metadata is used to check if related alarm information is written to the video file.

2. To ensure your option changes are saved when you are done, move your cursor to the “Save” button and then press the “Enter” button.
Software: Configuration

Configuration

Step 1: Configuration Management
Press the “RETURN” button to return to the Setup Menu, and then select the Tools icon. Then select the Configuration icon to enter the Configuration interface. Here you can import/export configuration settings through an SD card or reset to the MDVR to its factory settings.

![FIG. 31](image)
Accessing the Configuration Interface

Step 2: Formatting SD Cards
Press the “RETURN” button to return to the Setup Menu, and then select the Tools icon. Then select the Format icon to enter the Format interface. Here you can select the storage medium to be formatted and press the “Format” button.

![FIG. 32](image)
Formatting Media Interface
Step 3: Log Search
Press the "RETURN" button to return to the Setup Menu, and then select the Tools icon. Then select the Log icon to enter the Log Search interface.

The calendar days with green backgrounds indicate that there is a log that can be searched for by selecting date, time and log type.

FIG. 33
Log Search Interface

Search and Replay Recordings
Press the "RETURN" button to return to the Setup Menu, and then select the Search icon to enter the Record Search interface. You can play the video files that appear in the search results.

The calendar days with a green background indicate that there is a log that can be searched by selecting the date, time, record type and related channel.

FIG. 34
Recordings Playback Workflow
System Information

In Quad view mode, you can either press the “INFO” button on your remote control or enter the setup menu to display the system information using the System Info icon.

FIG. 35
System Information Workflow
FAQ - Frequently Asked Questions

Q: The mobile device does not output video.
A: 1. Check the power status of the device. If only one blue indicator LED is lit, it indicates that the device is still in standby mode and not powered on; at the same time, check if the red or yellow cable of the main power is supplied normally; if not, the device cannot be started.
2. Check if the display is powered and if the display video is switched to AV status.
3. Check the connection status of the video output cable and display.
4. Check the lock status on the 10-8 HD4SD lock; the device can only be started when the lock is locked.

Q: The 10-8 HD4SD video interface is different from the camera input interface.
A: A 4-pin interface is used for the vehicle device. BNC interface or air interface is used for the camera. If inconsistency is found, please use an adapter or connect it to a standard line defined as the line sequence for the vehicle device.

Q: A recording is lost or no recording is found within a certain period of time.
A: 1. Analyze the period of time between when the final video file was lost and the last video that was successfully recorded to see what has changed in the recording environment.
2. Check if the device’s power was on during this period of time, for example, delay recording was not set during mid-way shutdown or unloading & loading.

Q: Recording capabilities are unavailable even when the device is powered on and the HDD is installed?
A: 1. Check that the HDD is formatted after the HDD is installed. Unless the HDD is formatted it cannot be used properly.
2. Check if the record channel is off or if timing record is set. Recording is unavailable when it is not within the specified recording time frame.
3. Check if the HDD is properly contacted, and the HDD on the front panel is lit up.

GPS Related Problems

Q: GPS module is present but no coordinate information is available.
A: 1. Check if the GPS module is indeed present; also check if the HDD is installed and properly contacted.
2. Check if the GPS antenna is properly contacted and if the antenna is broken. The antenna is recommended to be placed in an area having a strong signal. Note that some car glass shielding may interfere with receiving a proper GPS signal.
3. If the test is conducted indoors and the GPS antenna is also indoors and shielded, it is recommended to place the GPS antenna outdoors.

Q: GPS geographic position is not accurately displayed on map.
A: If the GPS module is positioned, it indicates that the signal is valid. Government limitation, error tolerance or GPS signal interruption may cause deviation. The satellite map may have some deviation for safety reasons. In general, this can be solved by using GPS correction.
Appendix

CMS Related Problems

**Q:** The device is powered on while the CMS client does not display vehicle information or video.

**A:**
1. Check if the central registration server is powered on and online. Then check if the device number is used, thereby causing a conflict. Also check if the IP and port number are set correctly for the server center.
2. Check if the device reports information to the server via the built-in 3G module or WiFi (if available). If the built-in 3G is used, check if the right type is selected; for example, WCDMA and EVDO correspond to related SIM cards.
3. Check if the antenna is properly connected, if data access point(s) and center number are correctly set. If it still does not work, please collect as much information as possible about your setup and submit it to the technical support department for analysis and to facilitate troubleshooting.

**Q:** The device is online but a video image is not displayed.

**A:** Please set a lower sub-stream to transmit images. Then the sub-stream is set too high, block or slower transmission rates may result due to uploading limits of the network; the video transmission may be seriously affected due to weak network signal or intermittence.

**Q:** The device reports information to the CMS, but after a period of time it ceases to transmit video.

**A:**
1. Check if the device information displays dial-up. If it does then the traffic for the SIM card may be used up. Replace it with a new SIM card.
2. Check if the device number has been changed. If it has, your vehicle information will be reported again to the server.
3. If card replacement does not solve the problem, check if the device 3G module is faulty.
Appendix

Reference Tables

10-8 HD4SD Memory Space Reference

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Picture Quality</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td></td>
<td>900</td>
<td>670</td>
<td>540</td>
<td>450</td>
<td>390</td>
<td>350</td>
<td>315</td>
<td>280</td>
</tr>
<tr>
<td>HD1</td>
<td></td>
<td>560</td>
<td>420</td>
<td>335</td>
<td>280</td>
<td>245</td>
<td>220</td>
<td>195</td>
<td>175</td>
</tr>
<tr>
<td>CIF</td>
<td></td>
<td>350</td>
<td>260</td>
<td>210</td>
<td>175</td>
<td>150</td>
<td>135</td>
<td>120</td>
<td>110</td>
</tr>
<tr>
<td>960H</td>
<td></td>
<td>904</td>
<td>792</td>
<td>680</td>
<td>567</td>
<td>455</td>
<td>343</td>
<td>229</td>
<td>173</td>
</tr>
<tr>
<td>720P</td>
<td></td>
<td>1804</td>
<td>1355</td>
<td>905</td>
<td>680</td>
<td>455</td>
<td>343</td>
<td>229</td>
<td>173</td>
</tr>
</tbody>
</table>

The above table shows the recording space required for one-way images per hour. This table is for reference only. The size of the file is related to illumination change and object motion of the current channel. The video file may be much smaller. To save space, you can disable audio or an undesirable video channel.

Tools Required for 10-8 HD4SD Installation

<table>
<thead>
<tr>
<th>S/N</th>
<th>Name</th>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Multimeter</td>
<td>As Needed</td>
<td>Test the electrical circuit</td>
</tr>
<tr>
<td>2</td>
<td>Drill Bit</td>
<td>As Needed</td>
<td>Create holes for mounting</td>
</tr>
<tr>
<td>3</td>
<td>Remote Control</td>
<td>Special Tool</td>
<td>For device debugging</td>
</tr>
<tr>
<td>4</td>
<td>Electroprobe</td>
<td>As Needed</td>
<td>Test electrical circuits</td>
</tr>
<tr>
<td>5</td>
<td>Display</td>
<td>Special Tool</td>
<td>For device debugging</td>
</tr>
<tr>
<td>6</td>
<td>Wire Stripper</td>
<td>As Needed</td>
<td>For stripping wires</td>
</tr>
<tr>
<td>7</td>
<td>Screwdriver</td>
<td>As Needed</td>
<td>For device maintenance</td>
</tr>
<tr>
<td>8</td>
<td>Allen Wrench</td>
<td>As Needed</td>
<td>For device maintenance</td>
</tr>
<tr>
<td>9</td>
<td>Tape Measure</td>
<td>As Needed</td>
<td>For measurement</td>
</tr>
<tr>
<td>10</td>
<td>Cutting Pliers</td>
<td>As Needed</td>
<td>For cutting</td>
</tr>
<tr>
<td>11</td>
<td>Pincer Pliers</td>
<td>As Needed</td>
<td>For cutting</td>
</tr>
<tr>
<td>12</td>
<td>Electric Screwdriver</td>
<td>As Needed</td>
<td>For device maintenance</td>
</tr>
</tbody>
</table>
### 10-8 HD4SD Additional Parts Needed
(Not Included)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power cord</td>
<td>Tie Straps</td>
</tr>
<tr>
<td>Self Tapping Screws</td>
<td>Electrical Tape</td>
</tr>
<tr>
<td>ACC Cable</td>
<td>Fire Resistant Cable Housing</td>
</tr>
<tr>
<td>Wire Clips</td>
<td></td>
</tr>
</tbody>
</table>

### Revision History

<table>
<thead>
<tr>
<th>Issue Date</th>
<th>Revised By</th>
<th>Notes</th>
<th>Upgrade/Change Description</th>
<th>Revision</th>
</tr>
</thead>
</table>

for: ____________________ (Enter Serial Number Here)