Sensata IN

CP4S

4-channel HD
vehicle recorder

Installation guide

Version 1.1.1 | **Last updated 2/15/2023**

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Please read this entire guide before installation and use.
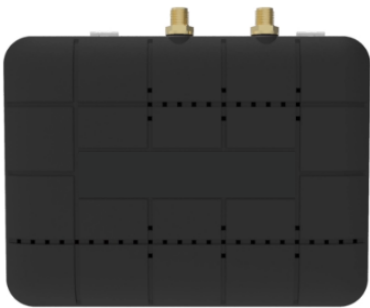

CP4S

Installation guide

Package contents

CP4S vehicle recorder

SD and SIM cards pre-inserted (if applicable)

Power cable
BAT(+), IGN+, BAT(-)

Remote controller
(Panic button) with 3M adhesive

Video output cable and I/O triggers

Camera input cable
(4x input)

GPS antenna module

Audio microphone

x4

**Wire splice clip, hook-and-loop adhesive,
Torx® screw (x2) and Torx screwdriver**

**Mounting bracket and
4x self-tapping screws**

2x stubby antennas

Overview

The Sensata INSIGHTS CP4S is the world's smallest 4-channel LTE-enabled vehicle recorder. The CP4S, 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 overall safety on the road. The CP4S features 4 camera inputs for connecting 1, 2, 3 or 4 cameras. A 6-axis G-sensor, microphone, SD card (up to 256GB capacity), panic button, cellular modem and GPS receiver are included. The CP4S is powered up on vehicle ignition and automatically begins recording. Various camera options are available, making the amount of possible CP4S system combinations nearly endless.

The CP4S is small, lightweight, easy to use and simple to install compared to other complex and expensive mobile DVRs. The CP4S 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.

WARNING:

Sensata INSIGHTS 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 Sensata INSIGHTS device(s), please visit **https://sensatainsights.com/contact/request-installation/** and submit the online form.
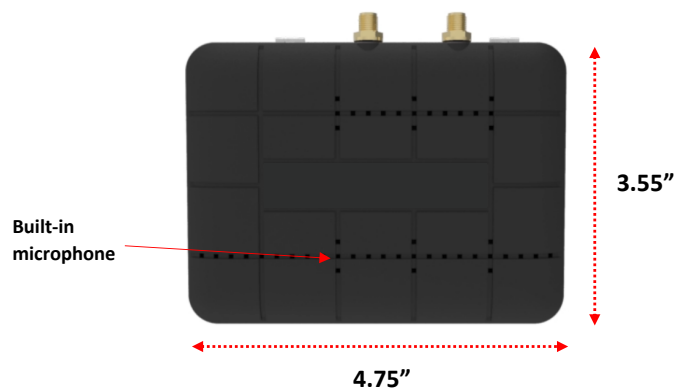
All cellular-enabled CP4S devices must use the installation wizard for proper onboarding and activation. Please visit SmartOPS to register, log in and use the install wizard.
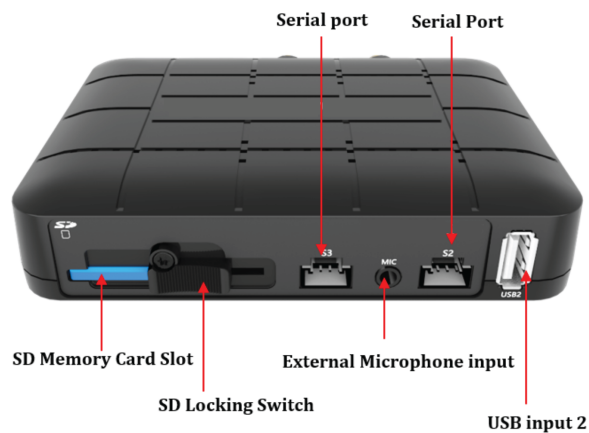
Hardware overview

Watch 360° hardware overview video here: https://youtu.be/cLmUPGLnqSM

Dimensions

Built-in microphone

3.55"

4.75"

Front view

Serial port   Serial Port

SD Memory Card Slot   External Microphone input

SD Locking Switch

USB input 2

Rear view

LTE antenna connectors

Internal Microphone & Buzzer

Camera input   GPS input   USB input   Power input

Remote Controller input   Audio/Video output & Speed, RPM, Alarm inputs

Remote controller

Green LED (Network)

Blue LED (Record)

Red LED (Warning)

PANIC Button

M2 button   M1 button
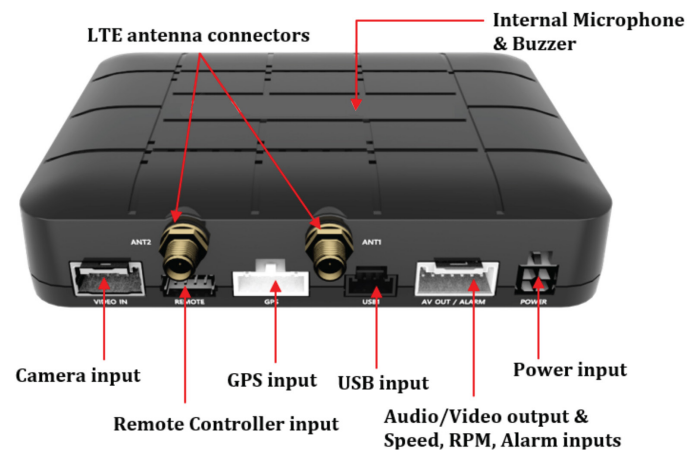
How to install your CP4S

1. Park the vehicle on a flat service. Turn off the engine before installing the CP4S.
   • The SD card and SIM is usually pre-inserted, but if it's not, you should be notified by the service provider and have been provided SIMs/SDs separately.

2. Find installation location for recorder and locking case (if applicable).
   • The default axis adjustments by device position are set as shown to the right.

3. 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 four cameras will be connected to the CP4S recorder via the **Camera Input Cable**.

Ch1: 1080p
Ch2: 720p
Ch3: 720p
Ch4: 720p

Ch4
Ch3
Ch2
Ch1   Connect to the camera.
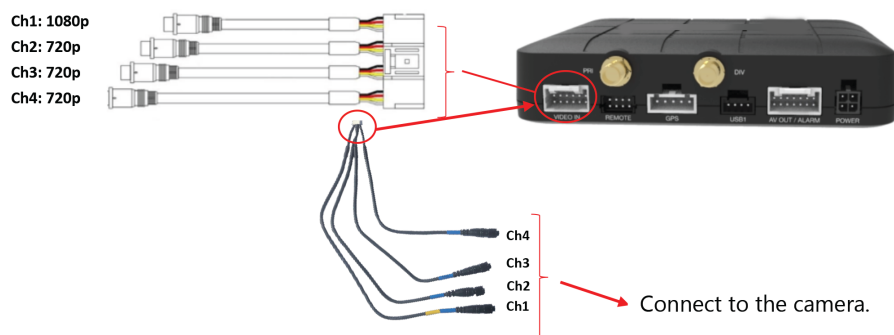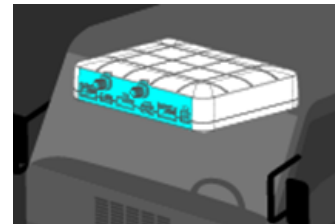
4. Install remote control onto dash next to the steering wheel and within reach of the driver.
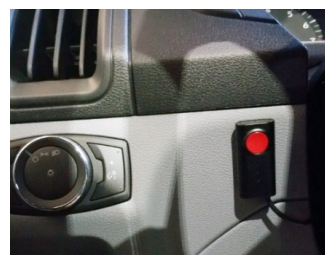
How to install your CP4S

5. Run camera cable(s) and secure in headliner and/or other area so no cables are exposed.
   Use provided wire clips if necessary.
6. Connect all cables to the CP4S recorder. Secure the windshield-mounted camera cables into the headliner
   and down the A-pillar.
7. 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).
   • 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 vehicle 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 the 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 certain types of wireless activated alarms, MP3/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 or if vehicle is in a covered location such as under a bridge or raised roadway, in a tunnel, 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

**CP4S GPS antenna properly installed
on the vehicle dash**

Accessory camera types

The CP4S has various accessory camera models available which should be installed in the appropriate location. A reference guide for the common camera models is below.

Model	Image	Installation location	Notes
SVA055-AM		Road + driver-facing dual camera	Road-facing camera is 1080p. Driver-facing camera is 720p. Driver camera has IR LEDs.
SVA027-A		Weatherproof side-mount camera	720p weatherproof camera, IR LEDs
SVA037-A		Rear view camera	720p weatherproof camera, IR LEDs
SVA050-A		Driver-facing camera	720p, IR LEDs
SVA041-AM		Road-facing camera	1080p

NOTE:
Older model accessory cameras are compatible with the CP4S.
To connect an older model accessory camera, please utilize adapter **SVA-CNVRT-B**.

Camera channel inputs

The CP4S has various configuration options for which cameras can be connected to each input (1~4).

Connecting one 1080p camera and 3x 720p cameras

Channel	Resolution	FPS
Ch1	1080p	15
Ch2	720p	15
Ch3	720p	10
Ch4	720p	10

Connecting 4x 720p cameras

Channel	Resolution	FPS
Ch1	720p	15
Ch2	720p	15
Ch3	720p	15
Ch4	720p	15

If using D1 (720x480 or VGA) camera, it must be connected to Ch4

Channel	Resolution	FPS
Ch1	720p	15
Ch2	720p	15
Ch3	720p	15
Ch4	D1	30

LCD camera channel display order (quad view)

NOTE:

In certain cases, camera channels can operate at 30FPS. This requires other camera channel resolutions to be lower. Review the CP4/CP4S Configuration Tool at support.smartwitness.com to preview the impact of different resolutions and frame rates on CP4S system storage.

Power cable and wiring

1. 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.
2. Secure the power cable extension into the headliner and down the A-pillar.
3. Route the power cable around the side and behind the rest of the interior panels down toward the fuse box/power source.
4. Make sure the vehicle is off, then connect the required wires to the vehicle, as shown below in the wiring diagram.
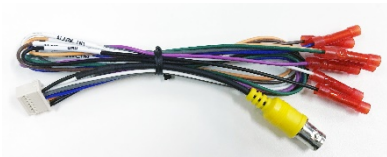
Power connection

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

Required

Power Specifications
Input: DC 10~32V, 2000 mA
Output: DC 5V, 2500 mA

IMPORTANT NOTE
True ignition source should be used to connect the white wire.

Video output cable and I/O harness (optional)

Video output for connecting LCD monitor (BNC female)

White: Alarm In 1, voltage on/off (3~70V)
Purple: Alarm In 2, voltage on/off (3~70V)
Green: Alarm In 3, voltage on/off (3~70V)
Orange: Alarm In 4, NC/NO (open/close)
Blue: Speed (TACHO)
Gray: RPM (TACHO)
Brown: Alarm out, low (0V) to high (5V)
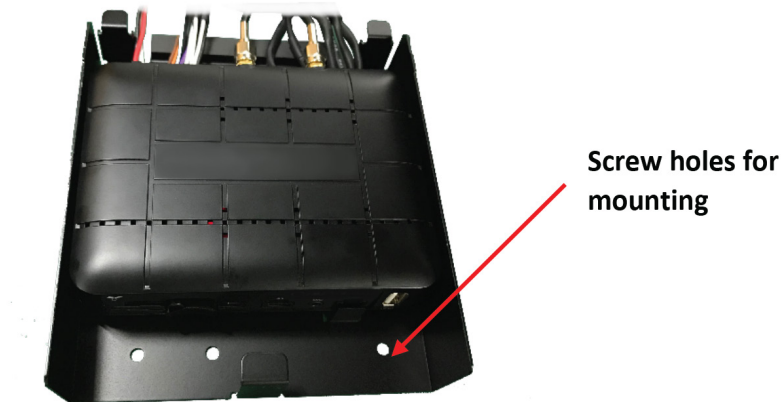**Black:** Ground for Alarm In 4 (NC/NO circuit)

Mounting bracket installation

Place the CP4S inside the mounting bracket, and secure to the vehicle using the four provided self-tapping screws.
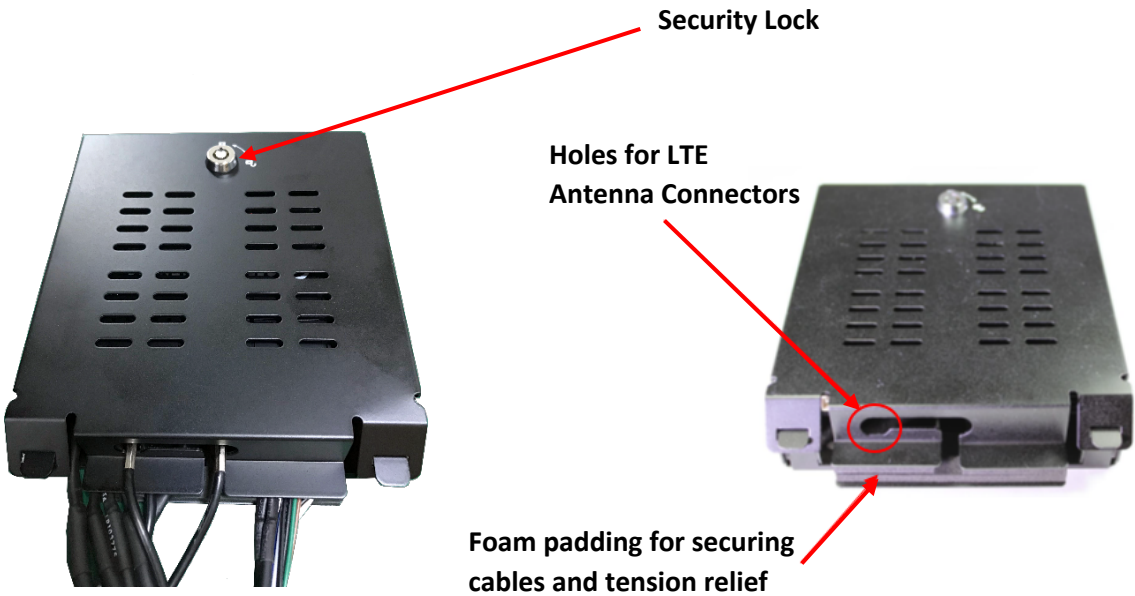
# Locking enclosure (optional)

Front view (open)

Screw holes for mounting

Rear view (closed)

Security Lock

Holes for LTE Antenna Connectors

Foam padding for securing cables and tension relief

Connecting LCD monitor with video output cable (optional)

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

1. Connect BNC/RCA cable (included with Sensata INSIGHTS LCD monitor) to CP4S video output (BNC female) and LCD V1 input (RCA female).
2. The LCD monitor should be installed in the cab. (Download the LCD monitor guide from SmartOPS. Login credentials required. A printed copy is also included in the LCD package.)
3. Connect the LCD power cable to a true ignition (IGN+) source and ground to BAT(-).
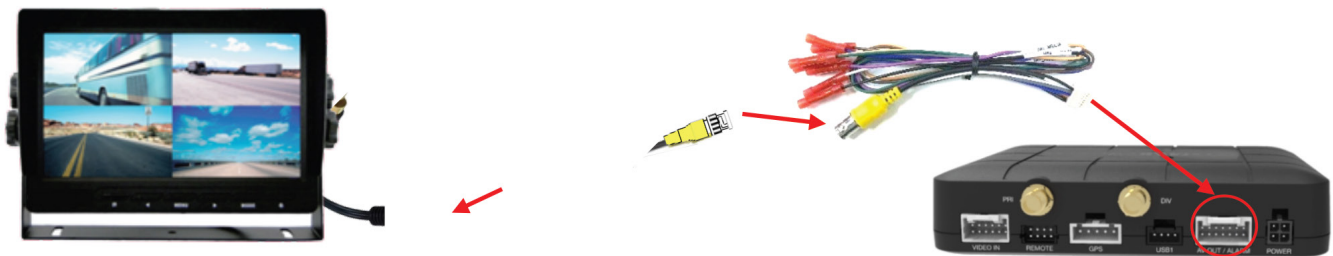
The default display is quad view (2x2) with all cameras shown. To change the video display channel, press the **M2** button to select which camera to view. Each press will change the camera on display with the last option being all camera views.

Final steps

After installation of the CP4S and accessories into the vehicle, you can turn on the ignition and the CP4S recorder will power on.

1. There will be a sequence of **red**, **blue** and **green** LED lights on the remote/panic button during the boot-up process.
2. Once boot-up is complete, the **red** light will turn off and there will be only solid **blue** and **green** (only for connected device) lights on. This indicates proper operation and recording.
3. If the **red** light is blinking, then there is an error. Please contact your supplier or visit support.smartwitness.com to create a support ticket. **Please see page 16 for more details on LED status indicators.**
4. Log in to SmartOPS and complete the installation wizard to validate the installation and generate the installation report.

> **NOTE:**
> To access installation resources through SmartOPS, you must first go through mandatory training with Sensata INSIGHTS. Once you complete the training (about a 30-minute webinar), you will be provided login credentials. To schedule training, please complete the online form here: https://sensatainsights.com/contact/become-an-installer/.

G-sensor calibration is needed after installing the CP4S.
1. Turn on the unit and wait until it starts recording.
2. Press and hold **M1** button (located at the remote controller) for more than 2 seconds.
3. 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.
4. Then the calibration will be done within 2 seconds.

M1 button for G-sensor calibration

Troubleshooting

The CP4S has a solid red light on as well as solid green and blue.
- Solid **red** LED indicates that one of the connected cameras is not receiving view signal. Please check the camera's connection.

The CP4S red LED is blinking.
- There is an SD card error/corruption. Please replace the SD card or contact Sensata INSIGHTS.
  - The new SD card must be initialized with the CP4S Configuration Tool for the device to function properly, and the right settings must be applied.
  - If the SD card is blank (not initialized), the CP4S will automatically initialize the SD card and apply the latest NAND settings during the rebooting process.
- There is a power issue. Please verify proper voltage and amperage are being supplied to the red (BAT+) and white (IGN+) cables on the power harness and that the black cable is properly connected to BAT(-).

The CP4S green LED is blinking or off.
- The SIM card is not registered with the cellular network. Please verify the SIM card is inserted correctly.
- If it looks to be inserted correctly, please remove and reinsert the SIM card and try again.
- Power cycle the camera.

Remote controller indicators and LED specifications

Status/step		LED			Buzzer	Voice To hear the Voice, please audio output cable to speaker
		Warning	Record	Network		
		Red	Blue	Green		
Startup and power off	Booting step 1 (0~20)	On	Off	Off		
	Booting step 2 (20~30)	On	On and off	Off		
	Booting finished (30, 1 second)	On	On	On	Beep (1000HZ, 200msec)	Beep (1 time)
	During power off	Off	Simultaneous flashing (blink rate: fast)			
	Power off finished	Off	Off	Off	Beep (2 times) (500HZ, 150msec)	
Record	Continuous record — Recording		On			
	Event record — Standby		On			
	Event record — Recording		Flashing (Blink rate: fast)			
	Dual record — Continuous recording		On			
	Dual record — Event recording		Flashing (Blink rate: fast)			
	No record — Not recording		Off			
Network	Network device ready			On		
	Communication			On		
Function	SD initialize (format)	Off	On and off	Off and on		Beep (1 time) continuously
	G-sensor calibration					Beep, after 2 seconds beep x 2
	FW upgrade		On/on and off/off	Off/off and on/on		
	Button press				Beep (2000Hz, 200msec)	Beep
Warning	System warning — SD card full	Flashing (Blink rate: fast)	Off			Beep x 4 (3 times)
	System warning — Video loss, video STD error	On				
Error	Record error — SD error, no SD, write fail	Flashing (Blink rate: slow)	Off			Beep x 4 (3 times)
	Network error — Network device error, SIM error			Off		
	Network error — Data network connection error			Flashing (Blink rate: slow)		
	Network error — DMS communication error			Flashing (Blink rate: slow)		
Event trigger	G-sensor, panic button, alarm-in					Dingdong x 2 (1 time)
	Over speed					Beep, beep x 2 (1 time)