



EROAD

Clarity Edge Multicam install guide



Technical support

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Workflow overview

To work correctly, **EROAD Clarity Edge** (“the unit”) must be mounted and calibrated, but mounting the unit and its optional accessories can affect the calibration. To combat this potential ‘chicken and egg’ scenario, EROAD mandates this general workflow:

1. If applicable, load approved miniSD card(s) and SIM cards and remove the protective lens films.
2. Mount the unit in the position indicated by the following instructions.
3. Roughly position optional accessories into their likely positions, and connect them together.
4. Connect the system to power, and calibrate the system’s components with the Clarity Edge Installer app. The app generates video feedback to see camera views, so you may firm up the position of optional cameras.
5. Troubleshoot where necessary.
6. Tidy cables and cab; photo-document the install.

Parts





Cable retention bracket

- Powerbox Max
- Regulatory card
- Window sticker
- Lens cover

Optional extras

- Standard-to-OBDII connector kit (comes with Y-splitter to allow additional OBD device)
- Fatigue Camera kit
- Remote button kit
- Rear camera
- Side Camera, Flush mount
- Side camera, Pole mount



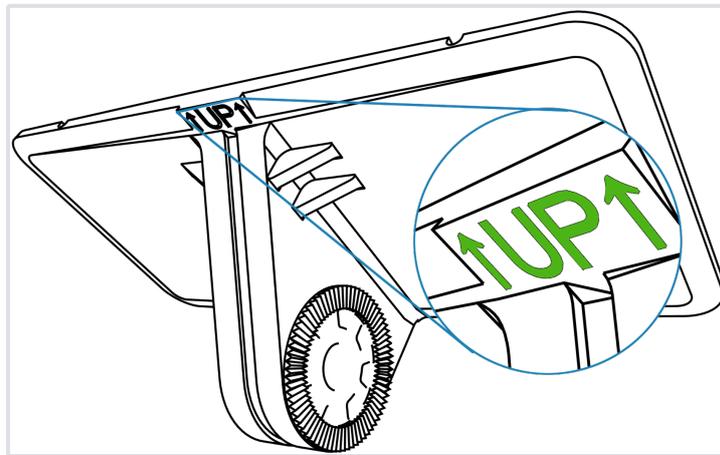
Pre-install instructions

⚠ Deviations from these instructions may result in a re-installation callout at the Installer's expense.

Following this guide means the mounting location will comply with local regulations.

Mounting Clarity Edge

The Clarity Edge unit comes with the Standard mount bracket. This bracket allows for up to 80° of tilt in common raked windshields.



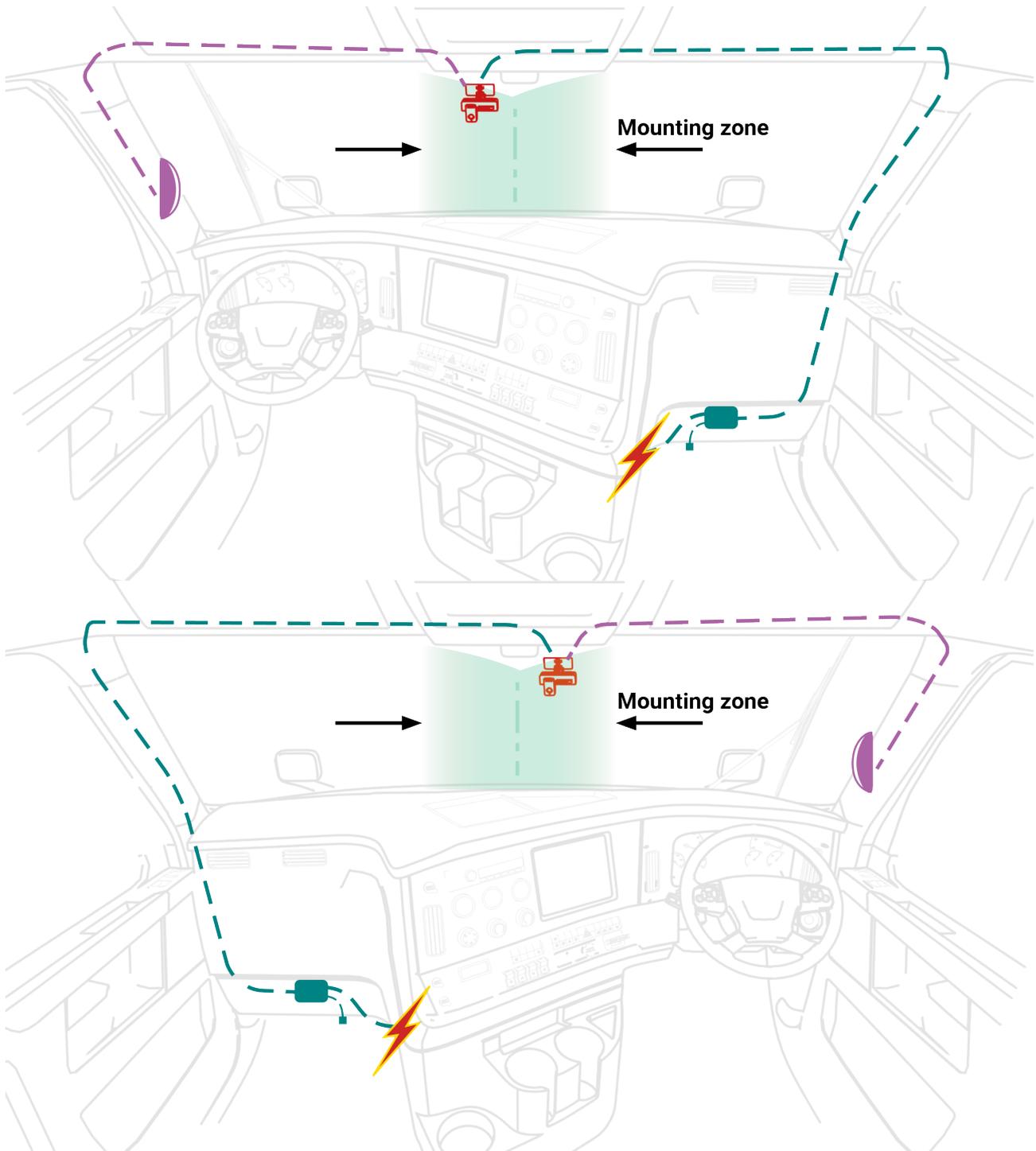
The mount sticks to:

- the middle of the front windshield
- around the rearview mirror area
- above the horizontal midline.

On flat ground, installers could use a spirit level or reliable digital app for alignment assistance.



Site position



The optimum site position is:

- **HORIZONTAL:** Within 50 mm (2 in) of the windshield's midline. (Within 150 mm (6 in) is supported.)
- **VERTICAL:** Approximately 20 cm (8 in) below the topmost sweep-edge of the windshield wipers, OR windshield tint visor, whichever is lowest
- **PROXIMITY:** Ideally, within 116 cm (46 in) from the driver's face.

Avoid installing other electronic devices around the unit, like intelligent rearview mirrors or electronic tags.

1. Clean the intended installation area with the IPA wipe.
2. Rewipe with a clean cloth, to remove any IPA residue.



3. Remove the 3M adhesive backing tape.
4. Align the long 'UP' edge horizontally, and press the bracket into the windshield for 10s such that no air bubbles are trapped between the windshield and bracket.
5. Connect the unit to the bracket with the front side facing inward (teeth on the right side of the bracket engaged with those on the right inner side of the unit).
6. Orient the unit so its top is level. Tighten the bracket stud with a PH2 Phillips screwdriver.

Mounting side cameras

Multicam supports two analog side cameras: rail-mount and flush-mount.

Each camera mount is fixed in place with screws.

Each camera within the mount may be physically rotated 360° about the forward axis, then locked with screws. Use the Clarity Edge app to view the camera's output and:

- aim the view along and wide of the truck wall, such that the wall occupies less than 15% of the view
- if possible, clear of any obscuring items, like exhaust stacks or loading gear (unless the item is the viewing purpose)
- rotate the camera such that its orientation marker is in the bottom-most position.

Orientation markers



Orientation markers. Each bump indicates the bottom of frame, or 'bottom-most edge'.



There is no way to auto-detect orientation/leveling of side cameras. The physical bump on-camera is visual aid to avoid sideways or upside-down image capture. Ensure side cameras are oriented such that the bump is in the downmost position, unless otherwise directed by the customer.



Mounting rear camera



Rear camera

The rear camera is prone to getting dirty, due to its location on a vehicle. Ensure the rear camera's visor is rotated as forward as it can, without blocking the camera's view or its surrounding IR lights.

If possible, situate the rear camera away from:

- kicked-up road debris
- operational zones (while clearly *viewing* operational zones)
- onboard moving equipment (unless tasked to view said equipment, such as concrete pouring chutes, watering jets, tailboards, etc.)



behind the opposite A-pillar trim to the unit, and the optional button for remote triggering a recorded clip, mounted on a dash blank.

Standard install

1. Mount all cameras – except the Clarity Edge itself – in situ before running cables from them to the Powerbox Max, to ensure you have adequate length.
2. Connect the Powerbox Max to the power supply cable. **ACC** and **POWER** wires to carry **5A** fuses.
3. Connect **Power** (fused), **ACC** (Ignition, fused) and **GND** to the corresponding correct vehicle connection points for the vehicle.
4. Use the EROAD recommended connection method of solder, tape & cable tie.



- **The power supply box MUST be firmly mounted in place via cable ties/ double sided tape.** secure it clear of any excessive shake or vibration locations (loudspeakers, engine, etc)
- The seatbelt power supply and the Powerbox Max MUST be firmly mounted in place via cable ties/ double sided tape. It needs to be kept clear of any locations with excessive shake or vibration (loudspeakers, engine, etc).



Mounting the optional Fatigue Camera

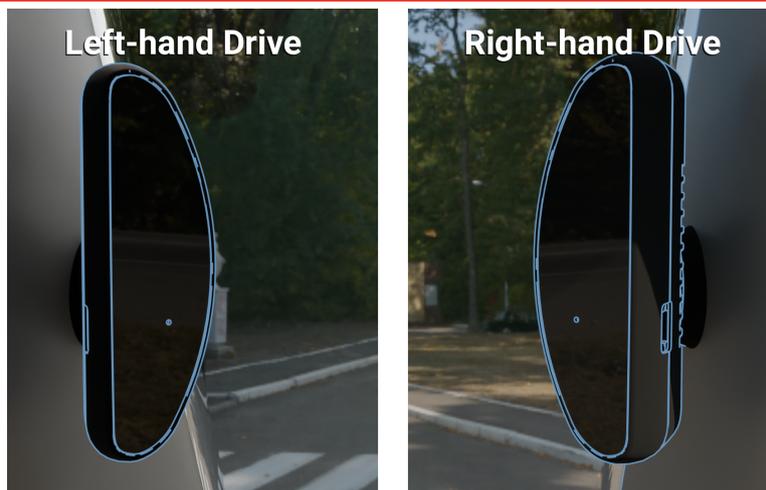
✓ Video

Fatigue Camera install video - <https://vimeo.com/955628260/5b4d861ea3>

Each Fatigue camera will come with the ordered mounting option: A-Pillar, Windshield, or bracket (often for dash mounts).

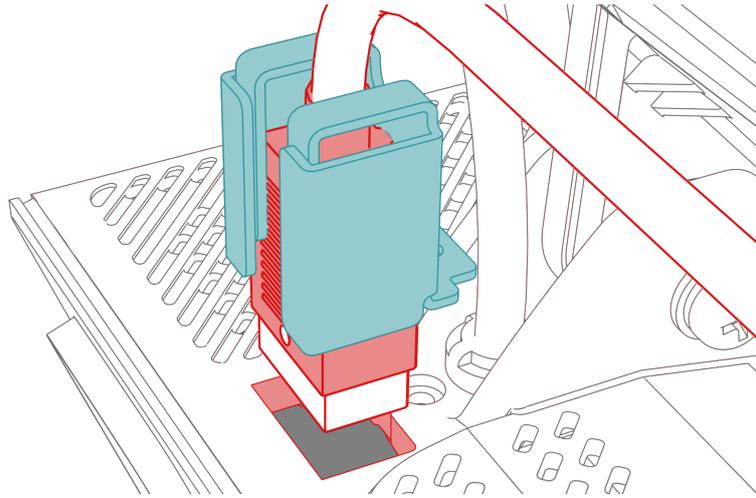
⚠ If the customer has ordered mounts that are inappropriate or dangerous for Fatigue camera installation, inform the customer before proceeding.

✗ **Check the vehicle for side-curtain airbags. If present, the Fatigue camera MUST NOT be fitted to the A-Pillar frame or trim.**



Fatigue camera

1. The previous video link showed how to install, including drilling 2 holes for the mount:
 - a. The Fatigue camera should align long-side vertically, curved side facing the cab's windshield, flat-face directly towards the driver.
 - b. Ideally, the Fatigue camera is mounted chin-height to a driver's face, but clear of the steering wheel.
 - c. The distance between the Fatigue camera's flat face and the driver's face should be 50–100 cm (20–40 in).
2. Connect the Fatigue camera cable to the Powerbox Max **IPC** cable.
3. Assuming A-Pillar installation is OK, you should be able to tuck the cable under the A-Pillar trim, with no need for an additional drill hole. Run the cable behind the A-Pillar, along the cab roof trim, to the Clarity Edge.
4. Thread the Fatigue camera cable from the Powerbox Max **LAN** feed, through the Fatigue camera cable clamp, such that the white dot faces through the gap, and near the eye end.
5. Using the screw near the Clarity Edge's main cable exit, screw in the Fatigue camera cable clamp.



You can rough-adjust the camera to face the driver's head restraint (headrest). The Clarity Installer app will provide more accurate alignment.



Installing the EROAD Seat Shaker

Pre-installation notes

1. The EROAD Seat Shaker requires the EROAD Fatigue Camera for operation.
2. When installing the Seat Shaker as an independent job item after a Clarity Edge install, Installers are still required to run the Clarity Edge Installer app to ensure connectivity and registration issues are tested and documented.

Parts



Seat Shaker



Powerbox



Seat Shaker to Powerbox cable

1. Using the supplied hose clip, fit the seat shaker securely to the bottom-rear steel frame of the driver's seat. The unit should not touch the driver's seat fabric.
2. Connect the Seat Shaker cable and run it under the floor covering to the dash, avoiding chafing or damage.
3. Plug looms and cables into their appropriate sockets.
4. Wrap and tidy unused wires and excess cabling.

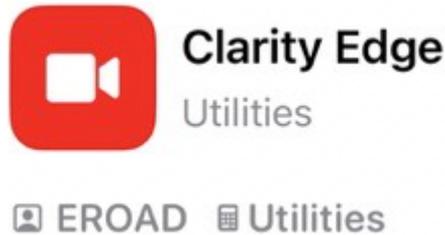




Clarity Edge Installer app

Download and install **Clarity Edge** installer from the Apple store or Google Play.

i There are several apps on the Apple Store or GooglePlay with the words 'Clarity' or 'Edge' in their titles. EROAD mobile apps feature simple red/white icons, and are made by EROAD.



! The Clarity Installer app is updated periodically

The Clarity Edge Installer app is updated as new features are incorporated, or processes are refined. The basic flow is:

1. **Power up the vehicle** to supply power to the Clarity Edge, and **sign in to the device's WiFi**.
2. **Select the power type** of install, and **options** – power type, single/dual drive, number of cameras.
3. **Calibrate and align the cameras**. Start with the Clarity Edge, then Fatigue and other cameras.
4. **Test that the devices are operating properly**, and validate that all feeds are coming up on the tablet in the correct orientation and layout.
5. **Photo-document and sign off**.

The following information calls out some specifics for a single fatigue camera install, but options and configurations may change on the installer app, depending on the job requirements.

- If you haven't already, remove the blue protective film from both camera lenses.
- Assemble the unit's WiFi address, QR codes, or other reference material ready to enter.

When powered, each unit generates its own WiFi network. You will connect to this network on your device for setup and calibration.





- i** There are minor variations between the iOS and Android versions of Clarity Edge Installer, but they do not affect the process.

The Clarity Edge Installer app changes as new features are incorporated, or processes are refined. The basic flow is:

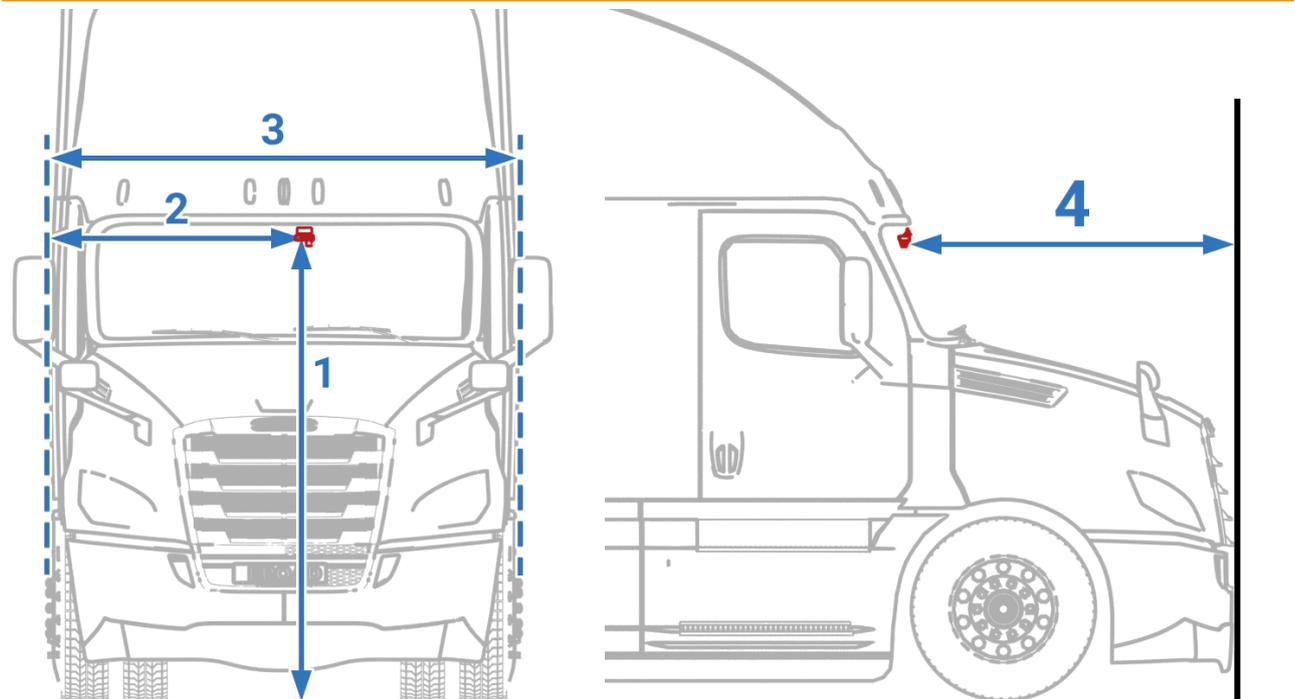
1. **Power up the vehicle** to supply power to the Clarity Edge, and **sign in to the device's WiFi**.
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4. **Test that the devices are operating properly**, and validate that all feeds are coming up on the tablet in the correct orientation and layout.
5. **Photo-document and sign off**.

- ✓** For Multicam, the Video expander box (PowerMAX box) must be checked.

Calibrating the Clarity Edge: Overview

To calibrate the road-facing camera, **you need to first accurately measure** the following distances from the road-facing camera lens position. Enter these measurements in the Clarity Installer app fields.

- ⚠** **Accurate measurements are crucial, or the unit could generate false lane departure warnings or similar.**



1. **HEIGHT**: the vertical height (accurate to cm/inch) from the ground to the lens with a tower ruler or tape. This is the ADAS lens installation height.
2. **LEFT MARGIN**: the horizontal distance from the lens to the outermost edge of the LEFT tire.



LEFT is left from viewing the vehicle from the **outside**, front. Always. It doesn't matter which side the steering column is: left is from the outside front.

Side mirrors are NOT considered in measuring width or margin, even if they extend past the main body sides.

3. **FRONT-END WIDTH:** the distance between the outermost edges of opposite tires. (Side mirrors are NOT appropriate points, even if they extend beyond the cab width.)
4. **FRONT LENGTH:** the horizontal distance from the camera lens to the frontmost point of the vehicle.

Tilt angle

The app will allow you to adjust the unit's camera for optimum performance. Once the correct angle is found, tighten the mounting bracket screw to lock the position in place.

Windshield replacement note

The Clarity Edge system may have a Fatigue camera installed on the driver-side A-pillar. Unless the Fatigue camera has been damaged or pulled out of alignment, all that's required is plugging the Fatigue camera back into the Clarity Edge once it's been re-mounted.

Windshield Installation

1. **Ensure you have used the Clarity Edge Installer to determine the best position, and use a black marker to mark that location. That location must allow 100% adhesion of the double sided tape on the base.**



2. **Ensure two grub screws are tightened fully, one as pictured above and one on the rear of the mount.**

3. Connect the Fatigue camera cable to the IPC connection of the 3-way extension cable.
4. You should be able to tuck the cable under the A-Pillar trim without having to drill an extra hole.
5. Tuck and fit the cable behind the A-Pillar, run it up and along the cab roof trim, to the Clarity Edge unit.

After the device is powered on, perform the adjustment with the assistance of Clarity Edge Installer's real-time preview screen.

1. Adjust the angle (up, down, left, and right) of the Fatigue camera so that the driver's face appears in the middle of the video screen, the driver's face and body are vertical on the video screen, and the lower edge of the screen is below the driver's chest.
2. in the FATIGUE video feed, no object (for example, the steering wheel) should obstruct the driver's face or seat belt features.



3. Lock the final position of the camera with the supplied Allen key.

Remote record button install (Kit HR003107A) - Optional

The remote record button provides a more conveniently-placed way to trigger a manual record event on the Clarity Edge, if the unit is out of reach, or if tapping the unit's button risks knocking the camera out of alignment.

1. Drill a 14 mm (0.55 in) diameter hole into a dashblank (or similar site within comfortable reach of the driver).
2. Ensure the O-ring remains near the head of the button-thread while removing the nut and washer.
3. Thread the wires through the washer and nut.
4. Wire in the fuseholder with a 2A fuse on the RED wire.
5. Wire in the remote button **ORANGE** wire to **SENSOR IN 1 (Grey)**.
6. Tighten the nut and washer.
7. Heatshrink the join, use cable ties to coil and tie away any excess cable.

Ensure there is a constant 12-24 V when the key is inserted with the engine running, and also when the key is not inserted and the engine is off.

Mounting the Screen

A suitable location for the screen will be a compromise between impinging on road view, vehicle operation and reach.

Connect the screen as shown in the main Cable diagram.



Troubleshooting

LED indicators

During normal operation all the unit's status lights are off, except the Power icon (Green).

<p>Power</p> 	<p>Off: The unit is not powered on Green: The unit is powered normally</p>
<p>Alarm</p> 	<p>Off: The unit is operating properly Red flashes x3: The unit generates an alarm The fault indicator of the OBD port blinks twice every second until the fault is removed</p>
<p>GPS</p> 	<p>Off: GPS is operating properly Red: The unit is out of coverage; module fault Red, flashing: The unit has poor coverage</p>
<p>Network</p> 	<p>Off: The unit is connected to the server properly Red: The unit is connecting intermittently, or through unverified hotspots Red, flashing: The unit is in Flight mode (operating properly, but offline)</p>
<p>WiFi</p> 	<p>Off: No WiFi connection. Green: Ready for WiFi connection.</p> <div style="border: 1px solid green; padding: 5px; margin-top: 10px;"> <p> WiFi connection is only used for unit configuration.</p> </div>
<p>Record</p> 	<p>Off: No triggered recording in operation. Red: Recording/ SD Card error: unable to read/write.</p>



Hardware faults

Device startup failure

- Check that the power cable is well connected, the fuse intact and is fully inserted.
- According to the power supply logic designed for the system, when the device is powered by OBD, it is powered when the vehicle is moving (G-sensor acceleration value > 10 g). If the OBD is installed under normal power supply, shake the power box slightly.

Device Networking Failure after Startup

Make sure that the SIM card is inserted before device startup. If it is inserted after device startup, please power off and restart the device.

- Check whether the SIM card is installed correctly.
- Check whether the network signal at the current position is good.
- Check the condition of the SIM card.

Device Recording Failure after Startup

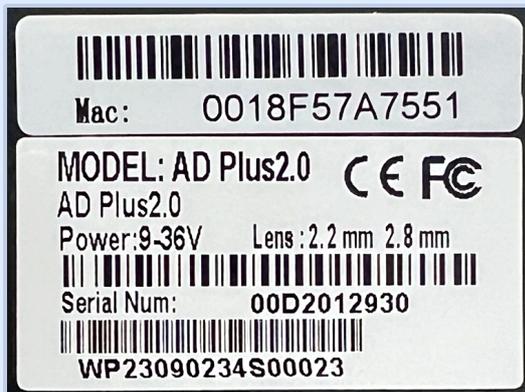
- Make sure that the SD card is inserted before unit startup. If it is inserted after unit startup, please power off and restart the unit.
- Check whether the SD card is installed correctly.
- After the SD card is inserted into the unit, format it before use.



SD Card insertion/ replacement

Check the label on your Clarity Edge to determine SD Card orientation.

AD Plus 2.0

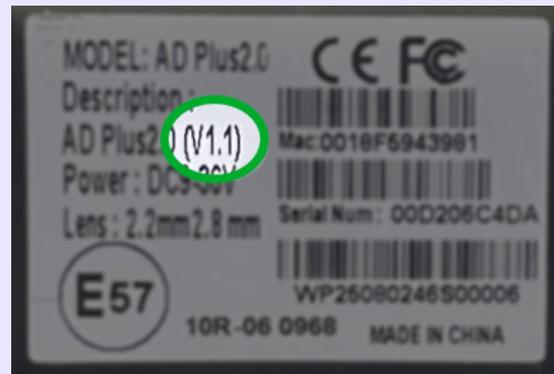


"AD Plus2.0" has nothing beside it

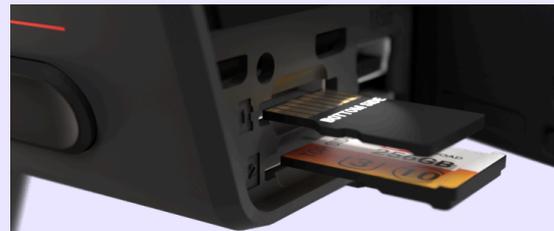


*Gold contacts face **TOWARDS** each other.*

AD Plus 2.0 (V1.1)



"AD Plus2.0" has "V1.1" beside it



*Gold contacts face **AWAY FROM** each other.*

Instructions

1. Ignition OFF.
2. Using a T6 Torx driver, unscrew side Port cover and open.
3. Replace with the card(s) supplied in this pack. Push in completely to click in place.
4. Close cover; re-tighten screw.

Ignition on; check Clarity Edge Camera icon:

- If **RED**, re-check that MiniSD cards are seated correctly.
- If **RED** for more than 1 minute, contact EROAD Support – email & phone contacts overleaf.





Specifications

Clarity Edge

Input voltage	12 / 24V
Power consumption	<ul style="list-style-type: none"> Standby: 13.5 V @ 5.67 mA, 27 V @ 3.39 mA Sleep: 13.5 V @ 62~124 mA, 27 V @ 32~61 mA Between 7-12 W, depending on Camera/SD/SIM/sensor load.
Camera resolution	Front-facing: 1080p@25fps; Driver-facing: 720p@20fps
Field of view	<ul style="list-style-type: none"> Front horizontal: 123° Front vertical: 65° Driver: 140°
Audio	<ul style="list-style-type: none"> Built-in mic (default OFF) Speaker power: 3W, with adjustable volume
Status lights	<p>Power: Green On/ Off</p> <p>Alarm: Triple-Flash Red (Alarm)/ Off</p> <p>GPS: Red (Abnormal)/ Red flash (Poor positioning)/Off (normal)</p> <p>Network: Red (Abnormal/ Off (Normal)</p> <p>Wi-Fi: Green (AP mode)/ Red (Abnormal)/ Off (Normal)</p> <p>Camera: Red (Fault, Privacy mode fail)/ Off (Normal)</p>
Storage	MicroSD card×2 (SDXC 256GB), Class 10 or above
Recording time	Dependent on MicroSD card size and additional cameras (eg. Fatigue camera)
Sensors	<ul style="list-style-type: none"> 6-axis IMU for acceleration/rotation ambient light for day/night switching
Ports	USB Mini, MP2 SIM Card x2, RS232, I/O, CAN
GPS	GPS L1, GALILEO, GLONASS, SBAS: WAAS, EGNOS, MSAS, GAGAN



Cellular networks	<ul style="list-style-type: none"> • USA: AT&T, T-Mobile, Cincinnati Bell, Immix, CommNet Wireless • CAN: Bell Mobility, Telus, Videotron, SaskTel • MEX: Telcel, IUSACell • AUS: Telstra • NZL: Vodafone GDSP
Dimensions	113.0 × 67.8 × 88.2 mm (4.5 x 2.7 x 3.5 in), excluding bracket
Weight	300 g (10.5 oz)
Ingress Protection	IP30 (Not waterproof)
Operating temp.	-40°C ~ +70°C (-40°F ~ +158°F)

EROAD Fatigue camera

Input voltage	PON (DC9-16V)
Consumption	~ < 2.4 W
Dimensions	98H x 30W x 43D mm (excluding mounting options)
Weight	230 g
Resolution	800 x 1280 px @20 fps
Network port	10M/100M Adaptive Ethernet Port (Six core aviation head and car connector head optionally)
Infrared lighting	940 nm
Ingress Protection	IP53
Operating temp	-40°C – +70°C

Powerbox MAX

Power Input	
IN	PIN9-M16



OUT	PIN4-M12, PIN6-M12
Dimension	149 x 99 x 43.3 mm
Operating Temperature	-30°C – +70°C

Seatshaker/ Fatigue Powerbox

Power Input	9-36 V
12V Power Out *3	12 V @1 A
12V Power Out *2	12 V @1.5 A
'SEAT' port	12 V @3 A (Only seat vibrator. It can control the switch through the control line)
24 V Power Out*2	24 V @1.25 A
IN	PIN9-M16
OUT	PIN4-M12, PIN6-M12
Dimension	149 x 99 x 43.3 mm
Operating Temperature	-30°C – +70°C

EROAD Seat shaker

Input voltage	12 V
Dimensions	132 x 60 x 78 mm (inc. molded mounting plate)
Weight	580 g
Ingress Protection	IP54



Multicam analog cameras

Camera	Side (rail mount)	Side (flush mount)	Rear
Resolution	1920x1080px@20fps	1920x1080px@20fps	1920x1080px@20fps
Min Lux	0.05Lux (IR Off)	0.05Lux (IR Off)	0.05Lux (IR Off)
Ingress Protection	IP67	IP69K	IP67
Working Temp	-40 – 70°C (-40 – 158°F)	-40 – 70°C (-40 – 158°F)	-40 – 70°C (-40 – 158°F)

LCD screen

Size	17.8 cm (7 in)
Resolution	1024x600px
Video Inputs	4
Power	9-36V
Working Temp	-30 – 70°C (-22 – 158°F)
Ingress Protection	IP30