



CRX

8CH AHD Mobile Digital Video Recorder



Installation Guide

v1.1.1

WARNING: SmartWitness installations should be performed by a qualified individual or installation professional only. Working with a vehicle's power system can be dangerous to both you and your vehicle. This installation is intended only to be a guide since vehicle designs and power/input sources can vary significantly from vehicle to vehicle.

If you need to request a professional installation service in the USA for your SmartWitness device(s), please visit smartwitness.com/request-install and submit the online form.

All cellular-enabled CRX devices must use the installation wizard for proper onboarding and activation, please visit install.smartwitness.com to register, login, and use the SmartInstall wizard.



1. Overview

The SmartWitness CRX offers High Definition in-vehicle CCTV recording for up to 8 cameras. CRX provides fleet operators with an effective way to monitor and manage their remote assets whilst in the field. In the event of an incident and/or allegation the CRX HD mobile will aid in the investigation process whilst reducing potential cost and exposure. In-Vehicle CCTV delivers actual video footage in the event of a claim, encourages safer more fuel efficient driving, monitors driving behaviors and enhances the overall safety and security for the driver, the fleet operator and other road users.

The solution includes a built-in 3-Axis G-Sensor, GPS, 8 alarm input triggers, flexible and powerful storage using an SSD (up to 512GB) and SD Card backup storage (up to 128GB). The CRX is slim and compact, only 7" x 7" x 2" and is connected directly to the vehicle's battery power and ignition for fully automated operation. Optionally connect a dashboard mounted LCD display to provides the driver with a real-time 360' view of the interior and exterior of the vehicle.

➤ Features

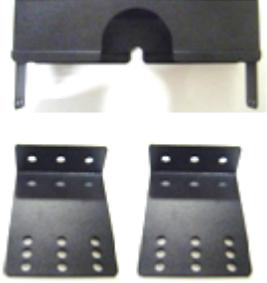
Recording Features	
720P HD and 30FPS recording on all 8 camera channels (1080P available, 4 channels max).	Various camera options: wide angle, weatherproof, infrared, dome, side view, rugged, reverse cameras
Dual Record mode (Continuous + Event)	Optional Audio Recording
Connects directly to vehicle ignition power, automated operation.	Tamper-Resistant locking cover and secure cover for rear cable inputs; additional Key required to remove SSD.
GPS data records full time to provide location data, vehicle speed, and accurate time/date.	Adjustable Resolution & Frame Rate.
Built-in G-Shock Sensor (adjustable sensitivity).	8 Alarm input triggers for advanced event recording.
Optional Wi-Fi and/or 3G/LTE Cellular connectivity for real-time video upload and live GPS tracking.	Battery backup included for recording and notification of incident in case of abrupt power loss.

Playback & Analysis Features

PC Analysis Software Included.	Optional Wi-Fi: transmits the pending emails once CRX connects to Wi-Fi AP.
Request HD video on demand from anywhere.	Filter Data Search by Time/Date, Event, Vehicle Speed, G-Force level
MP4 Conversion Tool. Data Remains Watermarked.	Privacy masking feature for blurring out faces or license plate numbers.
Google Maps Integration for Route Tracking.	Advanced Driver Behavior Analysis & Reporting Software.
Save/Print Event Reports.	OTA Software & Firmware Updates.
API available for integration with Telematics/AVL software.	With optional LCD monitor connected, view all camera channels at once or playback recorded videos in the vehicle

➤ Package Contents

Product Name	Image
CRX DVR	
GPS antenna module	
SSD Drive in removable case	

<p>L-Brackets and Rear Cable Cover</p>	
<p>Screws</p>	
<p>Keys for internal lock (Turns on device and locks SSD case in the CRX unit)</p>	
<p>Keys for external lock (Locks main unit's front cover)</p>	
<p>Camera Cable harness (x2) connects 4 cameras each. 4 pin aviation connector.</p>	
<p>Alarm I/O Trigger Harness and & A/V Output for connecting an LCD monitor</p>	

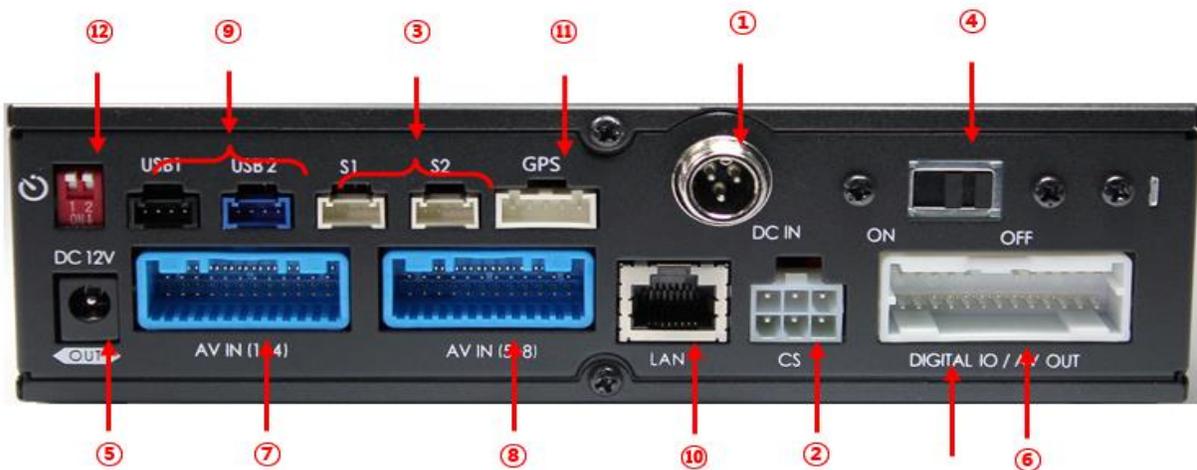
<p>Power Cable 400mm</p>	
<p>Car Signal input cable: left, right, brake, speed(VSS). Analog input only. Optional use.</p>	
<p>External LTE Modem + Antenna (Optional Accessory)</p>	
<p>External Wi-Fi/LTE Modem Case (Optional Accessory)</p>	
<p>Wire Splice clip & Velcro Sticker</p>	
<p>BB900 Backup Power Device</p>	

2. CRX Hardware Overview

➤ Front View



➤ Rear View 8



1. Power Connector:

Use the included power cable bundle for this connection, the battery cable connects to the battery power (BAT+) and the ACC cable connects to the ignition (IGN+). The black wire connects to ground (BAT-).

2. Car Signal Connector:

Use the car signal cable bundle for this connection. Connect the appropriate car signals to the labeled cables.



3. Serial Ports:

Port 1: Connect external device usually used for system maintenance.

Port 2: Connect external device usually used to connect EMS Alert Unit.

Port 3: Connect external device usually allotted for external GPS.

4. Main Power Switch.

5. Power Output (Output Voltage: DC 12V, 1A).

6. Digital IO / AV out Connector.

Digital Input 1: Allotted for RPM signal.

Digital Input 2 ~ 8: Connects to other signal inputs such as panic switch, horn, door open and close, etc.

Digital Output 1 ~ 2.

Audio / Video Out.

7. AV in (1~4) Connector.

Cameras 1 ~ 4: Video, audio, and 12 V power supply.

8. AV in (5~8) Connector.

Cameras 5 ~ 8: Video, audio, and 12 V power supply.

9. USB connector.

USB1: Optional serial connector accessory.

USB2 (blue connector): Connect USB Dongle (3G, LTE, Wi-Fi)

10. Ethernet connector.

Supports network connection.

11. GPS Connector

12. Power ON Delay Dip Switch.

➤ **Side View with Mountain Brackets**



➤ **Rear view with secure cover**



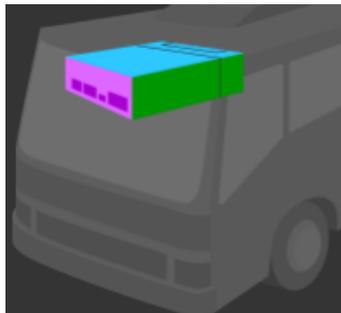
3. Installation

Park the vehicle on a flat service. Turn off the engine before installing the CRX.

- Insert the provided SD card into the SD card memory slot, and lock the SD card by sliding the SD locking switch.
- Insert CRX into the locking case. If no locking case, use the provided adhesive.

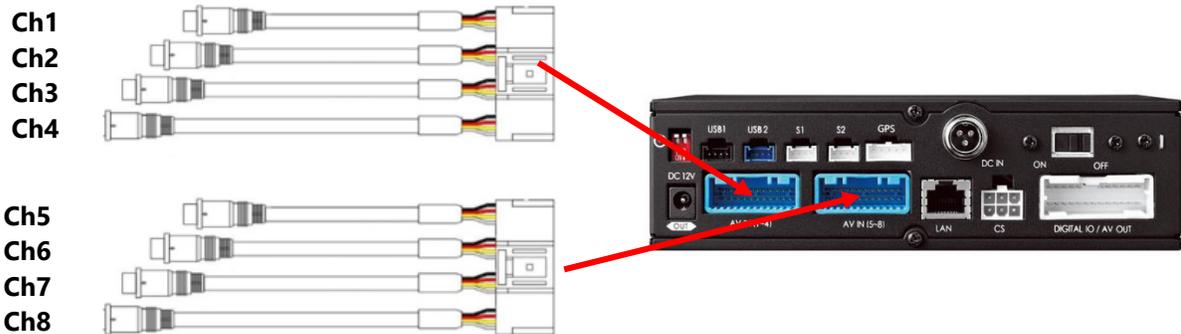
Note: The adhesive will not stick well with dust or oil, etc. Please make sure the surface is clean before applying.

- Find installation location for recorder and locking case.
 - The default access adjustments by device position is set as shown below.



(Purple = rear panel, Blue = top panel)

- Install all the interior and exterior cameras with 3M dual sided adhesive or hard mounting screws (confirm with customer as to the desired installation method).
 - All the cameras will be connected to the CRX recorder via the **Camera Input Cable**.





- Run the camera cable(s) and secure in headliner and or other area so no cables are exposed. Use provided wire clips if necessary.
- Connect all cables to CRX Recorder. Secure the windshield mounted camera cables into the headliner and down the A-Pillar. Route the GPS cable up the side panel and on the dashboard, in view of the windshield (so it can have a view of the sky to acquire GPS signal).
 - Activate the product in an area without large buildings to improve GPS reception.
 - The temperature ranges for optimum operation of the GPS receiver in your car is -10 ~ 50°C.

GPS reception may be impaired under the following circumstances

- 1) If there is an object at the end of the GPS antenna
- 2) If your vehicle has metallic elements on the windshields
- 3) If equipment generating electromagnetic waves that interfere with the GPS signal is installed in the vehicle e.g.: Other GPS devices such as a certain type of wireless activated alarms, MP3 and CD players and camera alarms using GPS.
- 4) If you are using a receiver connected by cable, electric interference can be avoided by simply changing the location of the receiver (antenna).
- 5) On heavily overcast or cloudy days, if the vehicle is in a covered location such as under a bridge or raised roadway, in a tunnel, an underground roadway or parking area, inside a building or surrounded by high-rise buildings.
- 6) If GPS signal reception is poor, it may take longer to locate your current position when the vehicle is moving than when it is stationary.



CRX GPS and LTE antenna properly installed on the Vehicle Dash
DO NOT ATTACH THE LTE ANTENNA ONTO A METAL SURFACE

➤ **Camera Types**

- CRX has various camera models offered which should be installed in the appropriate location. Here is a reference guide for the common models.

Model #	Picture	Installation Location	Notes
SVA032-A		Road facing on Windshield	IP68 Weatherproof rated. L bracket included for various mounting options.
SVA040-A		Driver Facing, on Windshield	Infrared LEDs.
SVA045-AM		Road facing, on Windshield	No IR LEDs.
SVA035-A		Outside of vehicle, either side mount or rear backup view.	IP 69 Weatherproof. Camera module can rotate 360° and tilt up and down as needed.
SVA036-C		Outside of vehicle. Rear backup view	IP 69 Weatherproof. Sun/rain shield included.
SVA033-C		Versatile camera, may be mounted as driver facing (inside), side view (outside), or rear view (outside)	IP 68 Weatherproof. L bracket included for various mounting options.

4. CRX Power Cable & Wiring

Lay out the power cable roughly where it will run once hidden behind the vehicle's interior panels. This gives you an idea of where to route the cable and how much slack to leave on the way down to the vehicle's power source.

Secure the power cable extension into the headliner and down the A-Pillar. Route the power cable around the side and behind the rest of the interior panels down towards the fuse box / power source. Make sure the vehicle is off, then connect the required wires to the vehicle, as shown below in the wiring diagram.

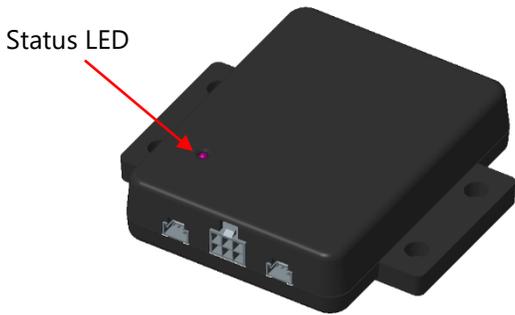
➤ Power Connection

- Black - Ground: BAT(-)
 - Red - Power: BAT(+)
 - White - Ignition (IGN+)
- } Required

Power Specifications
 Input: 12V/24V DC 3A
 Max Power Consumption: 96W



➤ Backup Power Device Installation Process:



RS-232 Serial Cable
For CRX (connect to
S2 port)

RS-232 Serial Cable
For external device
(pass-through)

Power cable port
(Power Input/Output)

1. Use the included power cable bundle for the power connection, the battery cable connects to the battery power (BAT+) and the ACC cable connects to the ignition (IGN+). The black wire connects to ground (BAT-).
2. Connect DC OUT cable to DC IN port at CRX.
3. Connect the included serial cable to the DVR port and the S2 port at CRX

Connect 3 cables to vehicle

- Black (Ground)
- Red (Power B+)
- White (IGN+)



Connect this connector to
CRX

SMARTWITNESS

4. Attach the CRX-BB900 using the provided double sided 3M tape. The surface must be clean and dry before you install. We recommended to install the product behind the rear view mirror on the front windshield.



S2 port

DC IN port

- Remote Panic Button Connection (Optional). Install remote control onto dash next to the steering wheel and within reach of the driver.



- Connect the red wire to Sensor In #5 on the CRX wiring harness.
- Connect the black wire to ground (BAT-).



Digital IO & A/V

- **Connecting a Wi-Fi or Cellular Modem (Optional)**

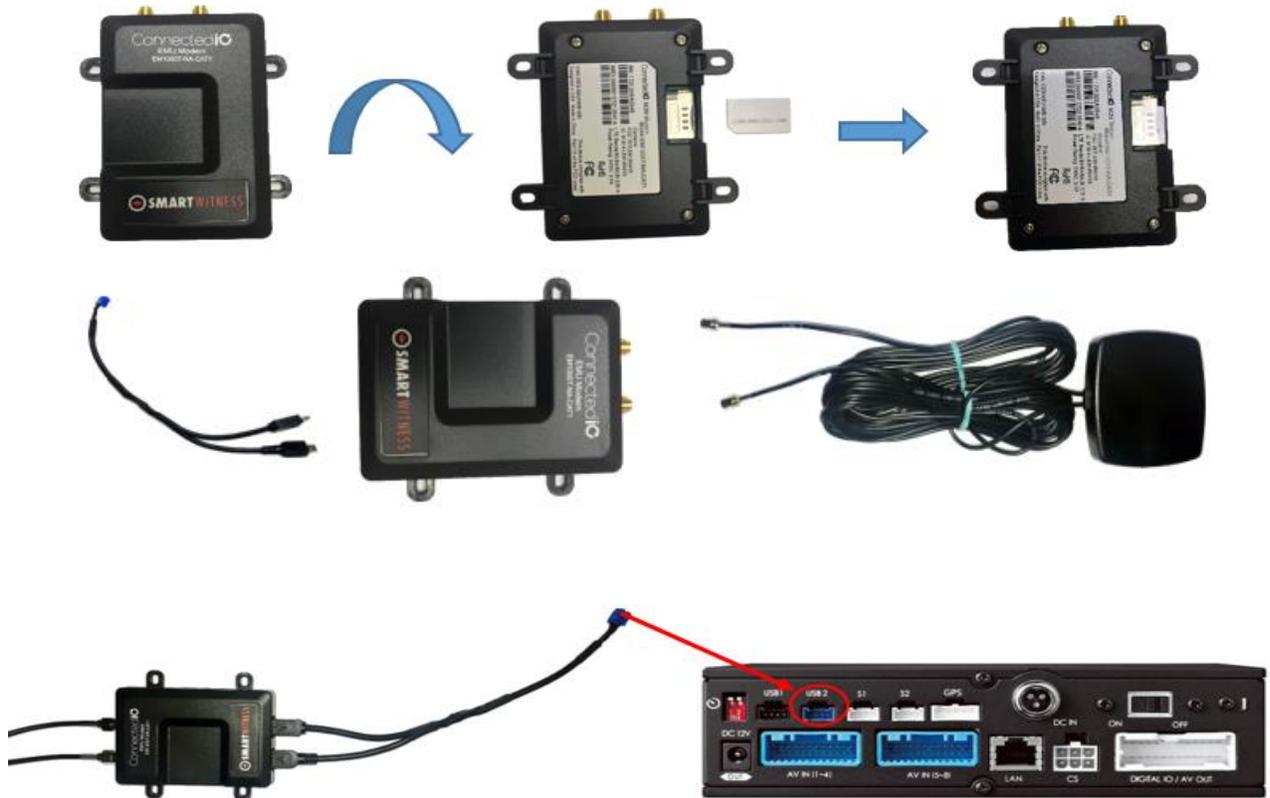


Connect the blue 4-pin molex connector to the blue "USB 2" port on the rear of the CRX.



○ **Connecting CIO LTE modem (Optional):**

- If customer or TSP is bringing their own sim, then the SIM may first need to be inserted. If no SIM is provided, then it may be a SmartWitness provided SIM. In this case, the SIM will already be inserted.



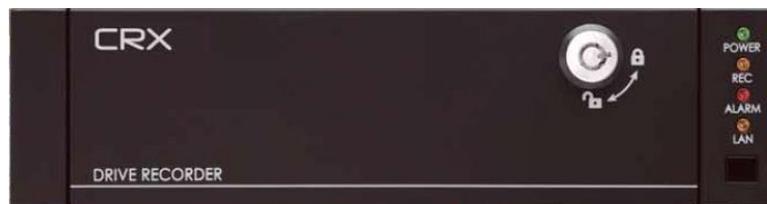
➤ Connecting LCD monitor with Video Output cable (Optional)

1. Connect RCA male-male cable (not included) to CRX Video output (RCA female) and LCD V1 input (RCA female).
2. LCD monitor should be installed in the cab. (download LCD monitor spec from install.smartwitness.com)
3. Connect LCD power cable to vehicle ignition (IGN+) and Ground to BAT (-).



➤ Final Steps

After installing the CRX and accessories into the vehicle you can lock the main cover of the CRX using the external locking keys. Turn the ignition of, there will be LED sequence of green, orange and red during the boot-up process. At power on, the POWER LED will illuminate immediately and the CRX will go into system check. Once device is operational, the REC LED will also illuminate. This usually takes about a minute but in some cases, the device may need to reboot in such case it will take about 5 minutes.



- If the Alarm LED is on (red LED) then there is an error, then contact your supplier or visit www.support.smartwitness.com to create a support ticket.

Note: The unit will not start recording immediately after power on. It takes around 30 seconds for the built-in power backup system to charge. Thereafter, the SD card will be ready to record.

➤ Troubleshooting

- **REC LED is off.**
 - This means that the SSD is not inserted into the CRX.
- **CRX Alarm LED is blinking.**
 - Blinking red LED indicates that one of the connected cameras is not receiving view signal. Please check the camera's connection.
- **CRX Alarm LED is solid.**
 - There may be a problem with the camera connection or data storage device, please contact your installer.
- **CRX LAN LED is blinking or off.**
 - The SIM card is not registered with the cellular network. Please verify the SIM is inserted correctly.
 - If it looks to be inserted correctly, please remove and re-insert the SIM card and try again
 - Power cycle the camera.

➤ LEDs Specifications

[POWER]: Solid ON when the CRX is powered (Green LED).

[REC]: Solid ON when recording (Orange LED).

[ALARM]: Solid ON when there are any failures such as missing camera input, bad SSD, etc. (Red LED).

[LAN]: Solid ON when connected to the network (Orange LED) and flashing if network/server error.



At power up, the **POWER** LED will illuminate immediately and the CRX will go into system check. Once device is operational, the **REC** LED will also illuminate. This usually takes about a minute but in some cases, the device may need to reboot in which case it will take about 5 minutes.