SMARTWITNESS

CP4

Wi-Fi/LTE enabled 4 Channel HD Recorder

Installation Guide

v1.2

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 schedule 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 CP4 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 CP4 is the world's smallest 4 channel cellular-enabled vehicle recorder. CP4, an in-vehicle drive recorder, offers commercial vehicle owners an effective risk reducing means to aid in the investigation process, decrease collateral damages associated with car accidents, encourage safe driving, monitor driving behaviors, and enhance the overall safety on the road. CP4 features 4 camera inputs for connecting 1, 2, 3, or 4 cameras. A 6-Axis G-Sensor, Microphone, SD card (up to 128GB capacity), panic button, cellular modem, & GPS receiver are included. CP4 is powered up on vehicle ignition and automatically begins recording. Various camera options are available, making the amount of possible CP4 system combinations nearly endless.

CP4 is the successor to the popular SmartWitness SVC400, which exceeded 50,000 commercial vehicle installations worldwide including school buses, taxis, semi-trucks, tow trucks, fork-lifts, ambulances, garbage trucks, van fleets, and more. An LCD display can be connected to CP4, making it double as a rearview backup system and/or blind-spot aid.

➤ Benefits

The CP4 is a powerful, compact and discreet 4 camera recorder for recording up to 4 cameras with audio. The CP4 will record exactly what happened before, during and after an incident. It does this by recording the following information: Drivers view of the road, Vehicle Location, Impact Force of Accident, Audio, & Driving Style (speed, acceleration, braking, & steering). This evidence can protect a driver from many of the issues faced on the roads today: Insurance fraud, Staged Accidents, False/Exaggerated Whiplash Claims, Conflicting Reports of Actual Events, Driving Offense Allegations (speeding, traffic signal violations, swerving, etc.).

CP4 is small, lightweight, easy to use, and simple to install compared to other complex and expensive mobile DVRs. CP4 can be easily installed inside a glove box or purchased with a locking case to prevent unauthorized access to the recorded data. An LCD monitor is not required for use, but can be added to provide added visibility in and around the vehicle for added security and safer operation.

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➢ **Features**

Recording Features	
720P recording on channels 1-3 D1 (720x480) recording on channel 4.	128GB SD storage capacity, record up to 150 hours of footage on 4 camera setup.
Various camera options: wide angle, weatherproof, infrared, dome, side view, rugged, reverse cameras, etc.	Dual Record mode (Continuous + Event). Optional Audio Recording.
Connects directly to vehicle ignition power, automated operation.	Tamper-Resistant locking case available; Key required to access SD card Data.
GPS data records full time to provide location data, vehicle speed, and accurate time/date.	Three 12V alarm input triggers for advanced event recording.
Delay power shutdown feature enables recording for up to 24 hours after ignition off.	Built-in temperature logic for improved performance in high-temp environments.
Adjustable Resolution & Frame Rate. Built-in G-Shock Sensor and Gyro (adjustable sensitivity).	Auto SD card format feature. CP4 automatically detects SD error/corruption and auto-formats itself and begins recording again.

Playback & Analysis Features	
PC Analysis Software Included, which can be downloaded at: support.smartwitness.com	Compatible with SmartWitness Smart API for AVL/Telematics Integration.
Filter Data Search by Time/Date, Event, Vehicle Speed, G-Force level.	MP4 Conversion Tool. Data Remains Watermarked.
Google Maps Integration for Route Tracking.	Google Earth Export Tool for Advanced Route Tracking and Archiving.
Privacy masking feature for blurring out faces or license plate numbers.	31-day Vehicle Tracking History, showing vehicle location, speed and driving style regardless if event video was recorded or not.
Optional LCD monitor connected, view all four cameras at once or playback recorded videos in the vehicle	OTA Software & Firmware Updates. Save/Print Event Reports.

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➢ **Package Contents**

| Product Name	Image
CP4 Vehicle Recorder	
Power Cable BAT(+), IGN+, BAT(-)	
Remote Controller (Panic Button) with 3M adhesive	
Audio/Video Output Cable	
Camera Input Cable (4x Aviator input for Ch. 1-4)	
GPS Antenna Module	
Wire Splice clip & Velcro Sticker	

Locking Enclosure/Mounting Bracket (Optional Accessory)	
External LTE Modem + Antenna (Optional Accessory)	
External WiFi/LTE Modem (Optional Accessory)	

2. CP4 Hardware Overview

➢ Dimensions

4.75"

3.55"

Built-in microphone

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➢ **Front View**

Serial port   Debug port

SD Card Slot

External Microphone input

SD Locking Switch   USB Input 2

➢ **Rear View**

Internal Microphone
& Audible Alarm (speaker)

Camera input
Harness (4ch)

GPS input   WiFi/LTE input   Power input

Remote Controller input

Audio/Video output &
Speed, RPM, Alarm inputs
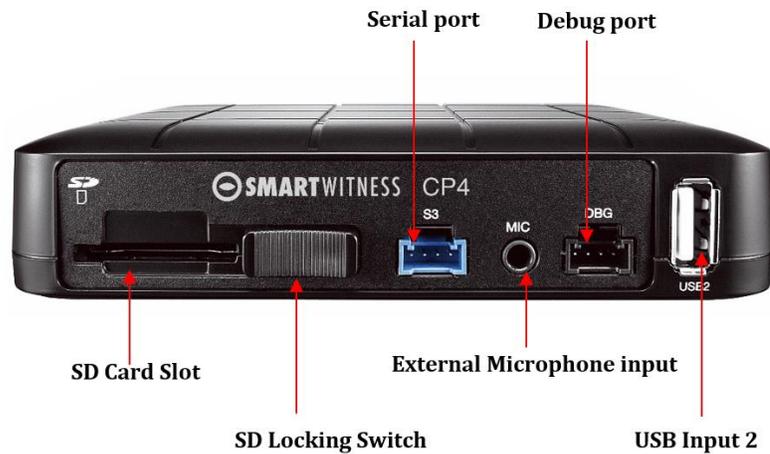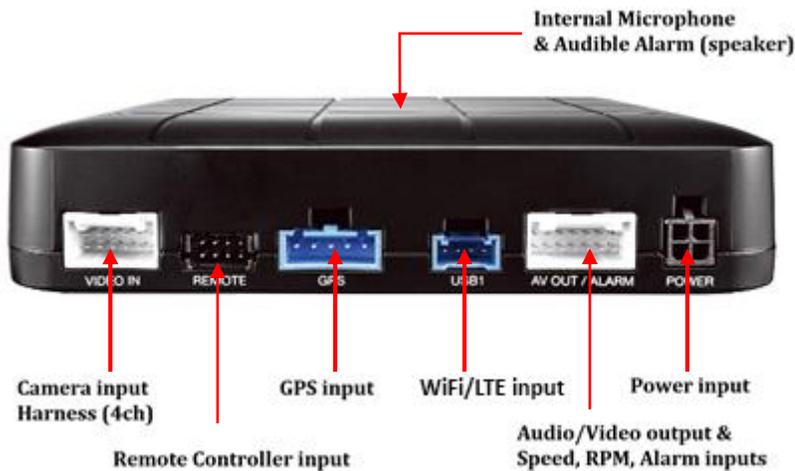
3. Installation:

Park the vehicle on a flat service. Turn of the engine before installing the CP4.

➢ Insert the provided SD card into the SD card memory slot, and lock the SD card by sliding the SD locking switch.

➢ Insert CP4 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 (if applicable).
  o The default axis adjustments by device position is set as shown below.
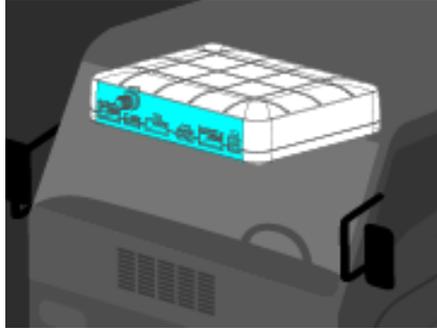
➤ Install all the interior and exterior cameras with 3M dual sided adhesive or hard mounting screws (confirm with customer as to the desired installation method).
  o All the four cameras will be connected to the CP4 recorder via the **Camera Input Cable**.

Ch1 (Digital)
Ch2 (Digital)
Ch3 (Digital)
Ch4 (Analog)

Ch4   Ch1
Ch3   Ch2
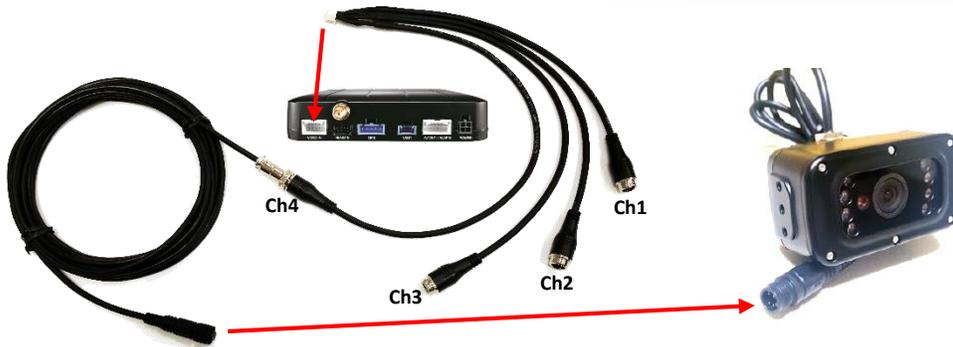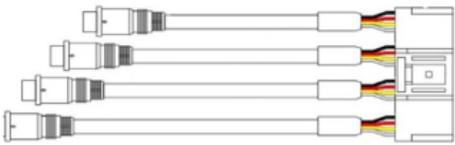
➤ Install remote control onto dash next to the steering wheel and within reach of the driver.

- ➢ If a WiFi or LTE modem antenna is required, make sure to connect it to the USB1 input on the rear side of the CP4 with the provided modem cable.
- ➢ Run camera cable(s) and secure in headliner an d or other area so no cables are exposed. Use provided wire clips if necessary.
- ➢ Connect all cables to CP4 Recorder. Secure the windshield mounted camera cables into the headliner and down the A-Pillar.
- ➢ **Route the GPS cable and LTE Antenna cable (if applicable) 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).
    - o Activate the product in an area without large buildings to improve GPS reception.
    - o 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.

- ➢ **CP4 GPS and LTE antenna properly installed on the Vehicle Dash**
- ➢ **DO NOT ATTACH THE LTE ANTENNA ONTO A METAL SURFACE**
    - ➢ (at least 5" separation between the 2 antennas)

➢ **Camera Types**
- o CP4 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		Verstaile 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.

➢ **Camera Channel inputs**
- o CP4 has some restrictions on which cameras can be connected to which channel inputs.
  1. **You cannot connect an "-A" camera to channel 4**
  2. **Ch 2 & 3 must have the same camera type (either both "-C" cameras or both "-A" cameras**

o   Here is a table of **acceptable** camera input configurations

Channel 1	Channel 2	Channel 3	Channel 4
A	A	A	C
A	A	A	
A	A		C
A	C	C	C
C	A	A	C
A	A		
C	C	C	C

o   Here is a table of **<u>unacceptable</u>** camera input configurations

Channel 1	Channel 2	Channel 3	Channel 4
A	A	A	A
A	A	C	
A	C	A	A
A	C	C	A
A	C	A	C
A	A	C	C
C	C	C	A

4. CP4 Power Cable and Wiring

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(+)   } Required
White - Ignition (IGN+)
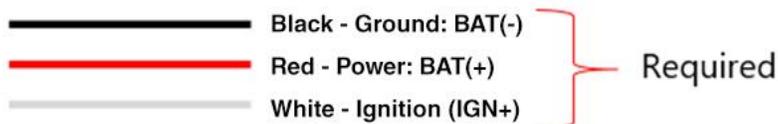
Power Specifications
Input: DC 10·32V, 2000 mA
Output: DC5V, 2500 mA

➢ Audio/Video Output Cable

White (Alarm In1, Voltage on/off (3~70V))
Purple (Alarm In2, Voltage on/off (3~70V))
Green (Alarm In3, Voltage on/off (3~70V))
Gray (RPM)
Blue (Speed)
Orange (Alarm out1), Low(0V) to High (5V)
Brown (Alarm out2), Low(0V) to High (5V)
3 x Black (Ground)

Optional

5. Locking Enclosure (Optional)

a. Rear View

Hole for external
3G/LTE Antenna

Cushion for cables

b. Inside View

Steel Guard
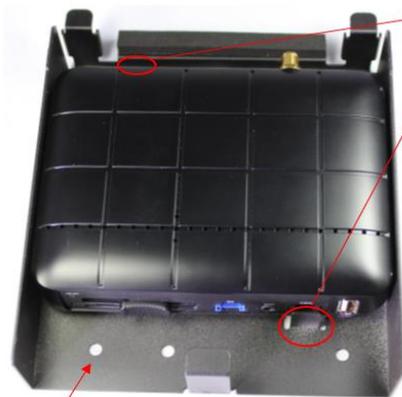
Screw holes
for mounting

## 6. Connecting a WiFi or Cellular Modem (Optional)

o After bootup, the CP4 remote should have a solid blue and green LED to indicate network connection.

➢ **Wifi/LTE modem type 1** (Connecting to USB1 port on the CP4 rear panel)

VIDEO IN   REMOTE   GPS   USB1   AV OUT / ALARM   POWER
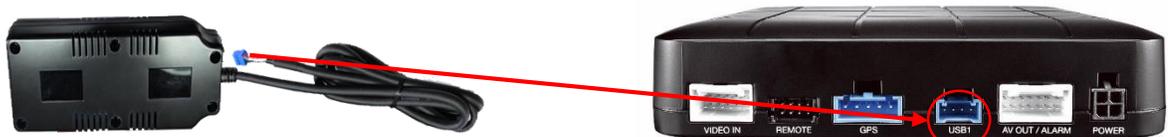
![SMARTWITNESS]

> ➤ **LTE modem type 2** (Connecting to **USB1** port on the CP4 rear panel)
> > o **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.**
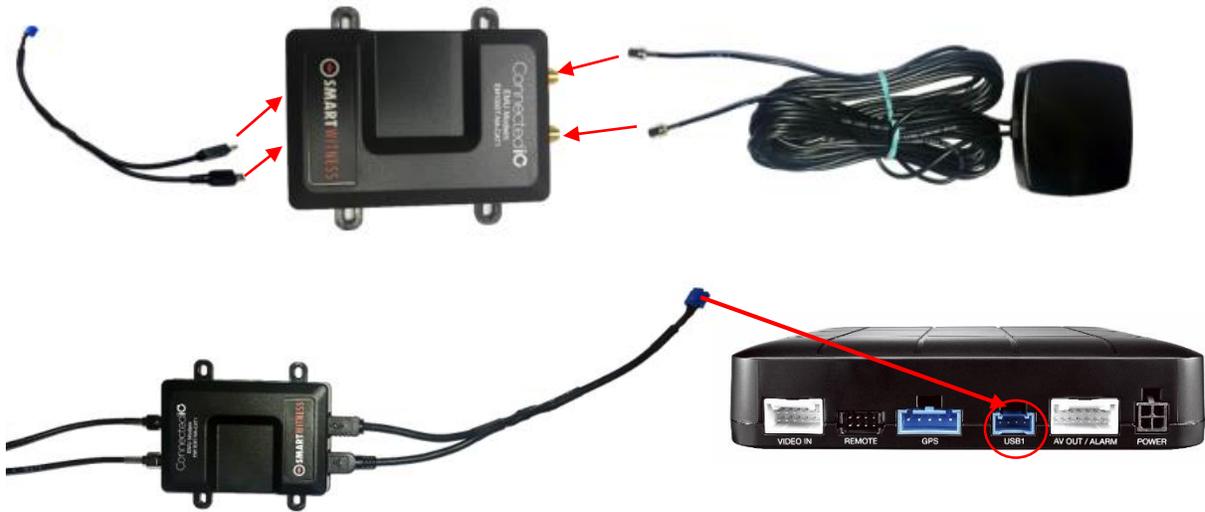
7. Connecting LCD monitor with Video Output cable (optional)

The following displays can only be seen when a monitor is connected.

1. Connect RCA male-male cable (not included) to CP4 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(-).
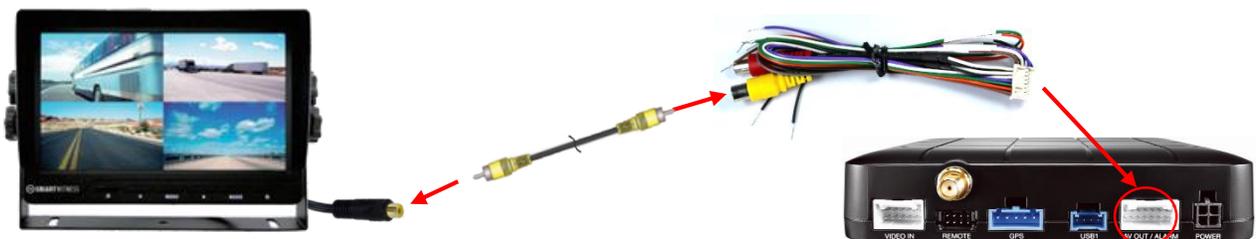
The default display is Quad view (2x2) with all cameras shown, to change the video display channel, press the [M2] button to select which camera to view. Each press will change the camera on display with the last option being all camera views.

8. Final steps

After installation of the CP4 and accessories into the vehicle you can turn on the ignition and CP4 recorder will power on. There will be a sequence of red, blue & green LED lights on the Remote/Panic Button during the boot-up process.

- o Once boot-up is complete, the red light will turn off and there will be only a solid blue & green (only for connected device) light on. This indicates proper operation and recording. If the red light is blinking, then there is an error, then contact your supplier or visit support.smartwitness.com to create a support ticket. ***Please see step 8 for more details on LED status indicators.***

> **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.

➢ **G-Sensor Calibration**

G-sensor calibration is needed after installing the CP4.

- a) Turn on the unit and wait until it starts recording.
- b) Press and hold **M1** button (located at the remote controller) for more than 2 seconds.
- c) You will hear a **beep** when you press **M1**, and then you will hear another **beep** after 2 seconds. Upon the second beep, you can release **M1** button.
- d) Then the calibration will be done within 2 seconds.

M1

M1
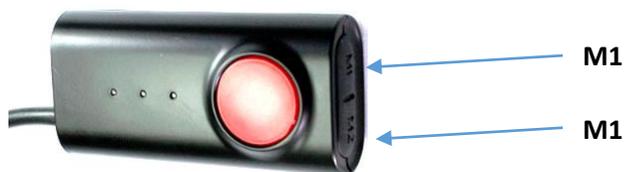
9. **Troubleshooting**

- **The CP4 has a solid red light on as well as solid green and blue.**
  - o Solid red LED indicates that one of the connected cameras is not receiving view signal. Please check the camera's connection.
- **The CP4 red LED is blinking**
  - o There is an SD card error/corruption. Please replace the SD card or contact SmartWitness.
    - ▪ The new SD card must be initialized with the CP4 Configuration Tool for the device to function properly, and the right settings must be applied.
    - ▪ IF SD card is blank (not initialized), the CP4 will automatically initialize the SD card, apply the latest NAND settings, during the rebooting process.

- **The CP4 green LED is blinking or off.**
  - o The SIM card is not registered with the cellular network. Please verify the SIM is inserted correctly.
  - o If it looks to be inserted correctly, please remove and re-insert the SIM card and try again
  - o Power cycle the camera.

10. **Remote Controller Indicators & LEDs Specifications**

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Status/Step			LED Warning (Red) ⚠	LED Record (Blue) ○	LED Network (Green) ▪	Buzzer	Voice [Remark] To hear the Voice, please audio output cable to speaker.
Start-up / Power off	Booting step1 (0~20)		On	Off	Off		
	Booting step2 (20~30)		On	On and Off	Off		
	Booting Finished (30, 1second)		On	On	On	[Beep] (1000Hz, 200msec)	「Beep」(1time)
	During Power off		Off	Simultaneous Flashing(Blink rate: fast)			
	Power off finished		Off	Off	Off	[Beep] [Beep] (500Hz, 150msec)	
Record	Continuous Record	Recording		On			
	Event record	Stand by		On			
		Recording		Flashing(Blink rate: fast)			
	Dual record	Continuous recording		On			
		Event recording		Flashing(Blink rate: fast)			
	No record	Not record		Off			
Network	3G Network Device Ready				On		
	Communication				On		
Function	SD Initialize (Format)		Off	On and Off	Off and On		(Beep, 1time) continuously
	G-Sensor Calibration						「Beep→(after 2 seconds) Beep、 Beep」
	FW Upgrade			On and On and Off and Off	Off and Off and On and On		
	Button Press					[Beep] (2000Hz, 200msec)	「Beep」
Warning	System Warning	SD Card Full	Flashing(Blink rate: fast)	Off			「Beep x 4」(3times)
		Video loss Video STD error	On				
Error	Record Error	SD error, No SD, Write fail	Flashing(Blink rate: Slow)	Off			「Beep x4」(3times)
	Network Error	3G Network Device error SIM error			Off		
		Data Network connection error			Flashing(Blink rate: Slow)		
		DMS communication error			Flashing(Blink rate: Slow)		
Event Trigger	G-Sensor, Panic Button, Alarm-In						「dingdong x2」(1time)
	Over Speed						「beep, beep x2」(1time)