INSTALLATION GUIDE

VIA Mobile360 Forklift Safety System

Front + Rear People Detection & Driver Safety System

1.15-16012024

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FCC-A Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his personal expense.

Notice 1

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Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

Notice 3

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CE FC Tested To Comply With FCC Standards FOR HOME OR OFFICE USE

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Before installing and using this product, please carefully read all the safety instructions and warnings in this user manual. Installing this product means that you have fully understood, confirmed and agreed to operate this product in accordance with the safety instructions and warnings stated in this manual. If you do not agree to these terms, please return this product to your dealer in its original packaging.

Caution:
This product cannot replace the driver to perform any operations, and the use of this product does not mean that any safe driving responsibility of the driver can be reduced. In any case, drivers should strictly observe safe driving laws and regulations and drive carefully.

- Please understand that the VIA Mobile360 Forklift Safety System is an intelligent video surveillance assistance system that can provide the driver with warnings in certain potentially dangerous situations, rather than an automated driving system. The driver cannot use it as a substitute for driving a motor vehicle or construction vehicle. For any operation that is usually performed at the time, the driver should remain vigilant under any driving conditions to ensure compliance with all safe driving standards and regulations; and abide by all safety rules.
- Please understand that although this product uses machine vision software and other top innovative technologies, it still cannot guarantee 100% accurate detection of vehicles, people, obstacles, or lanes. The road surface, weather and other conditions will also affect the detection accuracy of this product. The ability to recognize and react has a great impact, and we cannot guarantee to provide all corresponding audible or visual warnings. Therefore, we warn drivers to avoid relying too much on this product, losing their self-judgment, and being negligent when driving. Drivers must not rely on this product for their driving safety and must strictly abide by safe driving regulations.
- Please understand that before the driver is familiar with the functions of the system operation of this product, please do not change any settings for the system. While driving, please do not try to change the system settings of this product or change the position of the sensor. Drivers should always abide by safe driving regulations when using the VIA Mobile360 7" CVBS Display (upgrade option), and should always pay attention to the operating environment, even when viewing the display.

Magnets Warning

- This system contains powerful magnets, use caution when handling to avoid pinching.
- The magnets are fragile, avoid dropping or banging them.
- Do not approach magnetic, electrical materials, electrical appliances, including heart rate regulators, etc., to avoid degaussing, device failure, or even destruction due to strong magnetism.
- Do not use in environments exceeding the operating temperature of the system specification to avoid magnet demagnetization.
- If a person is sensitive to metal objects approaches the magnet, the skin will become rough and red. If this reaction occurs, please do not handle the strong magnets.

Pre-Installation and Use

- Please familiarize yourself with this user manual before installing this product. If you need a dealer/ third-party to install the system, contact VIA for further information.
- The working voltage of this product is 9VDC-36VDC.
- Do not cover or block the VIA Mobile360 camera or VIA Mobile360 7" Display or controls.
- Except for the purposes stated in this user manual, this product may not be used for any other purpose.
- If a certain function/accessory is marked as "optional", it means that the function/accessory is not applicable to all vehicle types and models, and additional fees may be required. Before purchasing this product, please confirm with VIA about the suitability of this product in advance.

- It may not be possible to install this product on every type or model of forklift. Before purchasing this product, please confirm with the VIA whether this product is suitable for the type or model of the forklift you intend to install it on.
- Before use, please confirm that the driver is familiar with the system operation of this product and ensure that the operation of this product does not affect driving safety.

System Limitations

1. This product is more suitable for brightly lit factories or outdoors.
2. This product is not a substitute for the driver to "observe" the surrounding environment. The driver should always remain alert during driving and operate according to the conditions they observe or hear.
3. The people detection function of this product can only detect people that are fully visible and cannot detect people that are blocked or other unusual actions except standing, walking, running, squatting, lying down or lying on the ground.
4. This product cannot guarantee 100% accuracy when detecting people or warning drivers of potential unsafe driving conditions/behaviors. In addition, light, working environment, weather and other conditions will greatly affect the recognition and response capabilities of this product. If the view of the camera is partially or completely blocked, the function of this product will be lost or impaired. Please make sure that the camera has a clear view!

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Warranty Process

During the warranty period, if this product breaks down and needs to be repaired, please follow the process below:

1. If you purchased this product from a distributor, please contact them.
2. If you purchased this product directly from VIA, please contact VIA. All products returned to VIA must be shipped prepaid. Please contact the VIA Customer Service Department to ask for the return authorization number, which must be provided when returning the goods, otherwise VIA has the right to refuse to accept it.

Revision History

Version	Date	Remarks
1.15	16/01/2024	Updated the Display Buttons descriptions in Appendix section A.1.2.
1.14	27/12/2023	Updated descriptions in section 3.1.1 for the Primary and Adaptive People Detection configuration processes, as warning zone boundary setting is now mandatory, with new "None" or "Max" options available for selection. Updated descriptions in section 4.3.2 for adding/removing optional alert language packs on a VIA Mobile360 Forklift Safety System. Added a new section 4.3.4 to describe user interfaces in the "Info" tab in more detail, including new interfaces for for downloading and managing optional alert language packs on a mobile device. Added VIA WorkX mobile app troubleshooting instructions in Appendix B for optional alert language packs. Added a new 4G LTE Wireless Module Kit part number for the Thailand region.
1.13	14/11/2023	Updated the 7" CVBS Display specifications.
1.12	25/10/2023	Clarified the Wireless Module Options.
1.11	12/09/2023	Added new descriptions in sections 3.1 and 3.1.1 for the Primary and Adaptive People Detection configuration processes.
1.10	14/07/2023	Updated descriptions in Appendix A for seatbelt sensor installation and for replacing the seatbelt sensor battery. Added descriptions in Appendix A for the optional NFC card reader, DIO2 cable, VESA plates and RAM® Mounts kit accessories.
1.09	27/03/2023	Updated descriptions in VIA WorkX app Settings and Appendix A for new 7" CVBS layout options available with the optional Speed and Reverse Light Sensor accessory kit. Added descriptions in VIA WorkX app Settings and Appendix A for the optional seatbelt sensor accessory. Updated descriptions in Appendix A for CVBS Display package contents and installation instructions.
1.08	18/10/2022	Added 2M (6ft. 7in.) extension cable option.
1.07	05/10/2022	Added instructions in Appendix A for installing the 4G LTE module. Updated speed limit recommendations.
1.06	20/07/2022	Added instructions for installing the DC power module.
1.05	01/06/2022	Updated illustrations for new 7" CVBS Display user interfaces and alerts. Added instructions for configuring Display Layout and Alert Direction in VIA WorkX App after speed and reverse light sensor activation.
1.04	17/03/2022	Updated instructions for Front & Rear Camera Calibration. Updated instructions for Driver Camera Calibration. Updated instructions for Album usage. Updated instructions for Speed & Light Sensor Installation.
1.03	20/01/2022	Added Speed and Reverse Light Sensor accessory kit. Added descriptions for the "People Detection Sensitivity" feature. Add Troubleshooting information.
1.02	04/11/2021	Added notes on warning/critical boundary settings. Updated LOCTITE usage.
1.01	30/09/2021	Updated 7" panel UI descriptions.

Version	Date	Remarks
1.00	07/12/2021	Initial Release

Packing List

- 1 x VIA Mobile360 M500 system (with waterproof cover)
- 2 x Vibration dampening strips
- 2 x IP67 FOV-190° front/rear cameras with mounting brackets (3M or 9ft. 10in. cable)
- 1 x IP67 FOV-92° driver camera with mounting bracket (3M or 9ft. 10in. cable)
- 3 x Strong magnets with 6 x M5*12mm (3⁄16 in.*7⁄16 in.) bolts and 3 x 3M VHB GPH-160GF series tape
- 10 x M5*25mm (3⁄16 in.*1in.) Molly bolts for camera and system installation
- 1 x Speaker with 3M VHB GPH-160GF series tape (3M or 9ft. 10in. cable)
- 1 x Wi-Fi/GPS antenna module (3M or 9ft. 10in. cable)
- 1 x Power, ACC/IGN & ground cable (3M or 9ft. 10in. cable) for combustion engine forklifts
- Red/Yellow blade fuse holder cable and fuse pack (Includes Standard, Micro, Low-Profile and Mini sizes)
- 4 x M12 caps for DIO 1, DIO 2, CAN Bus, and CVBS ports, 2 x SMA caps 4G antenna ports
- 1 x 32GB MicroSD card

Optional Accessories

Display Options

Part Number	Description
M360-M500-1L07A1	7" IP67 CVBS (800x480) display kit with strong magnet, magnet mounting plate, rubber pads, mounting plate, four Molly bolts, and screw packs (supports VESA plates)
M360-M500-2L07A1	7" IP67 CVBS (800x480) display kit with mounting plate, four Molly bolts, and screw pack (supports VESA plates)

Driver ID Option

Part Number	Description
M360-MX00-1SCRA0	NFC Card Reader with cable, pre-attached 3M tape, and one NFC card.
M360-MX00-1CRCA0	NFC card box (25 pcs)

Sensor Options

Part Number	Description
M360-M500-2S00A0	Forklift speed and reverse light sensor kit with mounting bracket and cables
M360-M500-1S00A0	Forklift speed sensor kit with mounting bracket, cable and M8 (5⁄16 in.) cap
M360-M500-3S00A0	Forklift reverse light sensor kit with cable and M8 (5⁄16 in.) cap
M360-SBS-1S0030	Wireless forklift seatbelt sensor

Wireless Module Options

Part Number	Description
M360-LTE3-Q1APA2	4G LTE Mobile broadband full-size miniPCIe module with antenna, thermal pad, and screw pack for APAC Region
M360-LTE3-Q1EUA2	4G LTE Mobile broadband full-size miniPCIe module with antenna, thermal pad, and screw pack for EU Region
M360-LTE3-Q1JPA2	4G LTE Mobile broadband full-size miniPCIe module with antenna, thermal pad, and screw pack for JP Region
M360-LTE3-Q1TLA2	4G LTE Mobile broadband full-size miniPCIe module with antenna, thermal pad, and screw pack for TH Region

Power Option

Part Number	Description
M360-PWM-2P00A0	36V ~ 100V DC power module for EV forklifts

Cable Options

Part Number	Description
M360-MX00-3C00A0	2M (6ft. 7in.) extension cable for cameras and 7" CVBS Display
M360-MX00-5C00A1	DIO2 cable

Mount Options

Part Number	Description
M360-RAM-1RM0A1	RAM® Mount Kit for system, three AHD cameras and 7" CVBS display
M360-M500-1HSYA0	75x75mm VESA plate and screw pack for VIA Mobile360 M500 system
M360-M500-1HM2A0	Three 35x75mm VESA plates and screw packs for AHD cameras
M360-M500-2HLMA0	35x75mm VESA plate and screw pack for 7" CVBS display
M360-M500-1HDCA0	75x75mm VESA plate and screw pack for DC power module
M360-M500-1HCRA0	35x75mm VESA plate and screw pack for card reader

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1. Product Overview

Prevent accidents and injuries in busy warehouse and industrial environments with the VIA Mobile360 Forklift Safety System. Combining smart people detection with advanced driver safety system, this rugged and reliable system alerts the driver whenever someone steps within a hazardous range of their vehicle and warns the driver when it sees that they are tired or distracted.

Simple to install and maintain, the VIA Mobile360 Forklift Safety System comes with front, rear, and driver cameras, a high-quality speaker, and optional accessories such as a 7" CVBS Display and a forklift speed and reverse light sensor kit to provide a complete out-of-the-box solution for a wide range of forklifts. By eliminating blind spots and giving early warning signals of people moving around the vehicle, the system provides an essential tool not just for averting forklift accidents but enhancing overall worksite health and safety standards.

Note:
All metric measurement values in this installation guide are accurate, and U.S Customary measurement values are approximate and rounded.

1.1 System Layout

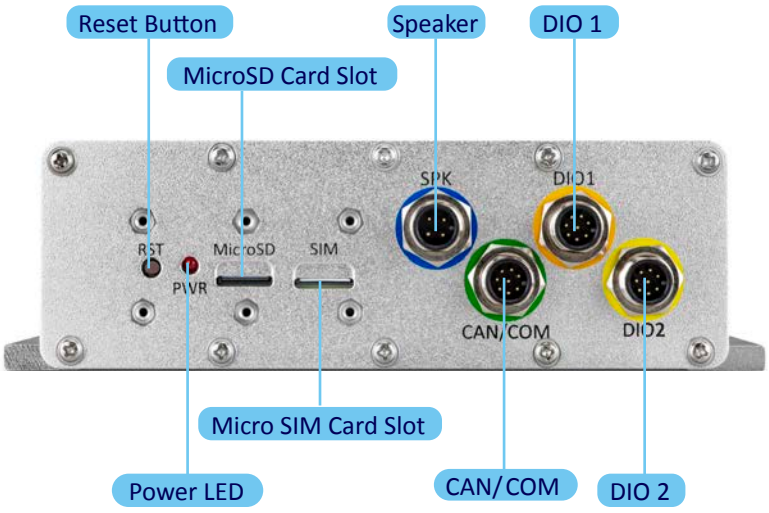


Figure 01: Front panel I/O layout

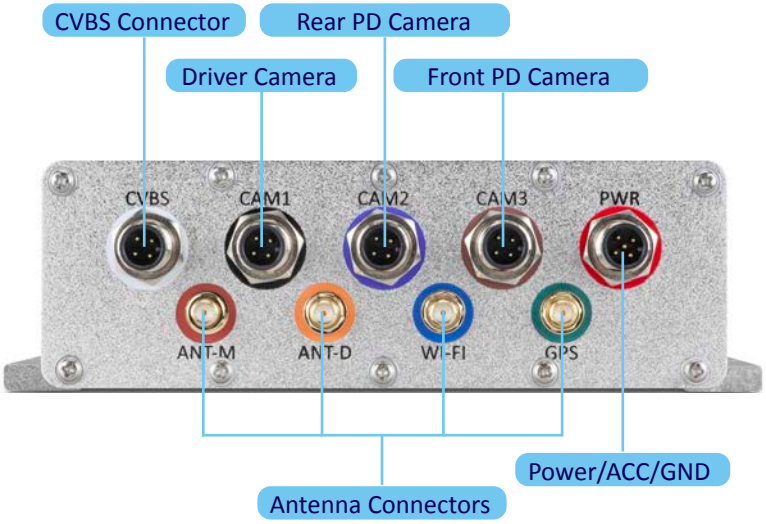


Figure 02: Rear panel I/O layout

1.2 System Dimensions

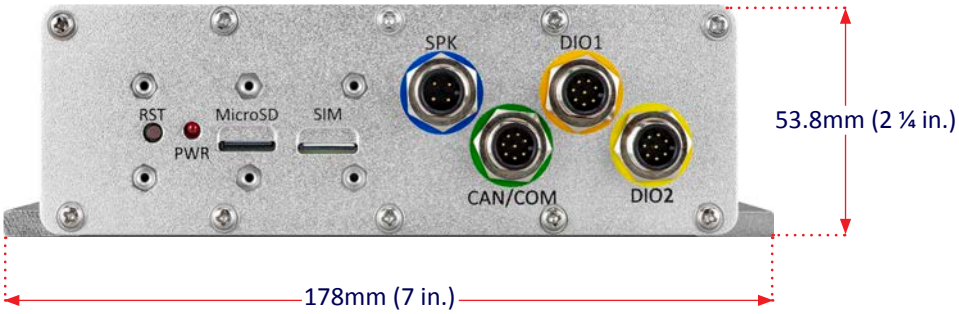


Figure 03: Front view system dimensions

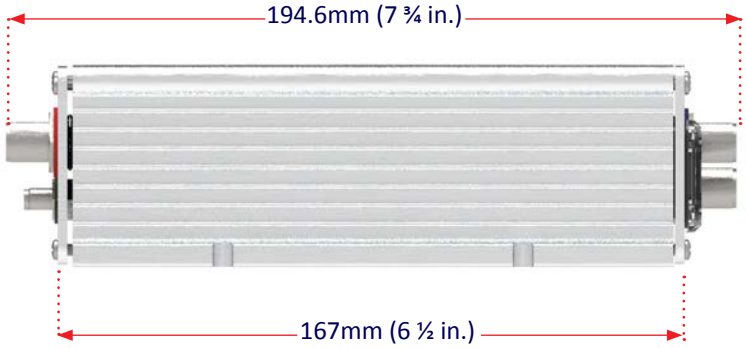


Figure 04: Side view system dimensions

2. Installation

The following items are suggested to have on hand to assist in the installation of the VIA Mobile360 Forklift Safety System.

Required Items

- LOCTITE 243 Threadlocker
- 3M VHB GPH-160GF series tape
- Tape measure
- Bubble level
- Phillips head screwdriver
- No. 8 pliers or wrench (5⁄16 in.)
- Drill (optional)
- Zip/cable ties
- Marker

2.1 System Preparation

Before installing the VIA Mobile360 Forklift Safety System in the target forklift, it is recommended to insert a MicroSD Card (if video recording is required), secure the waterproof cover for the MicroSD and Micro SIM card slots, attach the I/O covers for unused ports as well as to secure the vibration dampening strips to the bottom of the system.

2.1.1 Inserting a MicroSD Card

The VIA Mobile360 M500 system requires a MicroSD card to be installed in order to record video in real time. A 32GB MicroSD card is provided in the system package.

Note:
Failure to install a MicroSD card will not affect the operation of the system, but video will not be saved.

If a MicroSD card is inserted, the video of the three cameras will be saved locally and looped. Meaning, when the MicroSD card storage is full, the oldest saved files will be deleted and replaced with the new footage. See the table below for an estimation of the hours of video which can be saved from the three cameras based on varying MicroSD card sizes.

MicroSD Card Size	Recording Time
32GB	5.5 hours
64GB	11.2 hours
128GB	22.0 hours
256GB	44.4 hours
400GB	68.9 hours
512GB	88.2 hours
1TB	150.1 hours

Table 01: MicroSD card recording times

Follow the steps below to insert the MicroSD card into the VIA Mobile360 M500 system:

1. Prepare a MicroSD card with the appropriate storage and ensure it is formatted with either a FAT32 or exFAT file system. If the MicroSD Card needs to be formatted, see section 4.3.2 for details.
2. To insert the card into the VIA Mobile360 M500 system, ensure the card is face up, then gently push the card into the MicroSD card slot located on the front panel and ensure it has been fully inserted.

Note:
To remove the MicroSD card, push gently and the card will eject.

2.1.2 Securing the Waterproof Cover

To secure the waterproof cover for the MicroSD and SIM card slots located on the front panel, follow the steps below:

1. Insert the flat side of the rubber seal into the groove of the clear plastic cover.
2. Place the cover over the MicroSD and SIM card slots by aligning the screw holes and ensuring the rubber plugs fit securely into the MicroSD and SIM card slots.
3. Secure the cover to the system by tightening the 6 screws with the tool provided.

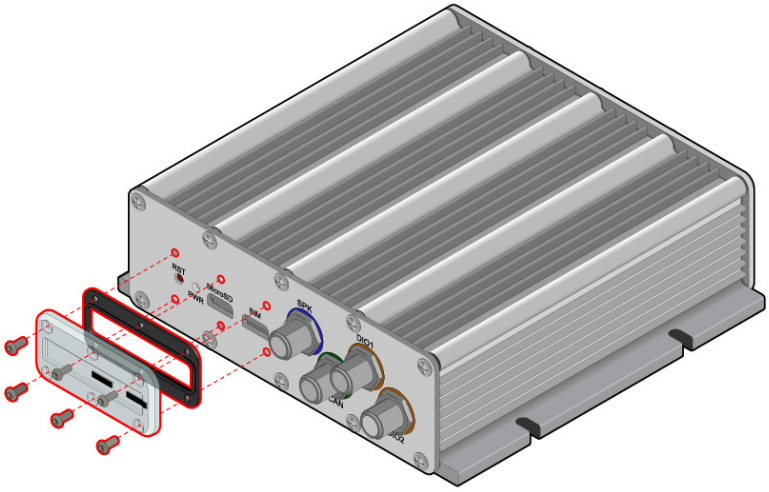


Figure 05: Securing the waterproof cover

2.1.3 Attaching the I/O covers

The VIA Mobile360 M500 system comes with additional I/O ports for connecting optional accessories. It is recommended to cover the unused ports with the provided caps to ensure the system is watertight. To cover the unused ports, follow the instructions below:

1. On the front I/O panel of the VIA Mobile360 M500 system, the DIO 1, DIO 2 and the CAN/COM ports are not required for the standard setup.
   - Use three of the provided M12 caps to cover the DIO 1, DIO 2 and CAN/COM ports. Ensure the caps are tightened securely.

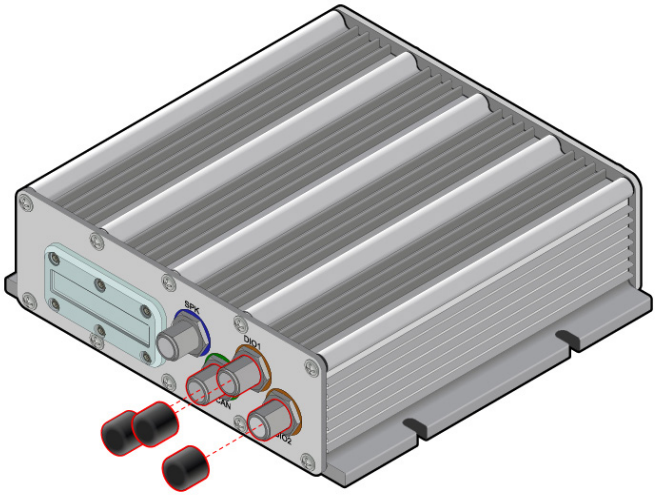


Figure 06: Covering unused front panel ports

2. On the rear I/O panel of the VIA Mobile360 M500 system, the CVBS port (display) and the ANT-M and ANT-D (for 4G) antenna ports are not required for the standard setup.
   - Use one of the provided M12 caps to cover the CVBS port. Ensure the cap is tightened securely.
   - Use the two provided SMA caps to cover the ANT-M and ANT-D antenna ports. Ensure the caps are tightened securely.

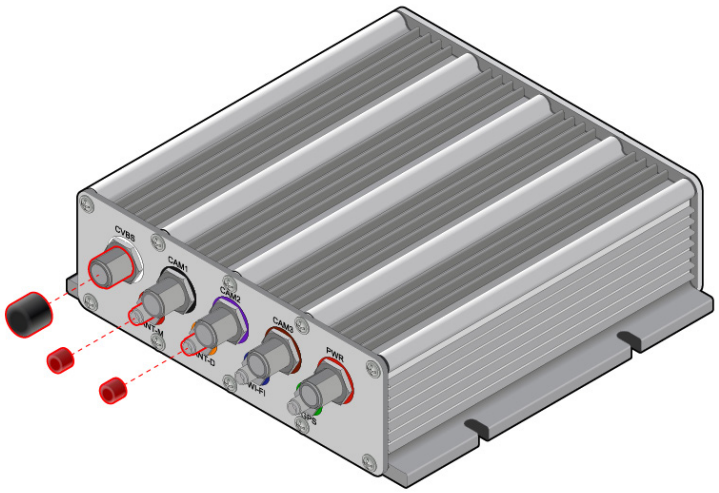


Figure 07: Covering unused rear panel ports

2.1.4 Attaching the Vibration Dampening Strips

Two vibration dampening strips are included to help protect the system against vibration caused during operation of the forklift. To attach the two vibration dampening strips, follow the instructions below:

1. Place the VIA Mobile360 M500 system top-down on a flat surface and clean the bottom of the system of any dust or debris.
2. Remove the 3M double coated tissue tape from the back of one of the vibration dampening pads and place it along the side of the system so the screw hole cutouts align with the system.
3. Repeat the process for the other vibration dampening strip on the opposite side of the system.
4. Ensure the strips adhere tightly to the system.

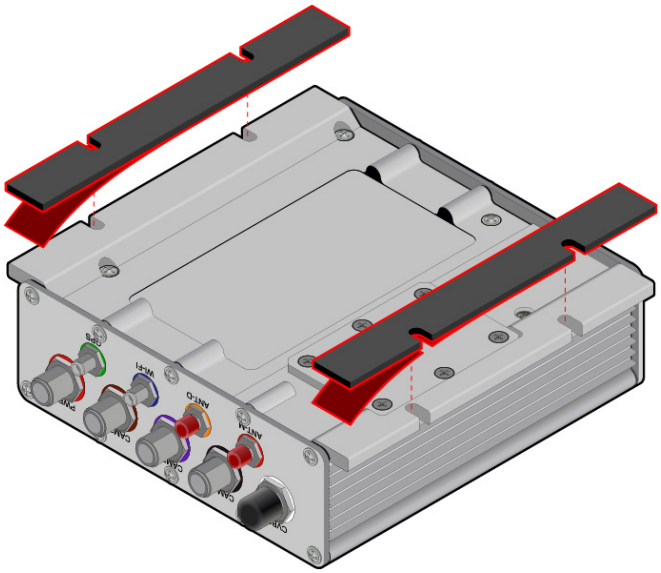


Figure 08: Vibration dampening strip installation

2.2 VIA Mobile360 M500 system Installation

Before installing the VIA Mobile360 M500 system on a forklift, a suitable location should be determined based on the following criteria:

- A flat surface with enough spacing to accommodate the system chassis and room for attaching the cables. The recommended spacing is 218mm(W) x 70mm(H) x 327mm(D) (8 ½ in. x 2 ¾ in. x 12 ¾ in.).
- The location should allow for airflow around the system to ensure proper operation.
- The surface which the system will be attached to should be able to be either drilled into to support the included four M5*25mm (⅜ in.*1in.) Molly bolts or provide proper adhesion for double-sided 3M VHB tape GPH-160GF (not included) to secure the system such that it will not fall or shift due to vibration or sudden stops or starts, under normal operating conditions.

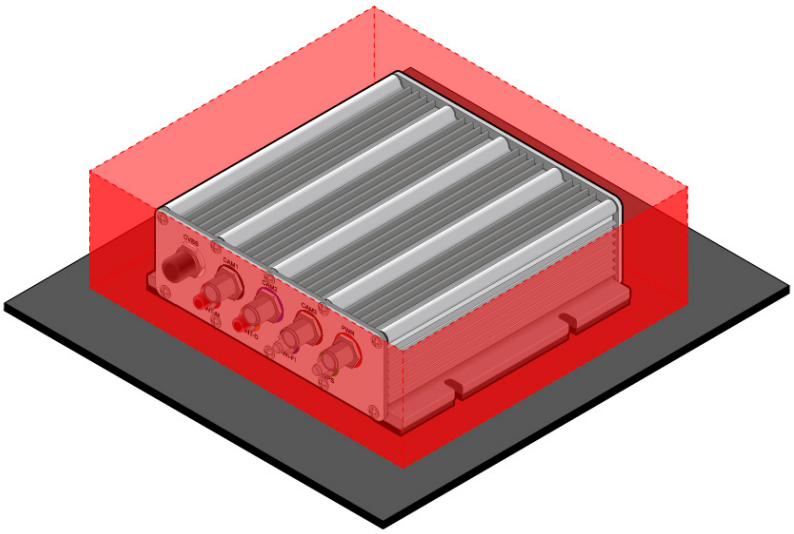


Figure 09: Recommended installation space requirements

VIA recommends the following locations to install the system:

- Under the driver's seat
- On the rear C-pillar
- On or under the forklift roof

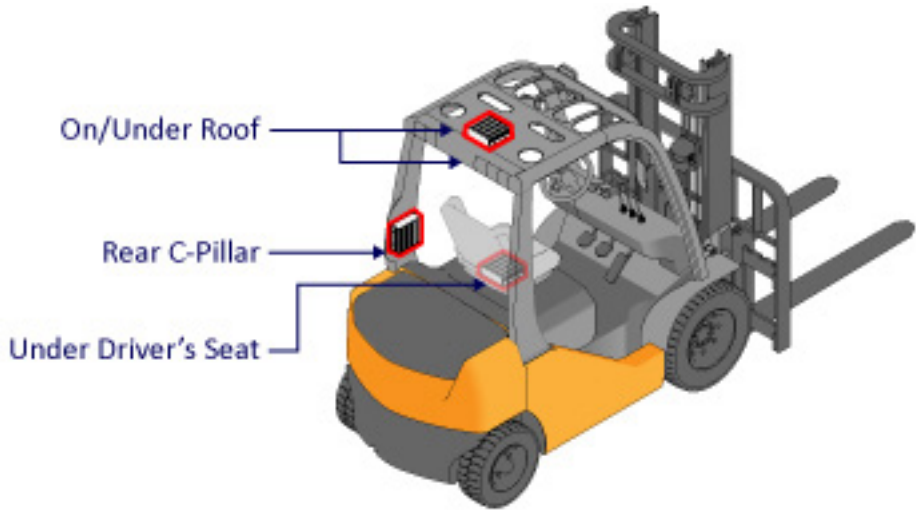


Figure 10: Recommended installation locations

2.3 Camera Installation

The VIA Mobile360 Forklift Safety System includes three cameras to be installed on the target forklift including a driver camera for driver safety system, and front and rear cameras for people detection.

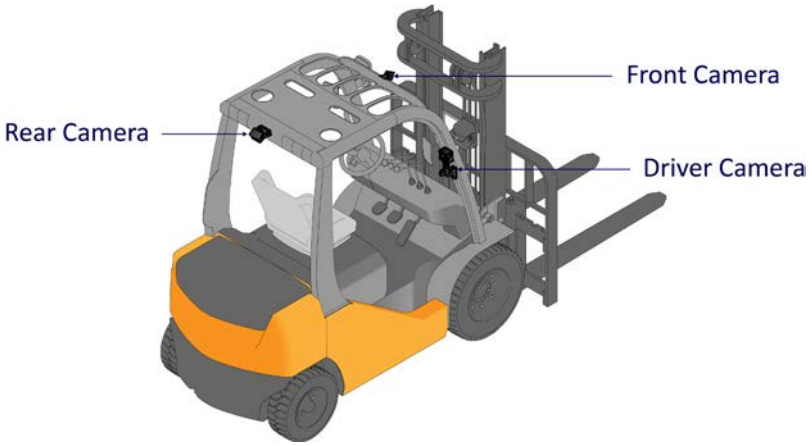


Figure 11: Camera installation locations

2.3.1 Front and Rear Camera Installation

The front and rear cameras come in labeled boxes within the VIA Mobile360 Forklift Safety System package and include color-coded cables (brown for front and purple for rear) for easy identification. Also included for each camera are a strong magnet with two M5*12mm (3⁄16 in.*7⁄16 in.) bolts, one piece of double-sided 3M tape, and two M5*25mm (3⁄16 in.*1in.) Molly bolts. Follow the steps below to install the camera:

1. Camera and mount assembly: There are two methods to fix the camera to the forklift:
   - **Magnet and 3M Tape** - Before installing the camera to the forklift, assemble the camera and mount by attaching the included magnet to the bottom of the camera bracket with two M5*12mm (3⁄16 in.*7⁄16 in.) bolts (use a No. 8 or 5⁄16 wrench), then affix the 3M tape to the bottom of the magnet.

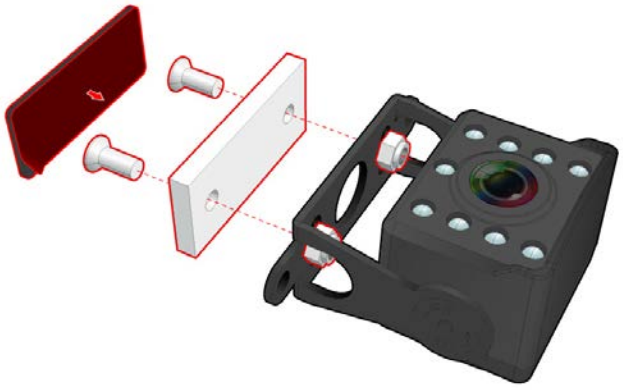


Figure 12: Attaching magnets and 3M tape to front & rear cameras

Note:
This requires a magnetic surface to attach the camera to. Solely using the 3M tape is not recommended for a permanent installation.

- **Drilling** - Two 25mm (1in.) Molly bolts can be used to fix the camera to the forklift. If drilling will be done, the use of the magnet and 3M tape are not required.

Note:
Ensure the surface has enough depth to insert the provided Molly bolts into.

2. The camera should be installed in the center of the front/rear roof bracket at a height between 1.6m ~ 2.7m (5ft. 3in. ~ 8ft. 10in.) off the ground and should have an unobstructed view (as best as possible for the front camera) looking forward.

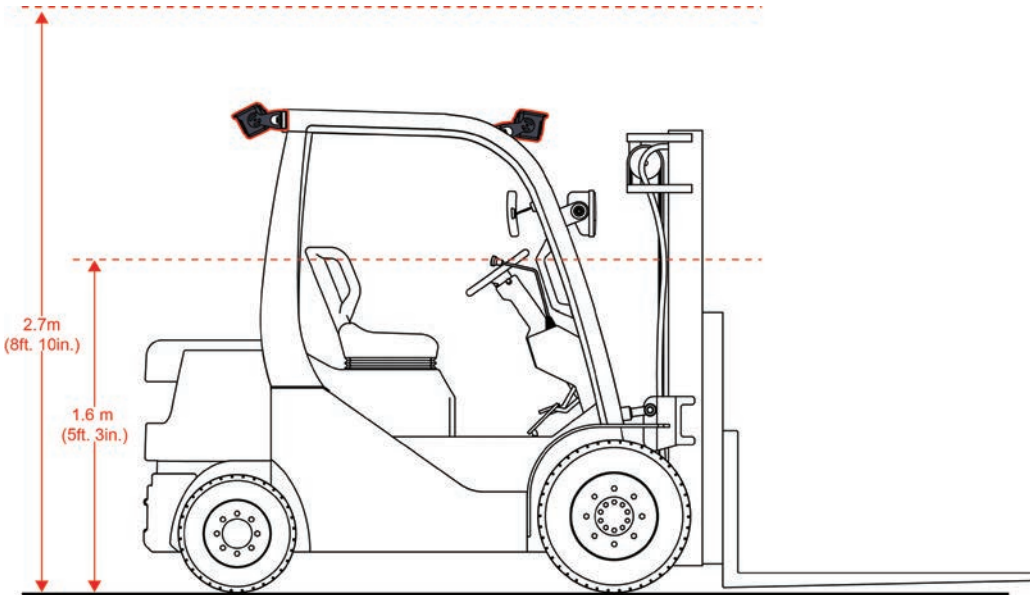


Figure 13: Front & rear camera installation locations

3. Once a suitable location is identified, mark the location with a line parallel to the ground (It is recommended to use a bubble level). If drilling will be used, mark the location of the screw holes on the bottom of the camera bracket and drill the holes.

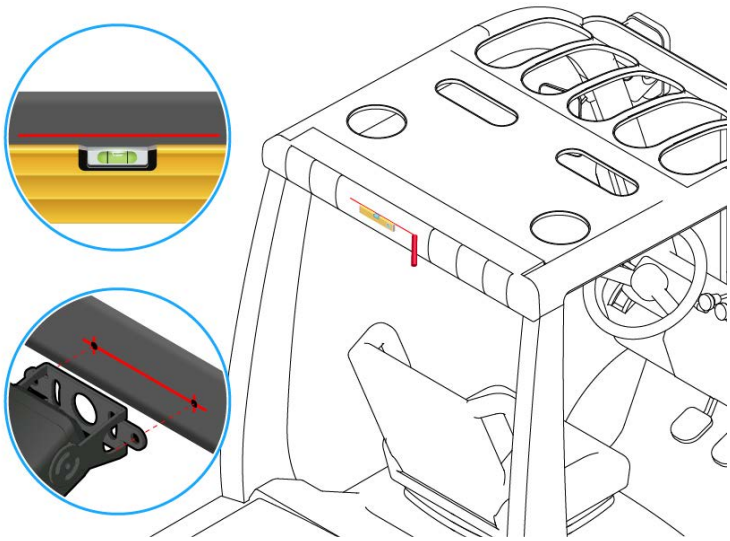


Figure 14: Marking installation location and drilling

4. Next, attach the cameras by:

   - Clean the surface of any dirt or debris with alcohol. Remove the 3M double coated tissue tape and carefully place the camera along the marked line. Press firmly to ensure a solid connection is made.

Note:
Take care when attaching as the magnets will provide a strong force.

   - If the drilling option is to be used, insert the M5*25mm (3⁄16 in.*1in.) Molly bolts into the drilled holes and tighten.

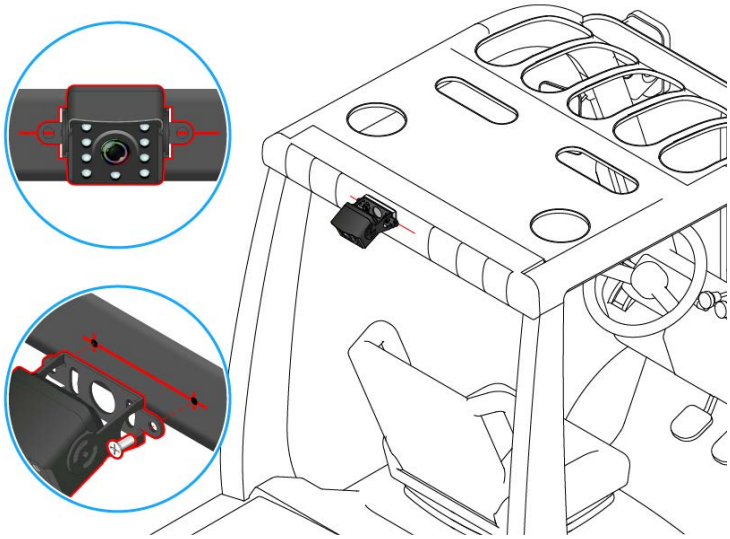


Figure 15: Installing front & rear cameras with Molly bolts

2.3.2 Driver Camera Installation

The driver camera comes in a labeled box within the VIA Mobile360 Forklift Safety System and includes a color-coded cable, black, for easy identification. It comes pre-assembled with the L-shaped mounting bracket with an M5*30mm (3⁄16 in.*1⅛ in.) bolt on it, and includes a strong magnet with two M5*12mm (3⁄16 in.*7⁄16 in.) bolts, an L-wrench, a piece of double-sided 3M tape, and two M5*25mm (3⁄16 in.*1in.) Molly bolts to secure the camera to the forklift.

The driver camera should be installed such that:

- The camera is between 60 ~ 100cm (23¾ in. ~ 3ft 3in.) from the driver's face.
- The camera is within 10cm (4in.) above or below the middle of the driver's face.
- The camera is no further than 46cm (18in.) to the left or right of the driver's head (measured from the center of the face). See the table below for a quick reference for optimal results based on different installation locations:

Distance to Driver	60cm (23½ in.)	70cm (27½ in.)	80cm (31½ in.)	90cm (35½ in.)	100cm (3ft 3in.)
Max Offset from Driver	27cm (10½ in.)	32cm (12½ in.)	37cm (14½ in.)	41cm (16in.)	46cm (18in.)

Table 02: Driver camera installation parameters

Note:
If the above criteria cannot be met, make sure the driver's head is within the bounding box during the calibration process to ensure reliable detection. See section 3.2.1 for more details.

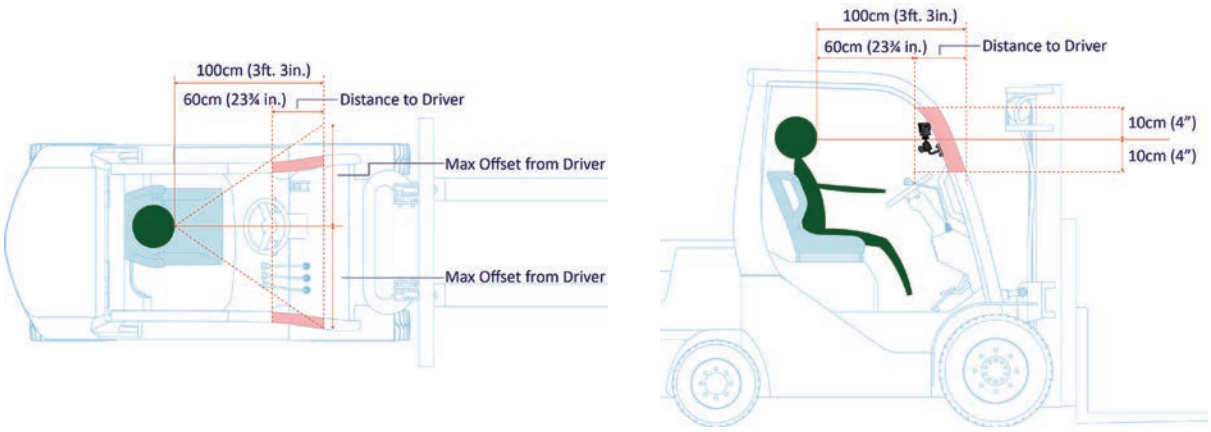


Figure 16: Driver camera installation requirements

Follow the steps below to install the driver camera:

1. Camera and mount assembly: There are two methods to fix the camera to the forklift:
   - **Magnet and 3M Tape** - Before installing the camera to the forklift, assemble the camera and mount by attaching the included magnet to the bottom of the camera bracket with the two M5*12mm (3⁄16 in.*7⁄16 in.) bolts (use a No. 8 or 5⁄16 wrench) and affix the piece of 3M tape to the bottom of the magnet.

Figure 17: Driver camera magnet assembly

Note:
This requires a magnetic surface to attach the camera to. Solely using the 3M tape is not recommended for a permanent installation. Take care when attaching as the magnets will provide a strong force.

   - **Drilling** - Two M5*25mm (3⁄16 in.*1in.) Molly bolts are included which can be used to affix the camera to the forklift. If drilling will be done, the use of the magnet and 3M tape are not required.
2. Next, find a suitable location to affix the camera mount, (along the A-pillar is recommended) and attach the camera by:
   - Clean the surface of any dirt or debris with alcohol. Remove the 3M double coated tissue tape and carefully place the camera. Press firmly to ensure a solid connection is made.

Note:
Take care when attaching as the magnets will provide a strong force.

- If the drilling option will be used, place the mount and mark where the screw holes are. Drill the holes then insert the M5*25mm (3⁄16 in.*1in.) Molly bolts into the drilled holes and tighten.

Note:
Ensure the surface has enough depth to insert the provided M5*25mm (3⁄16 in.*1in.) Molly bolts into.

2.4 Speaker Installation

The VIA Mobile360 Forklift Safety System comes with a 2W speaker which is required to playback the audio alerts for the driver.

To install the speaker, follow the steps below:

1. Find a flat location in the cab of the target forklift where the speaker can be installed such that it will not be blocked and is at least 60cm (23¾ in.) away from the driver's ear to avoid hearing damage.
2. VIA recommends installing the speaker on one of the rear C-pillars as shown in Figure 19.

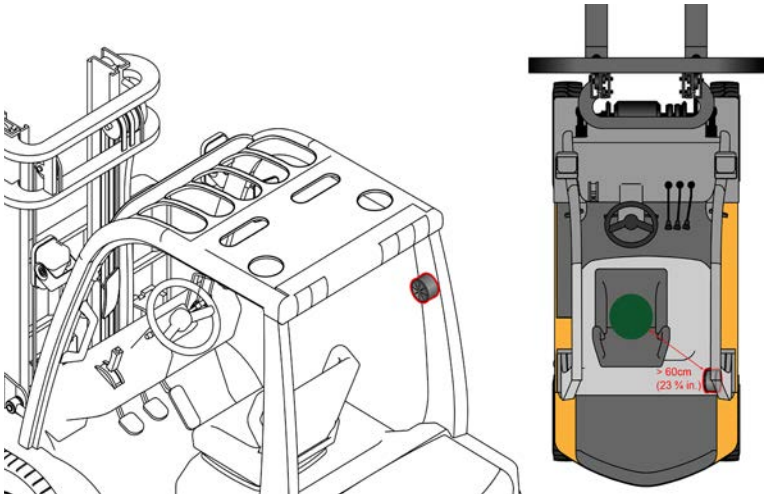


Figure 18: Speaker installation

3. Clean the target surface of any dirt and debris with alcohol.
4. Remove the protective 3M tape cover and affix the speaker to the surface. Press firmly to ensure proper adhesion.

2.5 Wi-Fi/GPS Antenna Installation

The VIA Mobile360 Forklift Safety System comes with a Wi-Fi and GPS antenna pack which is required for ensuring the Wi-Fi network signal strength in order to connect the VIA WorkX app to.

To install the antenna follow the steps below:

1. Find a flat location in the cab of the target forklift where the antenna can be installed such that it will not be covered.
2. VIA recommends installing the antenna on either one of the rear C-pillars or under the roof of the forklift as shown in Figure 19.

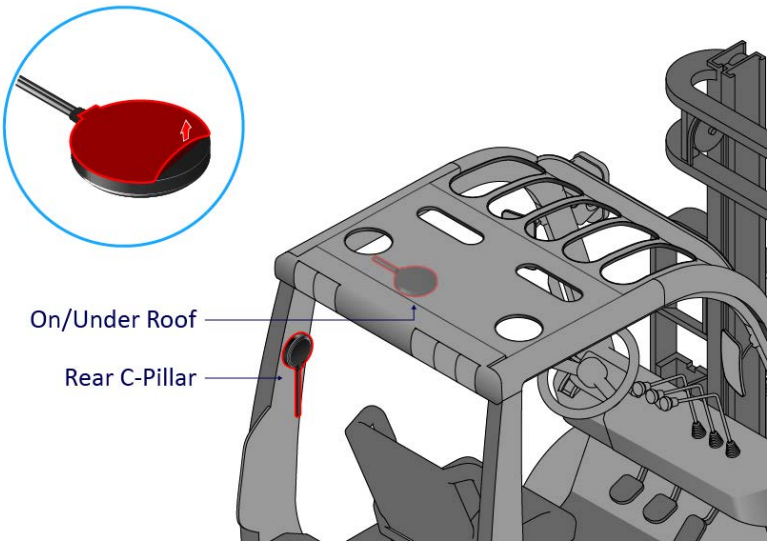


Figure 19: Wi-Fi/GPS antenna installation

3. Clean the target surface of any dirt and debris with alcohol.
4. Remove the protective 3M tape cover and affix the speaker to the surface. Press firmly to ensure proper adhesion.

2.6 Peripheral Cabling and Connection

After the core accessories (system, cameras, antenna and speaker) have been installed, the next step is to route the cables back to the VIA Mobile360 M500 system which was installed in section 2.2. Ensure the cables are routed such that no wires are hanging or exposed from the forklift to prevent accidental disconnection or injury. It is suggested to use zip ties or tape to help secure the cables when routing.

The connection between the VIA Mobile360 M500 system and the peripheral accessories may become loose due to the vibration created during operation of the forklift. It is strongly recommended to secure all M12 and SMA port connections with LOCTITE 243 Threadlocker (not included) prior to installation. Follow the steps below to apply the glue:

1. Unscrew the cap of the LOCTITE 243 Threadlocker bottle and align the dispensing head with the thread.
2. Apply one to two drops of glue around the port connector.

Figure 20: Applying LOCTITE 243 Threadlocker to I/O ports

3. Secure the cable to the port as soon as possible after dispensing (within 5 minutes) to prevent the glue from curing.
4. The glue needs 3 hours to cure completely. Please do not strongly vibrate or twist the cable during this time.

Each cable is color-coded to match the corresponding port on the VIA Mobile360 M500 system. Connect the cables to the correct port on the VIA Mobile360 M500 systems according to the color labels as follows:

Front Panel I/O

- Connect the speaker (blue cable) to the "SPK" port designated in blue.

Figure 21: Front I/O cable connections

Rear Panel I/O

- Connect the driver (DSS) camera (black cable) to the "CAM1" port designated in black.
- Connect the rear camera (purple cable) to the "CAM2" port designated in purple.
- Connect the front camera (brown cable) to the "CAM3" port designated in brown.
- Connect the Wi-Fi antenna (blue cable) to the "WI-FI" port designated in blue.
- Connect the GPS antenna (green cable) to the "GPS" port designated in green.

Figure 22: Rear I/O cable connections

2.6.1 Connecting Ground, ACC and Power

Follow the instructions below to choose and install the appropriate power accessories for your electric or combustion engine forklift.

EV Forklifts

An optional 36V ~ 100V DC Power Module accessory is available for VIA Mobile360 M500 system installations on EV forklifts. Installing this DC Power Module accessory supplies sufficient power and provides protection to the VIA Mobile360 M500 system.

Refer to the Appendix section A.7 for detailed information and installation instructions.

Combustion Engine Forklifts

A power cable is included in the VIA Mobile360 Forklift Safety System's standard package for VIA Mobile360 M500 system installations on combustion engine forklifts. This power cable includes three cables to be connected to the fuse box of the target forklift as follows:

- Yellow wire - ACC, enables system to turn on and off with the vehicle
- Red wire - Power
- Black wire - Ground

Figure 23: M12 power cable

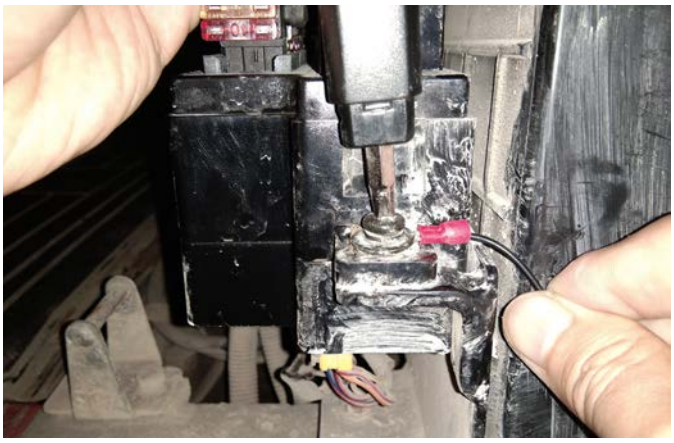
Also included are four blade fuse holders for connecting to the ACC fuse (Yellow) and the positive power fuse (red) as shown below:

Figure 24: Blade fuse holder cables

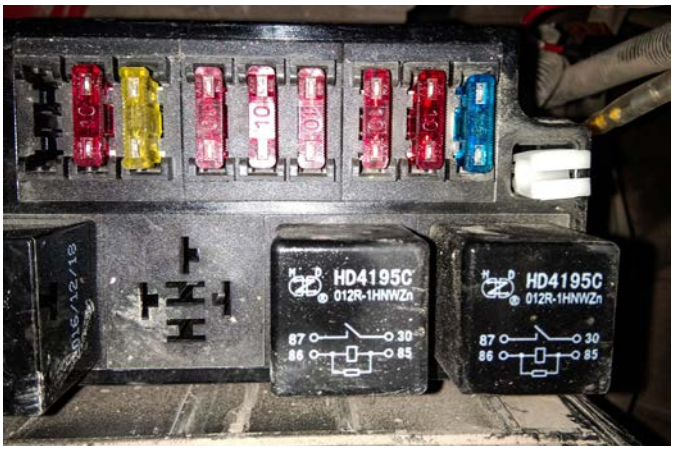
Note:
Before connecting power for the VIA Mobile360 M500 system, ensure the target forklift can supply the required system power ranging from 9V ~ 36V DC. Once confirmed, follow the steps below.

Make sure the vehicle is turned off and follow the steps below to connect the power cable:

1. Find an appropriate place to attach the ground wire to the vehicle (The bolt used to secure the vehicle's battery is a recommended location).
2. Loosen the screw and place the Y connector on the end of the black wire on the VIA Mobile360 M500 system power cable beneath the screw. Tighten the screw so the wire is firmly held.



3. Refer to the vehicle's user manual to find the location of the fuse box. Then check the ACC fuse and power specification and location on the fuse box cover.

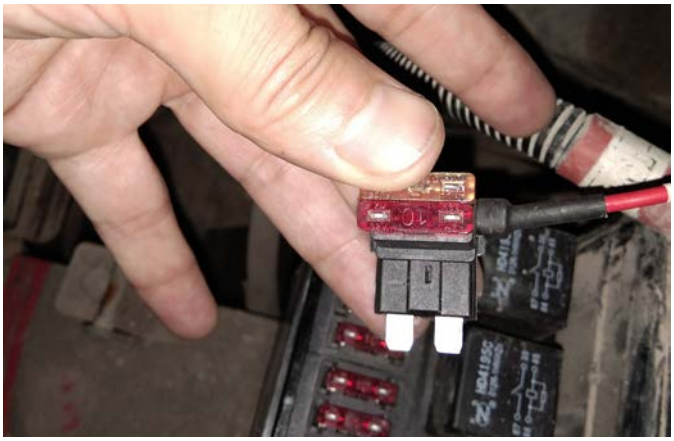


4. Pull out the ACC fuse from the vehicle's fuse box.
5. Select the appropriate yellow blade fuse holder cable. Plug in the ACC fuse that was removed from the fuse box into the free slot on the blade fuse holder cable.

6. Attach the blade fuse holder cable to the bullet head on the yellow wire coming from the power cable. Slide the plastic cover over the connection after the two ends have connected firmly.

7. Plug in the blade fuse holder cable into the ACC fuse slot in the fuse box.

8. Pull out the positive power fuse from the vehicle's fuse box.
9. Select the appropriate red blade fuse holder cable. Plug in the positive power fuse that was removed from the fuse box into the free slot on the blade fuse holder cable.



10. Attach the blade fuse holder cable to the bullet head on the red wire coming from the power cable. Slide the plastic cover over the connection after the two ends have connected firmly.

11. Plug in the blade fuse holder cable into the positive power fuse slot in the fuse box.

12. Route the cable back to the VIA Mobile360 M500 system and connect the cable to the "PWR" port on the rear I/O panel designated in red.

Caution:
Plugging the power cable into the wrong port will damage the VIA Mobile360 M500 system and void your warranty.

2.7 Turning System On/Off

After the system is fully installed, turn on the forklift and the system will power on (boot-up takes about 20 seconds). See the table below for the description of the system status based on the system power LED indicator state located on the front I/O panel.

Note:
It is recommended to keep the system on for at least 10 minutes upon the first boot to ensure the system fully charges.

LED Flash Frequency	Description
Solid On	System boot complete
Off	System is off
4 flashes per second	Firmware upgrading
1 flash per second	System powering on/powering off

Table 03: System LED status

After the forklift is turned off, the cameras will be turned off immediately followed by the video recording. When the system has completely shut down, the system power LED indicator will turn off. The entire shutdown process takes about 30 seconds.

2.7.1 System Reset

The VIA Mobile360 M500 system includes a reset button which can be used to either perform a system power reset or a complete factory reset.

- **Power Reset** - If the system hangs during a firmware update process, press and hold the reset button for 3 seconds. The system will reboot and then the update can be retried.
- **Factory Reset** - The factory reset can be used to restore the system to the default system settings. To perform the factory reset, press and hold the reset button for 8 seconds or until the audio alert "factory reset in progress" is heard, the system will complete the factory reset and reboot. This can be used to reset the Wi-Fi password if forgotten.

  A factory reset can also be done with the VIA WorkX app. See section 4.3.2 for more details.

Note:
The factory reset will remove the camera calibration information. All camera calibration will need to be redone.

Figure 25: System reset

3. Safety Alerts & Camera Calibration

To provide drivers with the smart situational awareness needed to safely maneuver around crowded and noisy working spaces, the VIA Mobile360 Forklift Safety System supports people detection through its front and rear cameras. To ensure that drivers remain fully attentive while behind the wheel, the driver camera provides driver safety system alerts for driver fatigue, as well as smoking and phone usage.

3.1 Front & Rear Camera Alerts

The people detection zone covers an area up to 6 ~ 8 meters (19ft. 8 ¼in. ~ 26ft. 3in.) on the front and rear of the vehicle. The detection area can be configured with either a single (critical) zone or two (warning and critical) zones to aid drivers in avoiding accidents with people moving around the forklift through an audio or voice alert.

Note:
Refer to section A.4 for detailed information on the optional speed sensor accessory and setup procedures.

Primary Detection Zone Configuration

Boundaries can be set to create a single (critical) zone or two (warning and critical) zones to alert drivers when people are detected.

Adaptive Detection Zone Configuration

This optional configuration is available for both cameras when the optional speed sensor accessory is installed on the vehicle.

The VIA Mobile360 Forklift Safety System can adaptively extend the range of the people detection zone to increase driver response time when a certain speed is reached or exceeded. Configuration of the adaptive detection zone involves selection of the speed threshold and creating new boundaries to extend the ranges of the critical or warning zones. After configuration, alerts will be played according to the following logic when the vehicle is driven above or below the speed threshold:

Speed Threshold	Alert Logic
Above	Adaptive Detection Zone Configuration
Below	Primary Detection Zone Configuration

Table 04: People detection alert logic based on speed threshold

Note:
If multiple people are detected around the vehicle, the system will play the alert for the closest person to the vehicle.

The figure below shows the coverage of the people detection zone with boundaries set for critical and warning zones. The purple zones represent the areas where people detection will be limited, subject to environmental conditions at distances over 6m.

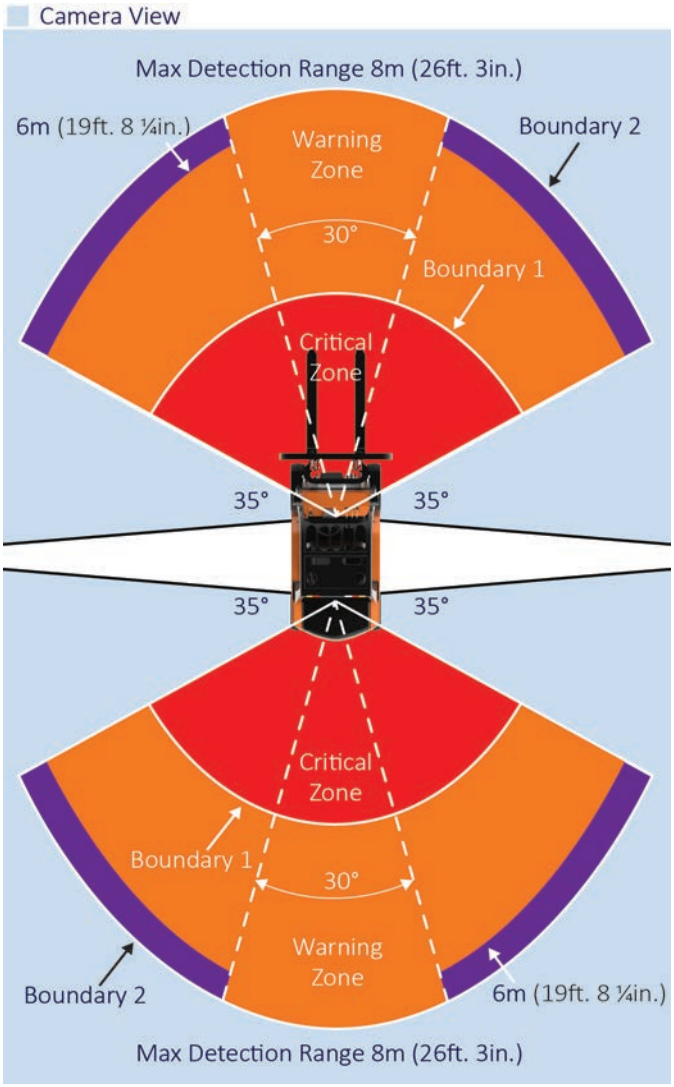


Figure 26: People detection zone coverage

The table below provides an overview of the different audio and voice alerts which can be used to notify drivers when people are detected in the warning and critical zones. See section 4.3.2 for how to configure the sound/voice alerts.

	Voice Alert	Sound Alert
Front Warning Zone	"Front, person detected"	Slow pulse A
Front Critical Zone	"Brake"	Fast pulse A
Rear Warning Zone	"Rear, person detected"	Slow pulse B
Rear Critical Zone	"Brake"	Fast pulse B

Table 05: People detection audio alerts

3.1.1 Front & Rear Camera Calibration

Before the VIA Mobile360 Forklift Safety System can provide people detection alerts, the front and rear cameras should be calibrated using the VIA WorkX app.

Follow the steps below to download the app and to connect to a target device:

1. Scan the appropriate QR code below to download the VIA Mobile360 app from either the Google Play Store for Android devices or the App Store for iOS devices.

GET IT ON Google Play

Download on the App Store

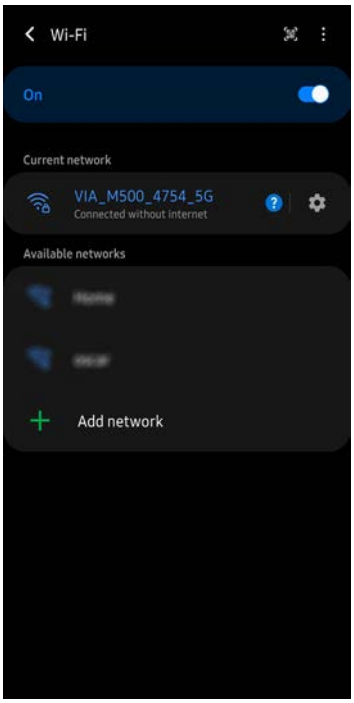
2. After installation is complete, launch the app and follow the prompts. Make sure the target VIA Mobile360 Forklift Safety System is powered on.
3. Each VIA Mobile360 Forklift Safety System has a unique Wi-Fi SSID, "VIA_M500_XXXX". Go to the available Wi-Fi connections on the mobile device and select the target system from the list.

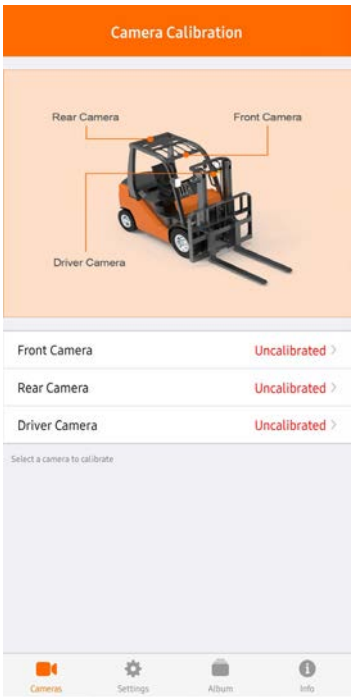
Note:
The band for the system's AP mode is set to 2.4GHz. This can be switched to 5GHz if the mobile device supports it. See section 4.3.2 for more details.

4. Enter the password to connect, where the default password is "12345678".

Note:
It is recommended to only turn on the target system when first connecting to make it easier to identify the correct device. It is also recommended to change the default SSID (Network name) to something identifiable for the target forklift by the user. See section 4.3.2 for details on how to change the device SSID.

5. Go back to the app and the "Cameras" tab will be shown.





Critical zone boundary distance settings should allow sufficient reaction time for the operator to stop the forklift prior to impact. In general, the VIA Mobile360 Forklift Safety System is designed to provide alerts meeting this criteria for forklifts operating at maximum speeds of 8 ~ 19kph (4 ~ 11mph).

The table below provides a reference for the suggested speed limit settings based on different reaction times.

Reaction Time	3M Boundary (9ft. 10in.)	4M Boundary (13ft. 1in.)	5M Boundary (16ft. 5in.)	6M Boundary (19ft. 8¼ in.)	7M Boundary (22ft. 11⅝in.)	8M Boundary (26ft. 3in.)
0.7 secs	9kph (6mph)	12kph (7mph)	14kph (9mph)	15kph (9mph)	17kph (10mph)	19kph (11mph)
2.5 secs	4kph (2mph)	5kph (3mph)	6kph (4mph)	7kph (4mph)	8kph (4mph)	9kph (5mph)
3.0 secs	3kph (2mph)	4kph (2mph)	5kph (3mph)	6kph (4mph)	7kph (4mph)	8kph (4mph)

Table 06: Speed limit reference

Note:
It is advised to check the minimum reaction times set by local governing agencies.

Primary Detection Zone Configuration

Follow the steps below to configure the primary detection zone for the front/rear camera:

1. Place the calibration pattern (printed on the bottom side of the VIA Mobile360 Forklift Safety System box) on the ground directly in front of the camera at a distance of 2m (6ft. 7in.), as shown below in Figure 27.

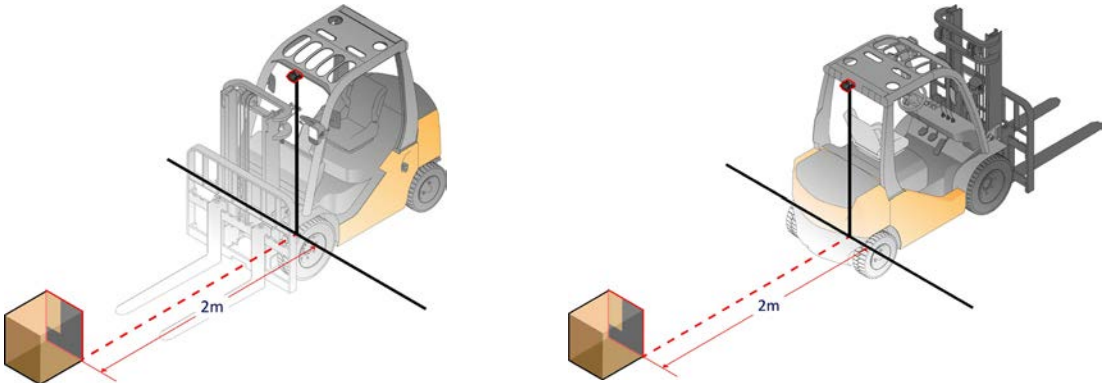
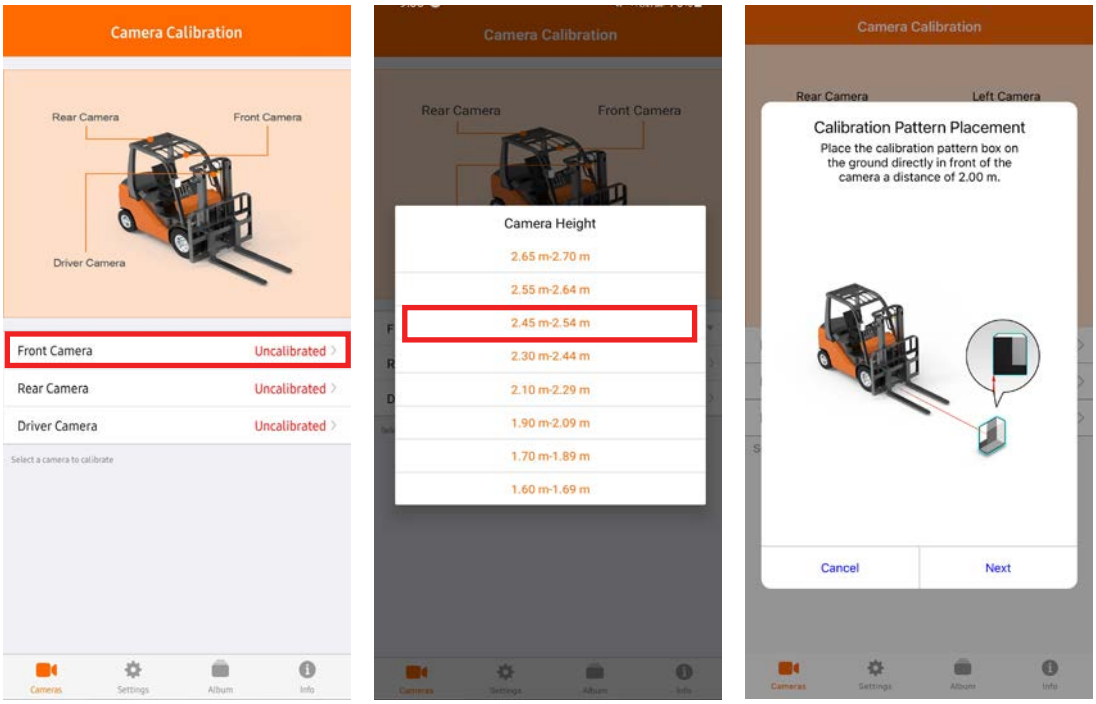


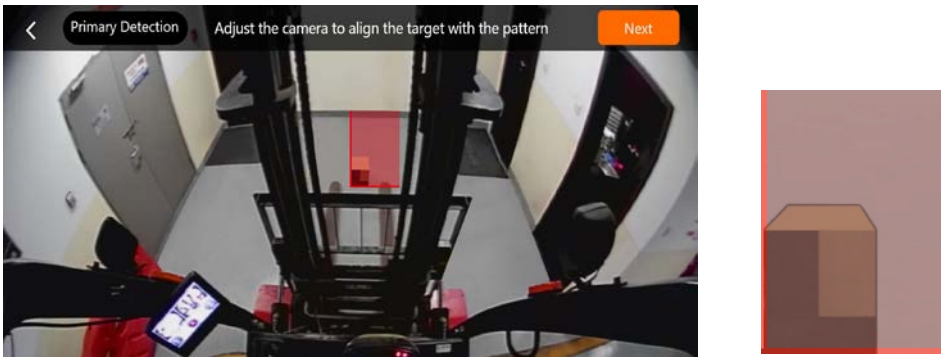
Figure 27: Front/rear calibration pattern placement

2. Open and connect the VIA WorkX app as described in section 3.1.1. From the "Cameras" tab, select a camera to calibrate.
3. Select the camera height range the installation fits within, measured from the ground to the camera lens.
4. On the next screen, tap "Next" to continue, after confirming that the calibration pattern has been placed on the ground directly in front of the camera at a distance of 2m (6ft. 7in.).



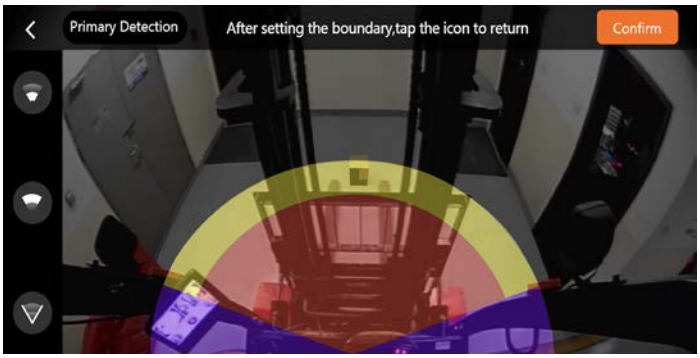
5. Adjust the camera to align the target overlay in the VIA WorkX app with the edge of the black pattern printed on the box and tap "Next". To adjust the camera, loosen the screws that connect the camera module to the camera bracket on either side. Once the camera is angled correctly, tighten the screws.

Figure 28: Front/rear camera angle adjustment



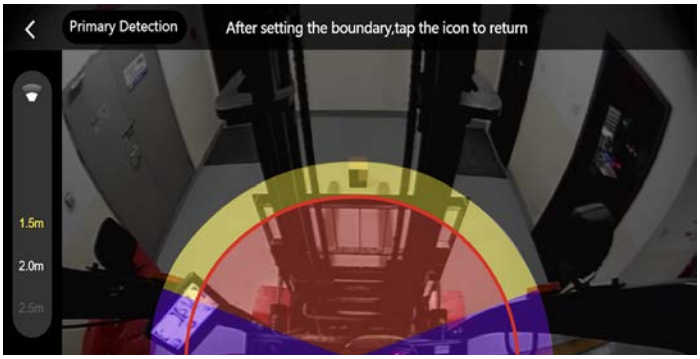
Note:
The calibration pattern on the box and the target overlay in the VIA WorkX app will appear mirrored during rear camera calibration, as mirrored images are output by the rear camera.

6. There are three icons along the left side of the interface to set the critical and warning zone boundaries, and detection area width.



7. Tap the first icon on the top left side and select the desired maximum distance within the range of 1.5m - 8m (4ft. 11in - 26ft. 3in.) for the critical zone boundary line.

   A red preview line will be overlaid to show the location of the line in front of the vehicle. Tap the icon to confirm the selection and return to the main display.

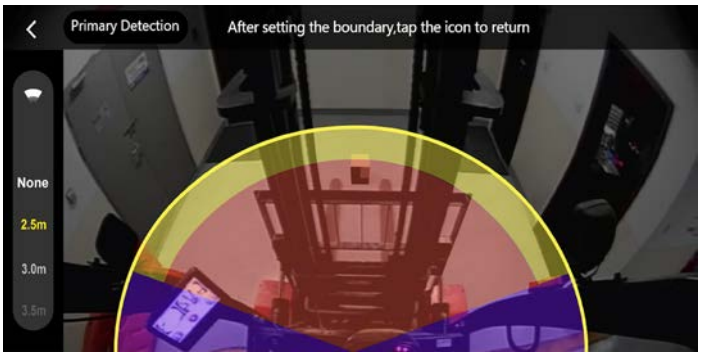


Note:
The desired option for Front/Rear Warning Audio Alerts can now be selected in the "Settings" tab of the VIA WorkX mobile app. Refer to section 4.3.2 for more information.

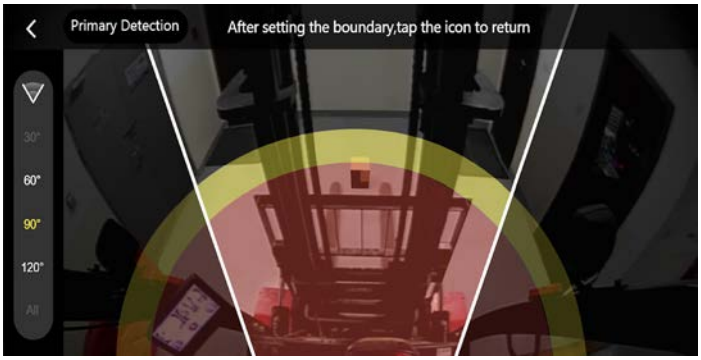
8. Tap the middle icon on the left side. If a warning zone boundary is not required, select "None". If required, select a distance at least 1m (3ft. 3in.) further from the critical boundary line, or "Max" to set the maximum possible distance.

   A yellow preview line will be overlaid to show the location of the line in front of the vehicle. Tap the icon to confirm the selection and return to the main display.

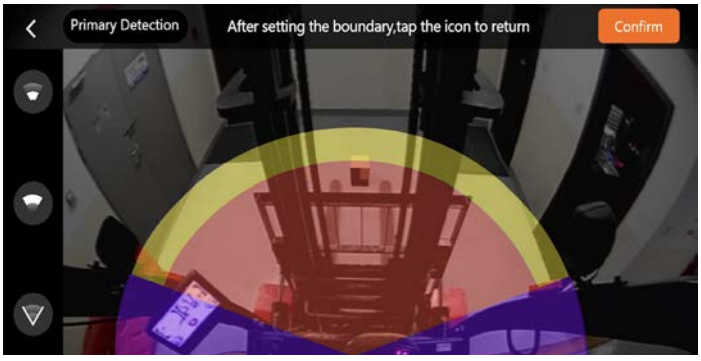
Note:
If 8m (26ft. 3in.) is selected as the desired critical boundary distance in step 7, the available options for selecting the warning boundary distance will be "None" and "Max".



9. The icon on the bottom left side can be used to set the detection area width. Tap it and select the desired angle from the list. By default, "All" is selected to provide alerts for the full range of the camera's detection. Selecting 120°, 90° or 60° narrows the range. When the desired angle is selected, a preview area of the detection zone will be displayed. To confirm the selection, tap the icon to return to the main display.



10. Next, tap the "Confirm" button on the main display to save the configuration.

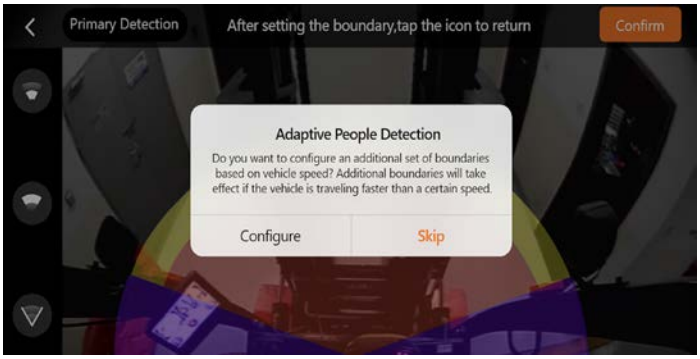


Primary detection configuration is now complete.

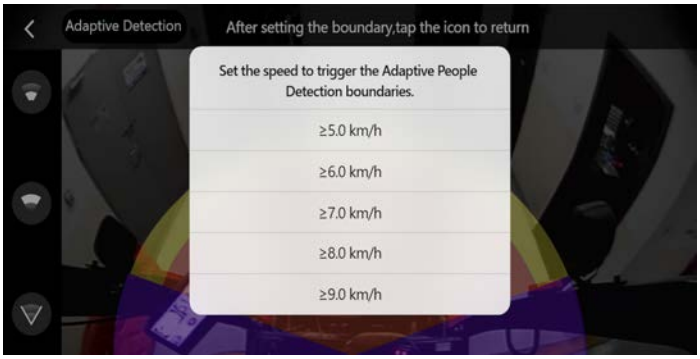
11. Adaptive Detection Configuration:

If the optional speed sensor accessory is installed on the vehicle, the cameras can be configured to adaptively extend the range of the people detection zone(s) when a defined speed threshold is exceeded.

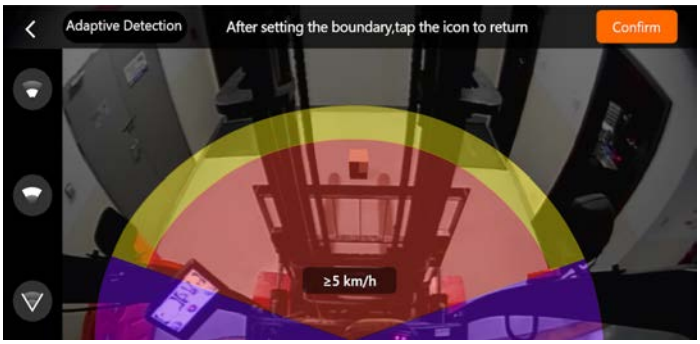
After tapping "Confirm" to complete Primary detection configuration, a pop-up will ask to configure "Adaptive Detection". If required, tap "Configure" and proceed to the next step. If not required, tap "Skip" to complete the camera calibration process and proceed to step 18.



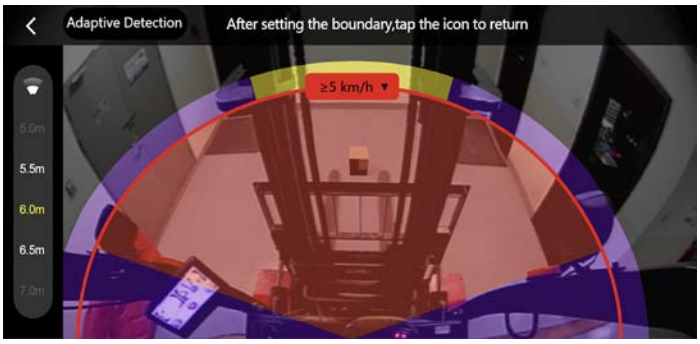
12. Select the speed threshold from the list which the "Adaptive Detection" will be enabled at.



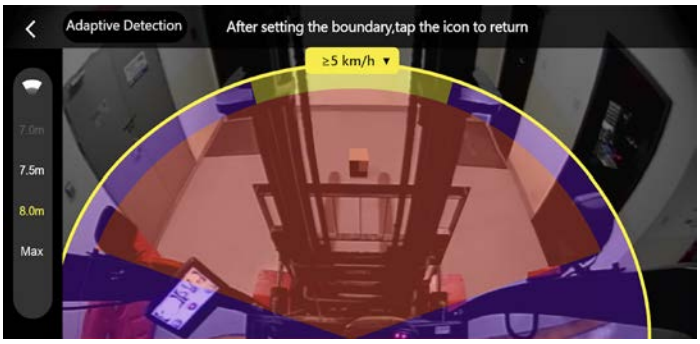
13. The next step is to set the adaptive detection area that people detection alerts will be triggered within. There are three icons along the left side of the interface to set the critical and warning zone boundaries, and detection area width.



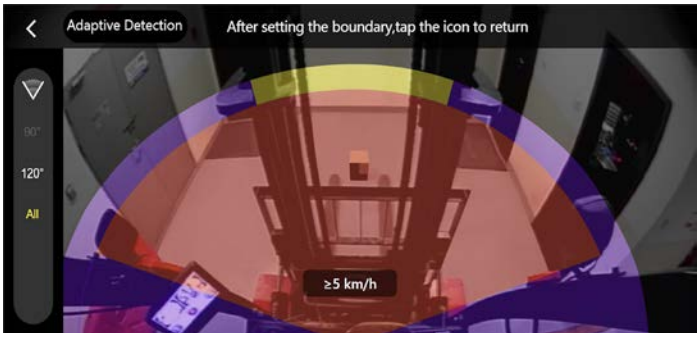
14. Tap the first icon on the top left side, and select the desired critical boundary distance. The minimum value will be 50cm (1ft. 7in.) greater than the critical boundary distance set in the "Primary Detection" calibration. Tap the icon to confirm the selection and return to the main display.



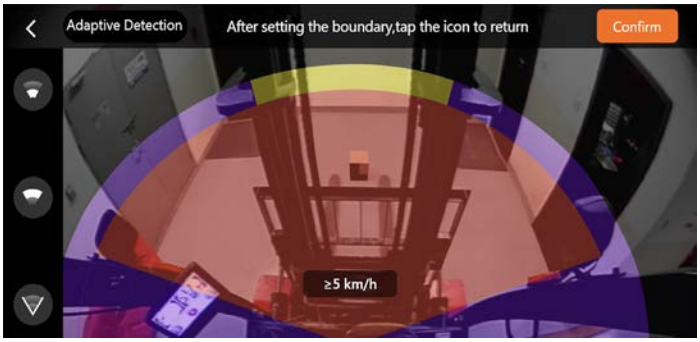
15. Next, tap the middle icon on the left side. If a warning zone boundary is not required, select "None". If required, select a distance at least 1m (3ft. 3in.) further from the critical boundary line, or "Max" to set the maximum possible distance. Tap the icon to confirm the selection and return to the main display.



16. Tap the bottom icon on the left side to set the width of the detection area as described in step 9. Tap the icon to confirm the selection and return to the main display.



17. The adaptive detection zone is now configured. Tap the "Confirm" button to save the configuration.

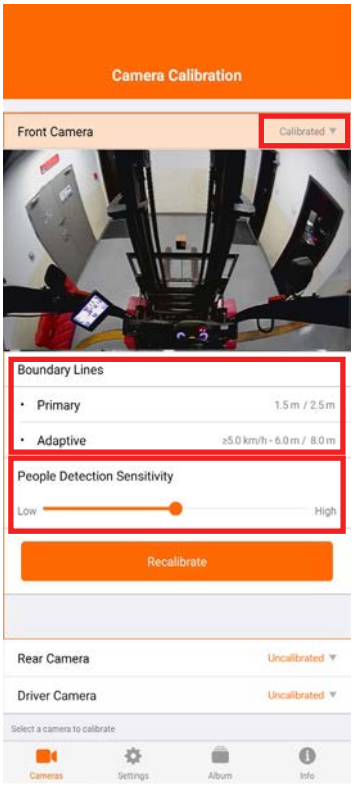


18. Camera Calibration Completion:

The app will now return to the "Cameras" tab, where the status beside the camera will show as "Calibrated", and the critical/warning boundary distances will be displayed. If adaptive detection configuration was completed, the critical/ warning boundary distances for the adaptive detection zone will also be displayed.

A slider to adjust the "People Detection Sensitivity" will also be displayed, which can be used to adjust the sensitivity as follows:

- If the system is detecting objects as people, the sensitivity should be adjusted lower.
- If the system is missing detection of actual people, the sensitivity should be adjusted higher.



Next, proceed to configure the detection zones for the other uncalibrated camera.

3.2 Driver Camera Alerts

To ensure that the forklift driver remains fully attentive while behind the wheel, the driver camera of the VIA Mobile360 Forklift Safety System provides DSS (Driver Safety System) alerts when signs of fatigue are detected. The driver camera can also detect dangerous and illegal behaviors such as smart phone usage and smoking, ensuring full compliance with health and safety requirements.

Driver Fatigue Detection - This alert is triggered when a driver yawns, closes their eyes for more than 3 seconds or when a driver's head is detected looking down for more than 3 seconds.

The table below provides an overview of the different DSS alerts used to notify drivers when a DSS alert is detected. See section 4.3.2 for how to configure the DSS alerts.

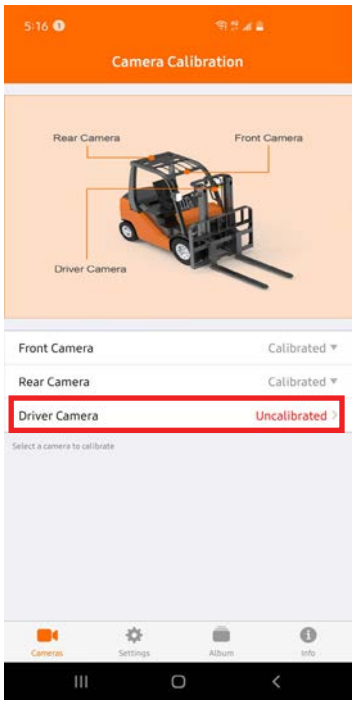
DSS Trigger	Voice Alert
Driver Fatigue	"Pay attention"
Phone Usage	"Stop using your phone"
Smoking	"Stop smoking"
Camera View Blocked	"Driver camera obscured"

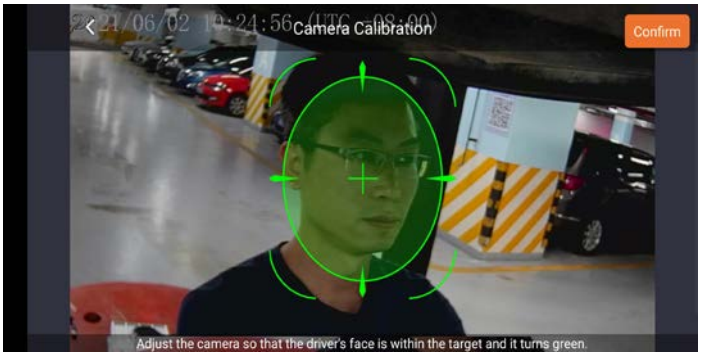
Table 07: Driver audio alerts

3.2.1 Driver Camera Calibration

To calibrate the driver camera, follow the steps below:

1. Open and connect the VIA WorkX app as described in section 3.1.1. From the "Cameras" tab, tap "Driver Camera".
2. Have a person sit in the driver seat of the forklift and adjust the camera so that their head fits within the target overlay in the app interface. Make sure the camera is positioned for the view to be horizontal to the ground as well.
3. The target will turn green when a face is detected within the region.





4. Secure the camera angle by tightening the screws.

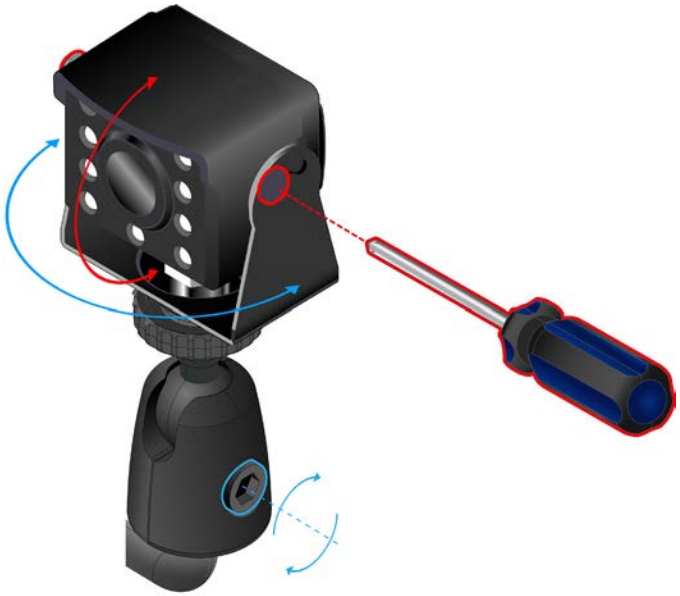
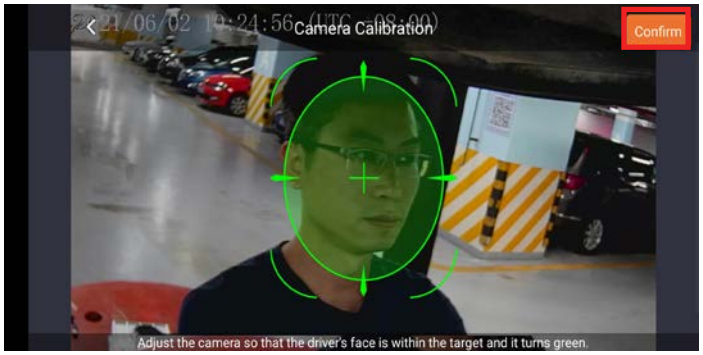
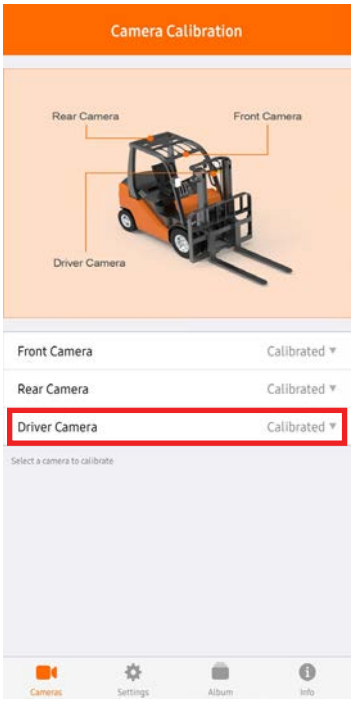


Figure 29: Driver camera angle adjustment

5. Tap "Confirm" on the top right-hand corner of the app to complete driver camera calibration process and return to the "Cameras" tab. The status beside the driver camera will now show "Calibrated".





4. VIA WorkX App

The VIA WorkX app supports Android 8.0, iOS 12.0, and higher. The app can be used to calibrate the three cameras, adjust settings and upgrade the firmware for the VIA Mobile360 Forklift Safety System, as well as view and download videos stored on the system's MicroSD Card.

4.1 Connecting the VIA WorkX App

Follow the steps below to download the app and connect to a target device:

1. Scan the appropriate QR code below to download the VIA Mobile360 app from either the Google Play Store for Android devices or the App Store for iOS devices.

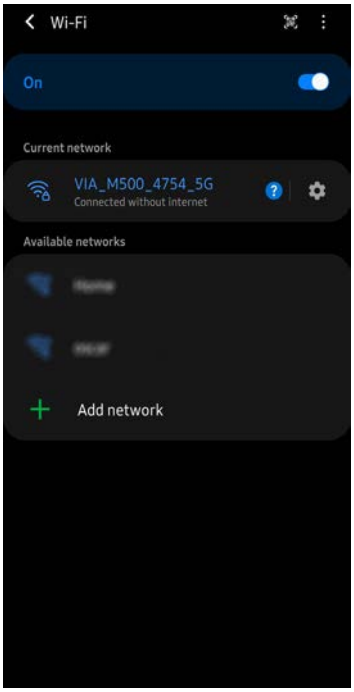
GET IT ON Google Play

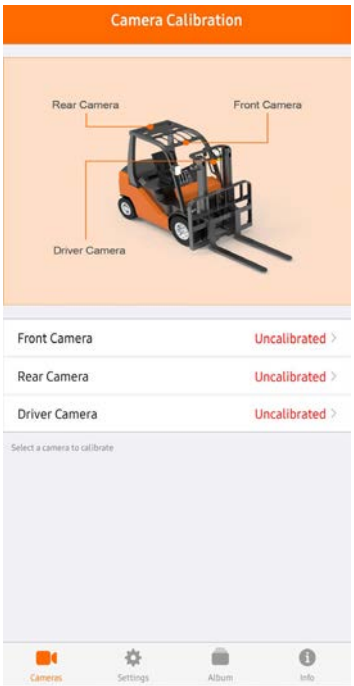
Download on the App Store

2. After installation is complete, launch the app and follow the prompts. Make sure the target VIA Mobile360 Forklift Safety System is powered on.
3. Each VIA Mobile360 Forklift Safety System has a unique Wi-Fi SSID, "VIA_M500_XXXX". Go to the available Wi-Fi connections on the mobile device and select the target system from the list.
4. Enter the password to connect, where the default password is "12345678".

Note:
It is recommended to only turn on the target system when first connecting to make it easier to identify the correct device. It is also recommended to change the default SSID (Network name) to something identifiable for the target forklift by the user. See section 4.3.2 for details on how to change the device SSID.

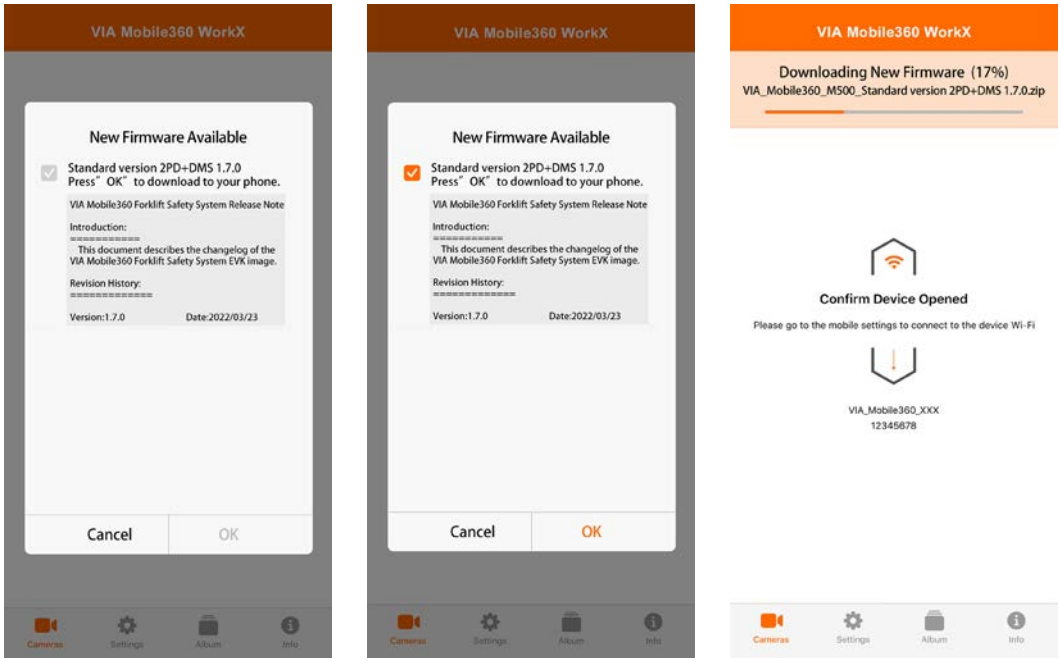
5. Go back to the app and the "Cameras" tab will be shown.





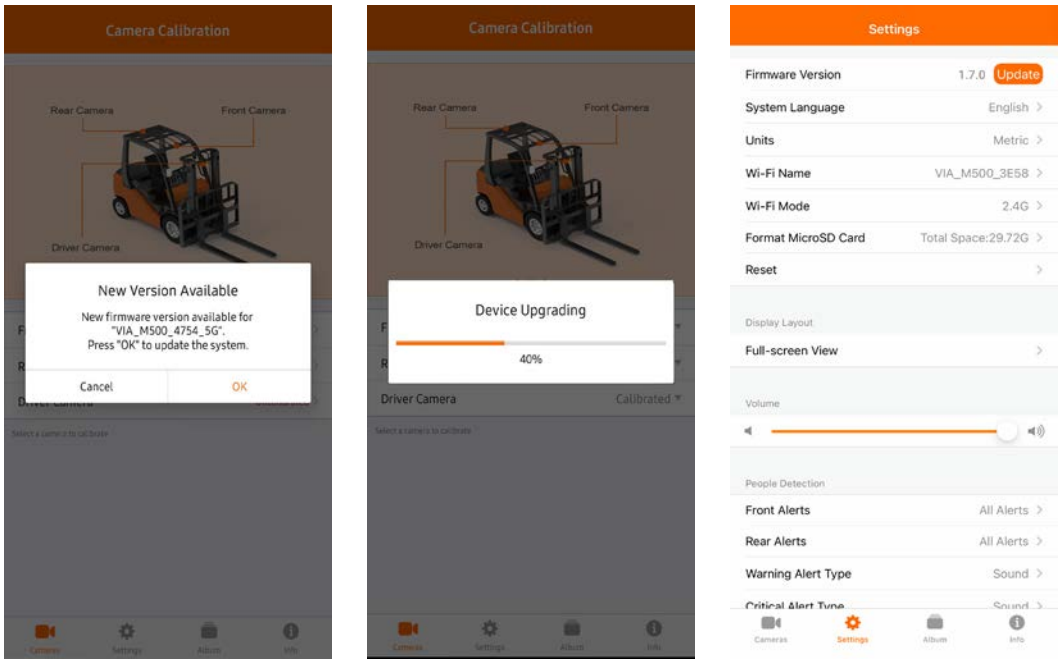
4.2 Upgrading System Firmware

When a new firmware version is available for the VIA Mobile360 Forklift Safety System, a notification will appear when first opening the VIA WorkX app. Press "OK" to download the new firmware to the mobile device.



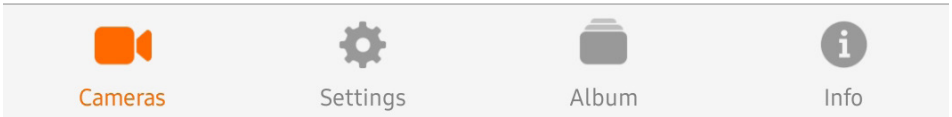
After the firmware download has completed, connect to a VIA Mobile360 Forklift Safety System as described in section 4.1 above. If a notification appears in the app asking to update the system:

1. Press "OK" and the system will download and install the new firmware.
2. Once the installation has completed, the system will restart.
3. If "Cancel" is selected, the system firmware can be updated at a later time in the Settings tab. The "Firmware Version" item will show an "Update" button beside the current version which can be tapped to update the system.



4.3 App Menu

The menu for the VIA WorkX app is located along the bottom of the app interface and includes the four items described below:

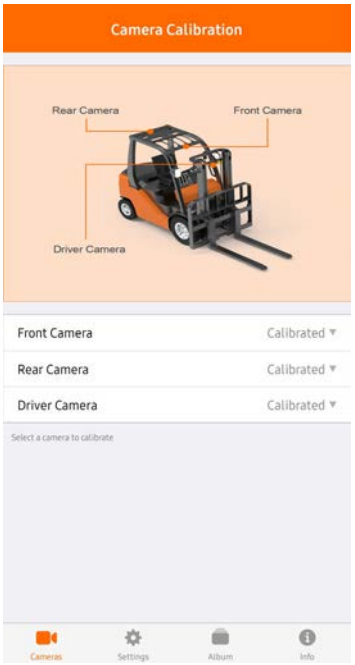


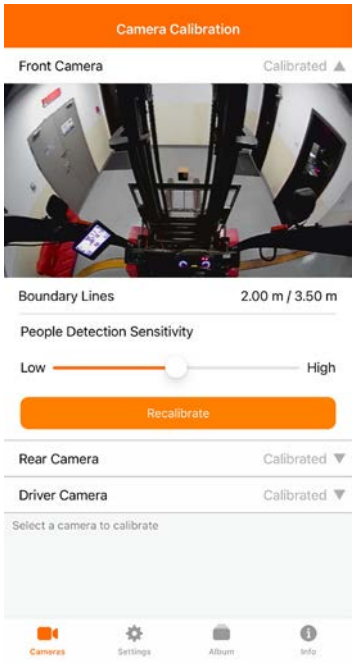
- **Cameras** - The cameras tab provides the calibration methods for each camera as well as live streams of each camera after calibration has been completed.
- **Settings** - Provides settings to configure the VIA Mobile360 Forklift Safety System.
- **Album** - View the videos saved to the MicroSD card in the VIA Mobile360 Forklift Safety System and download the videos to the connected mobile phone.
- **Info** - View the app version or privacy policy information. Optional language packs can also be downloaded to the mobile device and managed.

4.3.1 Camera Calibration

The "Cameras" tab provides the calibration status for each camera as well as the methods to calibrate each camera as explained in Chapter 3 of this guide.

Selecting any camera from the list will show the live view of the camera as well as the calibration information. Selecting 'Recalibrate' will allow for the calibration process to be redone.





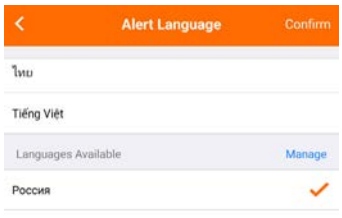
4.3.2 Settings

The "Settings" tab provides all available settings to configure the VIA Mobile360 Forklift Safety System.

- **Firmware Version** - Shows the current firmware version of the connected VIA Mobile360 Forklift Safety system.
- **Alert Language** - Shows the language used for the audio alerts. Tapping on the current language will bring up a list of 10 available languages and additional options displayed in the "Languages Available" section. The options displayed in the section are located on the mobile device and can be downloaded to the system.

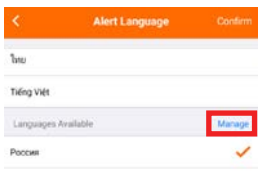
Note:
Refer to section 4.3.4 for downloading and managing optional language packs on the mobile device.

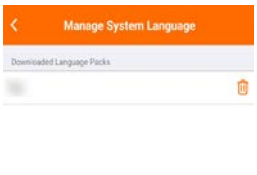
Select the desired option from the list of 10 languages, or download a language from the mobile device by selecting it and tapping "Confirm" on the top right corner of the screen. The language will instantly be added to the system and selected as the Alert Language.

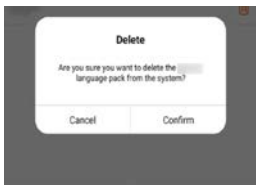


Note:
Ensure that the download process finishes before disconnecting the VIA WorkX app from the system or switching to another tab in the app.

To remove a language added to the system from the mobile device, tap "Manage". On the next screen, tap and then "Confirm" in the pop-up dialog.







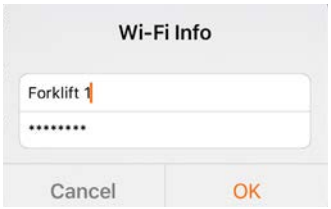
- **Units** - Shows which units to display in the App. Tapping on the current units will bring up a list to change between Metric, Imperial, and US Customary.

- **Wi-Fi Name** - Shows the Network Name (SSID) of the connected VIA Mobile360 Forklift Safety System. Tapping on the name brings up the option to change the SSID and password.

Note:
It is recommended to change the default Wi-Fi name and password after the first connection to make the system specifically identifiable with the host forklift, and when multiple systems are operating closely at the same time.

To change the Wi-Fi name and password:

1. Tap the current name in the settings list.
2. Enter the new Wi-Fi name and password.
3. Tap "OK" to save the changes.



Note:
After changing the SSID and/or Password, the VIA WorkX app will need to reconnect to the system as described in section 4.1 using the new name and/or password.

- **Wi-Fi Mode -** Switch the system's Wi-Fi mode between 2.4GHz/5GHz (need to reconnect after change).
- **Format MicroSD Card** - Shows the storage size of the MicroSD card inserted as well as provides a method to reformat the inserted MicroSD card as exFAT.
- **Reset** - Pressing this will perform a factory reset. The VIA Mobile360 Forklift Safety system will be restored to the factory default settings including the default Wi-Fi name and password. All camera calibration will need to be redone if pressed.
- **Volume** - Change the volume of the speaker.

People Detection:

- **Front/Rear Warning Alerts** - Select "All Alerts", "Critical Alerts Only" or "No Alerts" to enable or disable alerts for the respective direction.
- **Warning/Critical Alert Type** - Allows for the warning/critical audio alert to be changed between sound and voice notifications.
- **Show Detection Boxes** - Allows display of box-shaped people detection target overlays on the display interface.

Output Customization: Allows configuration of the VIA Mobile360 M500 system's custom output interfaces for relaying alert signals to custom controller devices through the DIO2 cable accessory.

Driver Monitoring: Allows enabling/disabling of driver fatigue, phone usage and smoking detection alerts by toggling the respective switch.

Optional Accessories: Allows activation and configuration of connected optional accessories like speed, reverse light and wireless seatbelt sensors.

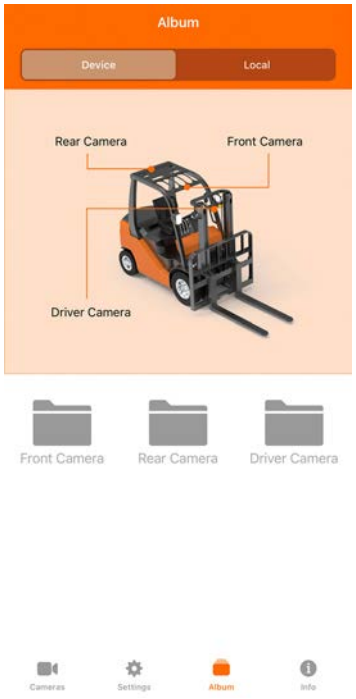
- **Display Layout** - Select '2 camera' or 'Rear Only' to display camera view layouts on the 7" CVBS Display. '2 camera' is the default selection.

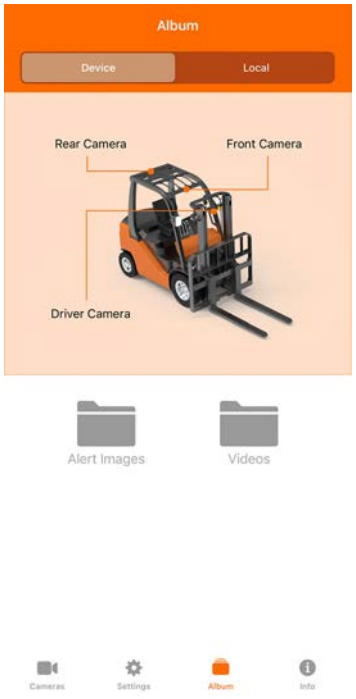
Note:
For more information on:
* The optional DIO2 cable accessory - refer to Appendix section A.3.
* The optional speed and reverse light sensor accessory kit - refer to Appendix section A.4.
* The optional wireless seatbelt sensor accessory - refer to Appendix section A.5.

4.3.3 Album

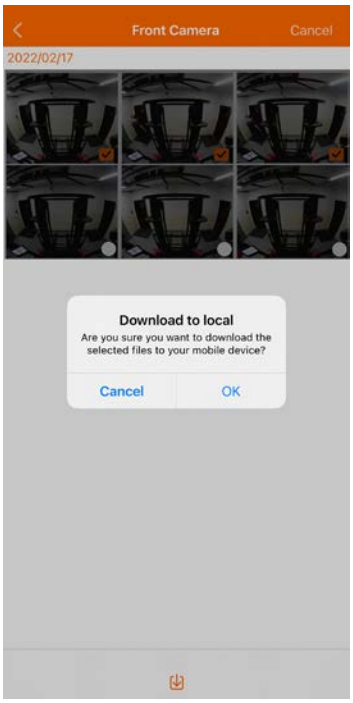
From the "Album" tab, users can playback or download videos and alert images stored on the MicroSD card installed in the VIA Mobile360 Forklift Safety System. Up to 500 alert images can be stored, while the number of videos that can be stored depends on the MicroSD card's storage capacity.

Device: When connected to a VIA Mobile360 Forklift Safety System, the "Device" tab will be accessible and show folders for each camera connected to the system. In each camera's folder are sub-folders for alert images and videos. Tapping on an alert image will provide a full screen preview, while tapping on a video file will begin playback.

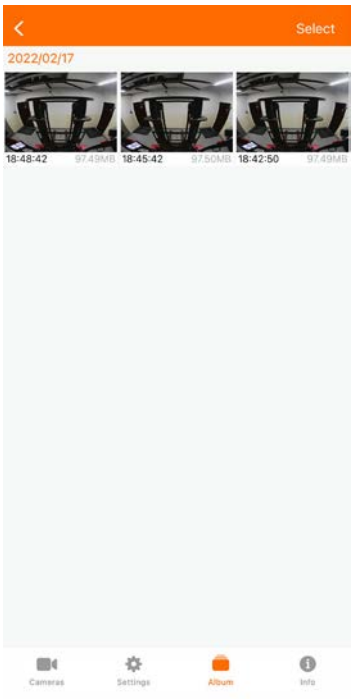




To download alert images or videos to the mobile device, long press on the thumbnails of the desired items. An orange check mark will appear on the bottom right-hand corner of the thumbnails. After selecting the desired items, tap the download icon at the bottom of the screen. Tap "OK" to confirm download of the selected items to the connected mobile device. Downloaded alert images and videos can then be seen in the "Local" tab.

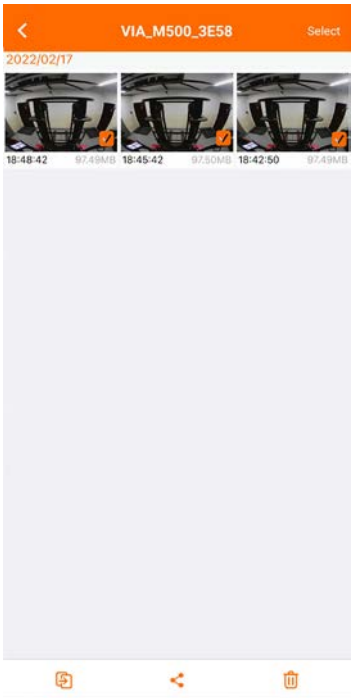


Local: Alert images and videos downloaded to the connected mobile device are displayed in the "Local" tab. Individual folders with subfolders for alert images and videos will be created for each VIA Mobile360 Forklift Safety System that has downloaded items stored on the connected mobile device. These alert images and videos are accessible at any time. Tapping on an alert image will provide a full screen preview, while tapping on a video file will begin playback.

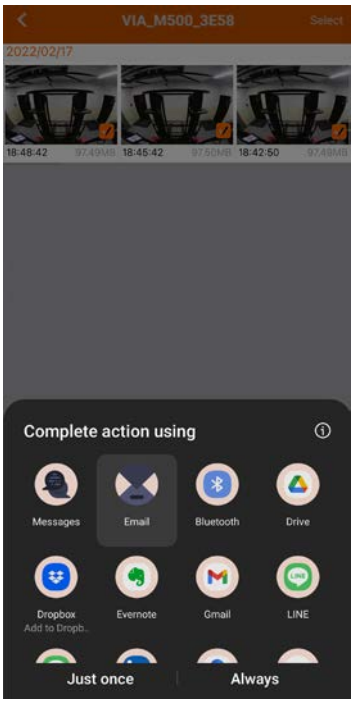


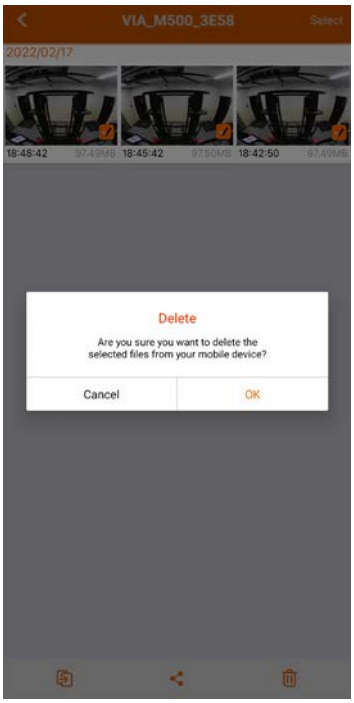
Alert images and videos which have been downloaded to the local device can be shared, copied to the local phone storage or deleted.

To select files to copy, share or delete; long press on the thumbnails of the desired items. An orange check mark will appear on the bottom right-hand corner of the thumbnails. After selecting the desired items, tap the copy, share or delete icon at the bottom of the screen.



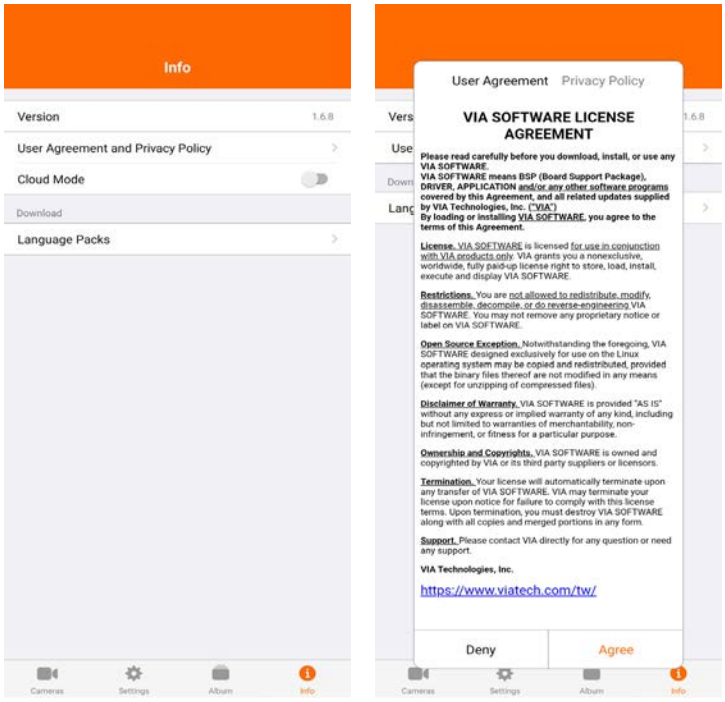
- If copy is selected, a notification will appear confirming the files have been copied. Press "OK" to continue.
- If share is selected, the phone will provide options to share the files to email, social media etc. Select the desired methods to share and complete the corresponding process.
- If delete is selected, tap "OK" to confirm deletion of the selected items from the mobile device.





4.3.4 Info

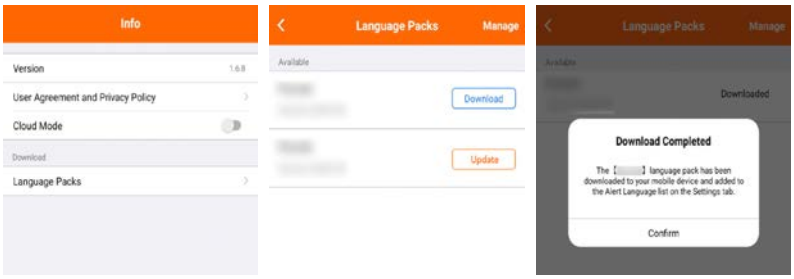
The "Info" tab allows users to check the VIA WorkX app version, review the user agreement and privacy policy, enable/disable the Cloud Mode, and download optional language packs.



Note:
The "Cloud Mode" will be automatically be enabled when the 4G LTE wireless module is installed in the VIA Mobile360 M500 system. Refer to Appendix section A.6 for more information.

To download a new or updated optional alert language pack to the mobile device, follow the steps below:

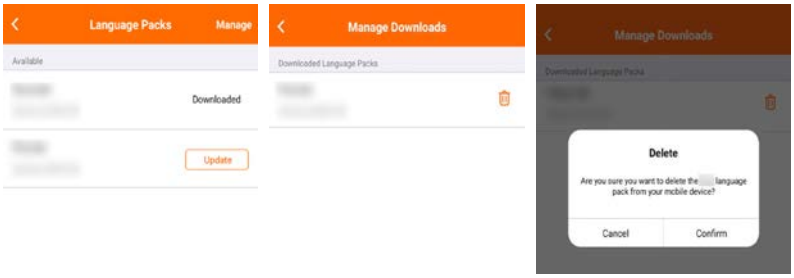
1. Connect the device to the Internet.
2. Tap "Language Packs".
3. On the next screen, tap "Download" or "Update" next to a language in the list. The alert language pack will start downloading and the progress will be displayed. Once the download is completed, a pop-up dialog will be displayed and the "Downloaded" status will be displayed next to the language.



The downloaded alert language pack can now be added to the VIA Mobile360 Forklift Safety System. Refer to section 4.3.2 for instructions.

To remove a downloaded optional language pack from the mobile device, follow the steps below:

1. Tap "Manage" on the top-right corner of the "Language Packs" screen.
2. On the next screen, tap and then "Confirm" in the pop-up dialog.



Appendix A Optional Accessories

This section introduces optional accessories available for the VIA Mobile360 Forklift Safety System and includes instructions to install these optional accessories.

Caution:
Ensure that the forklift is turned off before installing or uninstalling an optional accessory.

A.1 7" CVBS Display Kit

An optional 7" CVBS Display kit is available for the VIA Mobile360 Forklift Safety System for increased driver awareness of the vehicle's surrounding environment. Live video streams from the front and rear cameras can be viewed on the 7" CVBS Display panel along with real-time visual alerts for people detection and driver safety system alerts in the user-friendly interface.

7" CVBS Display Specifications	
Panel Size	7" LCD panel
Resolution	1024(H) x 600(V)
Contrast	500:1
Brightness	400cd/m^2 (116.75fL)
Response Time	25ms
Power Consumption	<500mA
Power Supply	12V DC-in
Operating Temperature	-20°C ~ 70°C (-4°F ~ 158°F)
IP Rating	IP67
Dimensions	188mm (W) x 137mm (H) x 67mm (D) including sunshade [7 ½ in.(W) x 5 ½ in.(H) x 2¾ in.(D)]

Table 08: 7" CVBS Display specifications

A.1.1 Package Contents

- 7" IP67 CVBS LCD panel [2m (6ft. 7in.) cable]
- Sunshade with screw pack & tool
- Hinge
- 4 x M4*10mm (3⁄16 in.*3⁄8 in.) hexagon screws
- 4 x M5*12mm (3⁄16 in.*7⁄16 in.) hexagon screws
- Magnet mounting plate
- 4 x M5*6mm (3⁄16 in.*1⁄4 in.) Phillips head screws
- Strong magnet
- 2 x M5*8mm (3⁄16 in.*5⁄16 in.) Phillips head screws
- 2 x magnet rubber pads
- Mounting plate
- 4 x M5*25mm (3⁄16 in.*1in.) hexagon screws
- 4 x Molly bolts

Figure 30: 7" CVBS Display kit

A.1.2 Display Buttons

The CVBS Display includes a number of indicators and buttons to adjust the display output, as shown below:

Figure 31: 7" CVBS Display buttons

Depending on the model of the CVBS Display used, the buttons on the display will function as follows:

Current Model	Older Models (Part Number ending with A0)
01 - Light sensor	01 - Light sensor
02 - Power indicator	02 - Power indicator
03 - Power button / Return	03 - Power button
04 - Auto Dim / Menu back	04 - Menu back only
05 - Menu	05 - Menu
06 - Menu forward	06 - Menu forward
07 - Mode switching / Menu selection	07 - Mode switching / Menu selection

Pushing the "Menu" button will bring up the following items depending on the model of the CVBS Display used:

Current Model	Older Models (Part Number ending with A0)
Picture Mode - Tap the back or forward buttons to select the "Standard", "Dynamic", or "Mild" preset, or "User" to manually adjust the contrast, brightness, color, sharpness or tint.	**Brightness**
Option - Tap to select the Menu language, or to reset to factory default.	**Contrast**
	Color
	Hue
	Screen Rotation (TCON)
	Auto Dim
	Reset

Note:
If Auto Dim is enabled, the panel brightness will automatically adjust based on the ambient brightness detected by the light sensor. Make sure the light sensor is not blocked.

A.1.3 Installation

Follow the steps below to install the CVBS Display panel:

Display Panel and Mount Assembly: The display panel can be mounted on the forklift by using the strong magnet or drilling method. Both methods will require assembling and fixing of the mount on the forklift before mounting the display panel.

1. Find a suitable installation location to mount the CVBS Display on the forklift's A-Pillar and wipe its surface with alcohol to remove dirt and debris. While identifying a suitable installation location, consider the following requirements:
    - The display panel should be installed at a suitable height and angle for a clear view of the display, but must not interfere with the view of the surrounding environment.
    - There should be sufficient surface area to affix the mounting plate that has dimensions of 131mm (W) x 50mm (H) x 8.5mm (D) [5 ⅜ in. (W) x 2in. (H) x ⅝ in. (D)].
    - To mount the display panel using the strong magnet, the surface should be ferromagnetic.
    - To mount the display panel by drilling, the installation location should have enough depth to accommodate a mounting plate fixing hole's depth of the provided Molly bolts , 25mm (1in.).

Figure 32: Mounting plate fixing holes

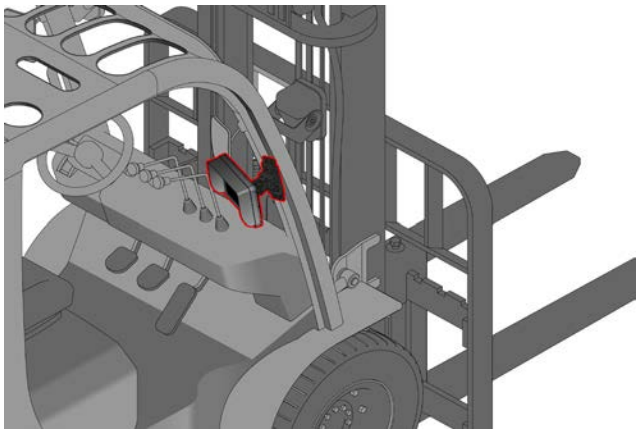


Figure 33: Finding a suitable installation location for the CVBS Display

2. Place the mounting plate on the forklift's A-Pillar and determine the location of the four screw holes suitable to fix the hinge vertically on the front side of the mounting plate. Mark the four screw holes to be used to attach the hinge.

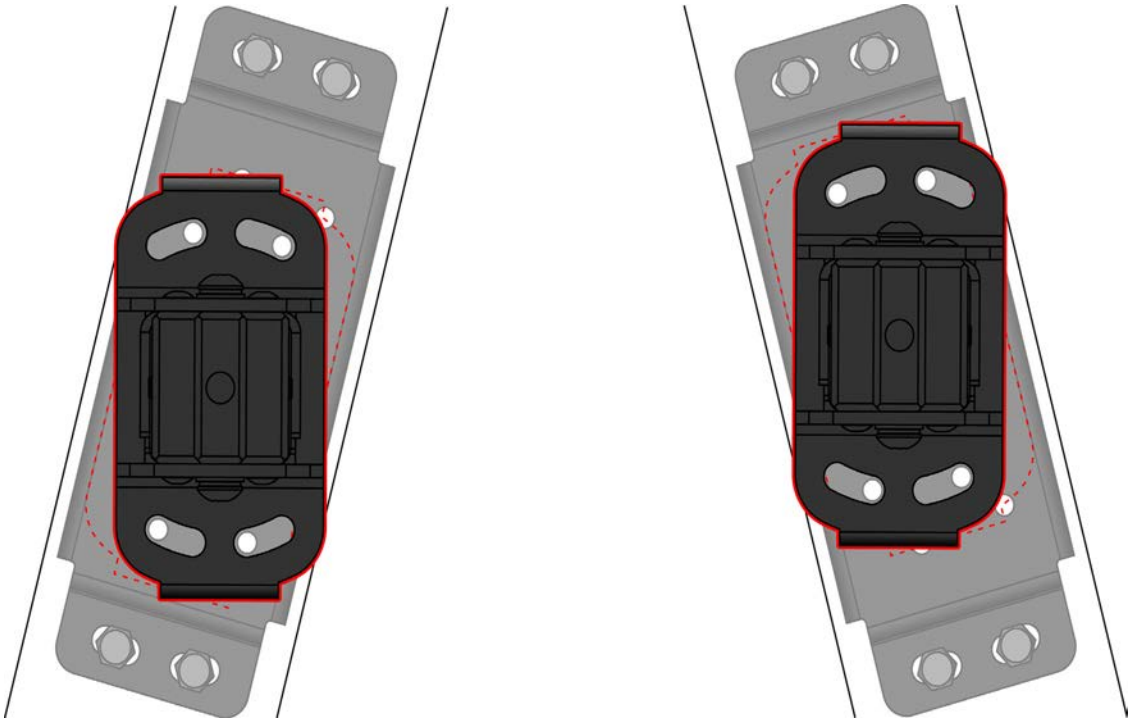


Figure 34: Determine four screw holes suitable to fix the hinge on the mounting plate

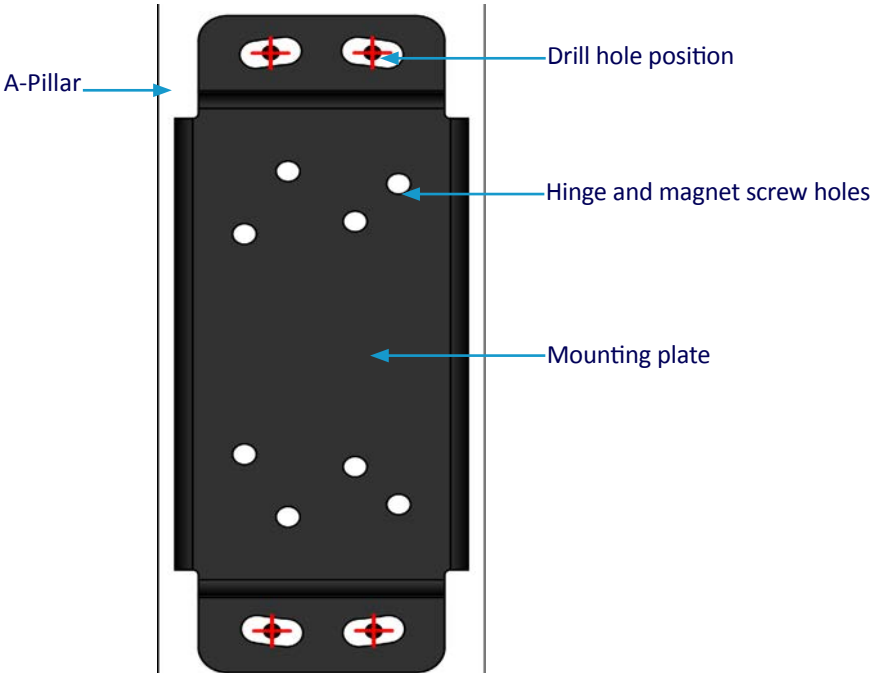


Figure 35: Mark hole positions to mount hinge and mounting plate

If drilling will be used to mount the display panel, mark the center location of each mounting plate fixing hole at the top and bottom of the mounting plate. The drill holes should be 17.35mm (11⁄16 in.) apart.

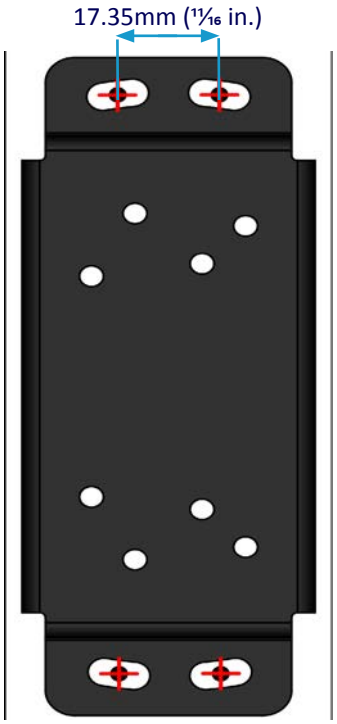


Figure 36: Distance between drill holes

3. To mount the display panel using the strong magnet, perform steps 4 - 9 below and proceed to step 12. To mount the display panel using drilling, proceed to step 10.

Strong Magnet :

4. Place the magnet mounting plate on the mounting plate and align the screw holes of both plates correctly.
5. Affix the magnet mounting plate on the rear side of the mounting plate using the four M5*6mm (3⁄16 in.*1⁄4 in.) Phillips head screws provided. Insert and tighten the screws into holes on the magnet mounting plate that align with the other four holes on the mounting plate not marked in step 2 for attaching the hinge.

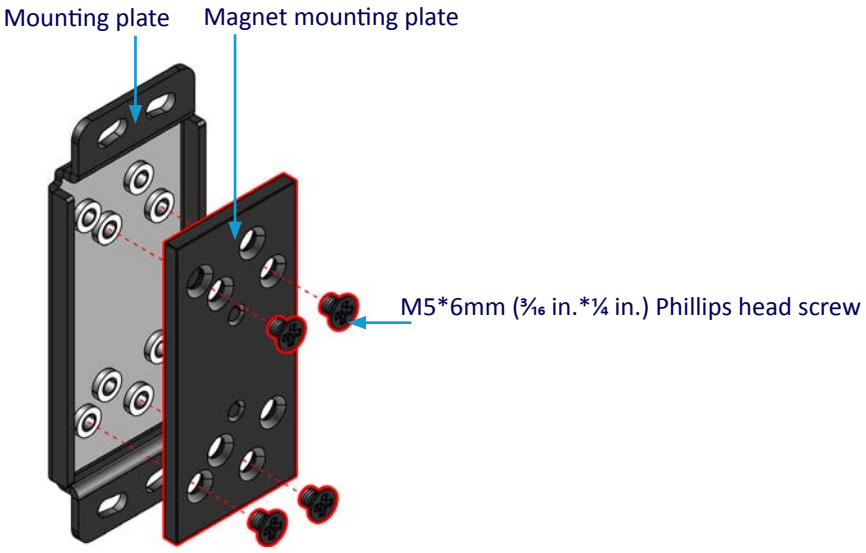


Figure 37: Affix the magnet mounting plate on the mounting plate

6. Carefully place the magnet on the magnet mounting plate, aligning matching screw holes of the magnet and the magnet mounting plate correctly.
7. Secure the magnet to the magnet mounting plate by inserting the two M5*8mm (3⁄16 in.*5⁄16 in.) Phillips head screws provided and tighten the screws.

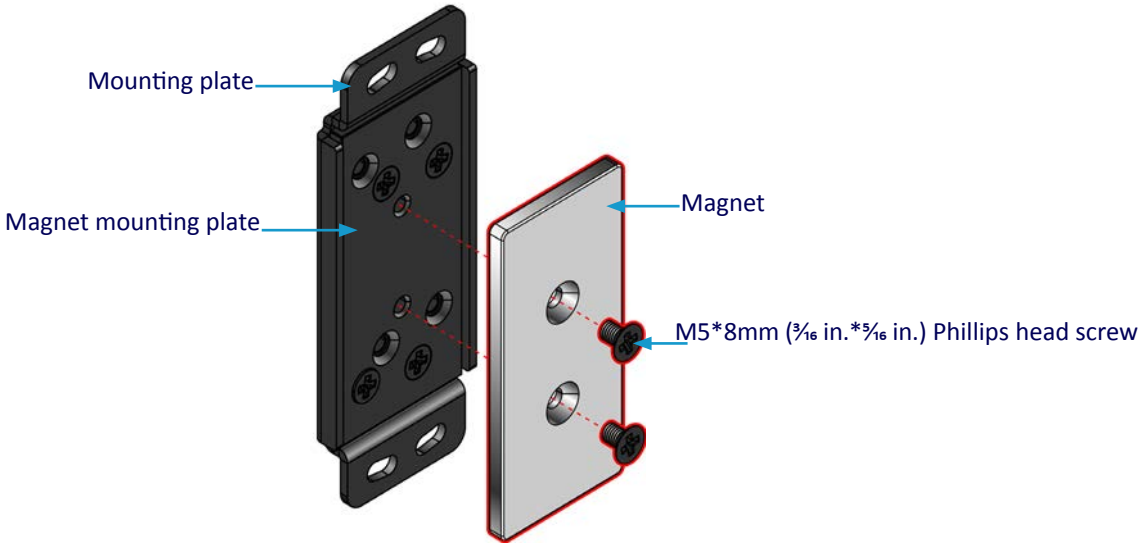


Figure 38: Affix the magnet on the magnet mounting plate

8. Clean the surface of the magnet with alcohol then attach the two rubber pads to the top and bottom (as shown below) of the magnet by peeling off the protective cover on one side of the 3M tape on magnet rubber pads. Press firmly to ensure complete adhesion.

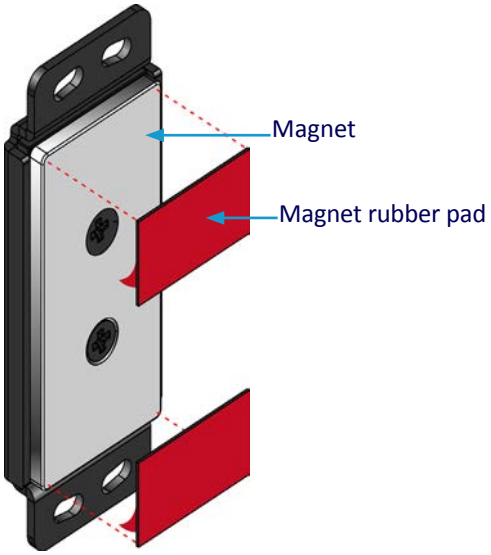


Figure 39: Affix rubber pads on the magnet

9. Clean the surface of the A-pillar with alcohol then remove the protective cover from the other side of magnet rubber pads and attach the mounting plate on the desired location of the A-Pillar. Press firmly to ensure complete adhesion and proceed to step 12.

Note:
Be careful when attaching the mounting plate as the magnet will provide a strong force.

Drilling:

Four M5*25mm (3⁄16 in.*1in.) hexagon screws and Molly bolts are also provided with the CVBS Display panel. If drilling will be done, the provided magnet mount assembly parts are not required.

10. Drill a hole with a diameter of 8mm (5⁄16 in.) in each drill hole marked in step 2, then insert a Molly bolt into each drilled hole.

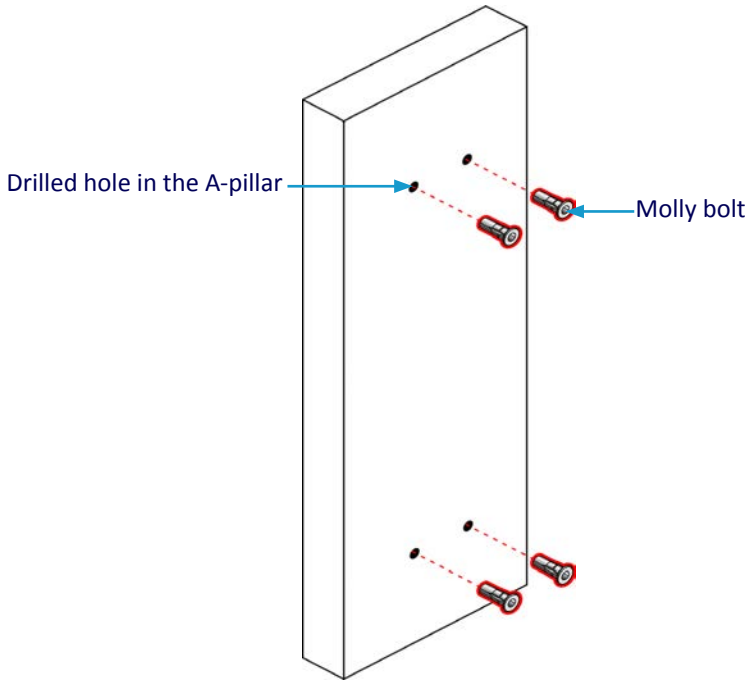


Figure 40: Drill holes into the A-Pillar and insert Molly bolts

11. Place the mounting plate vertically on the A-Pillar and insert the provided four M5*25mm (3⁄16 in.*1in.) hexagon screws into the Molly bolts. Make sure the mounting plate is positioned as vertically as possible and tighten the screws to maintain a strong hold.

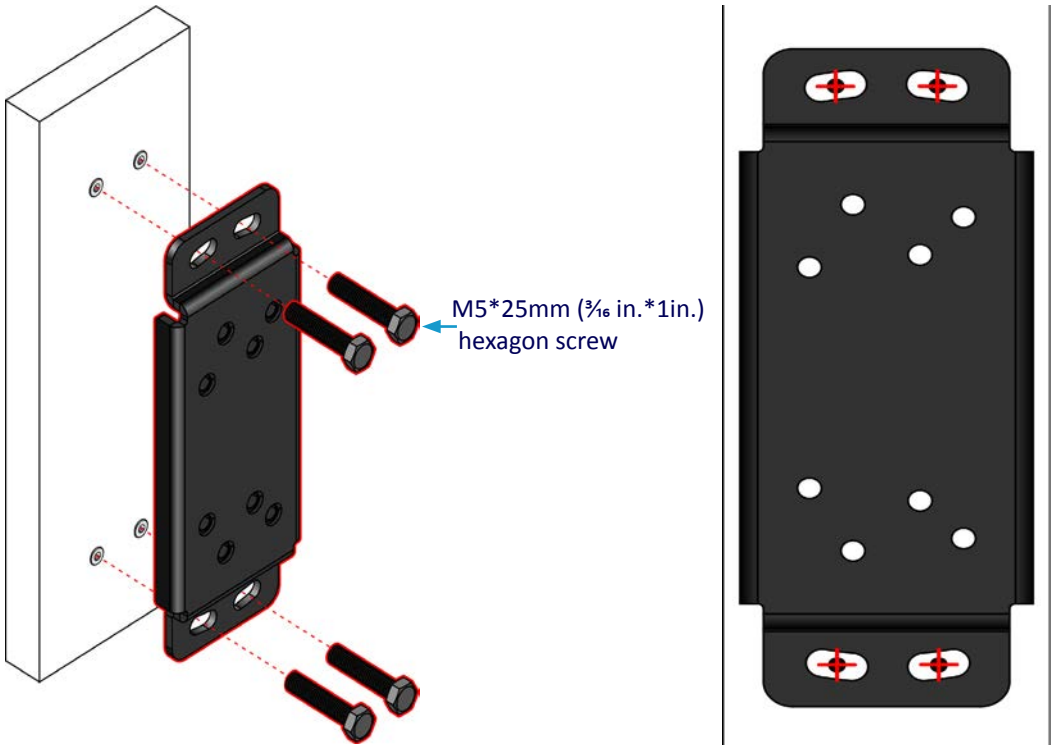


Figure 41: Affix the mounting plate on the A-Pillar

12. Attach the hinge on the mounting plate by inserting the provided M5*12mm (3⁄16 in.*7⁄16 in.) hexagon screws into the hole positions marked in step 2. Tighten the screws enough to maintain hold on the mounting plate.

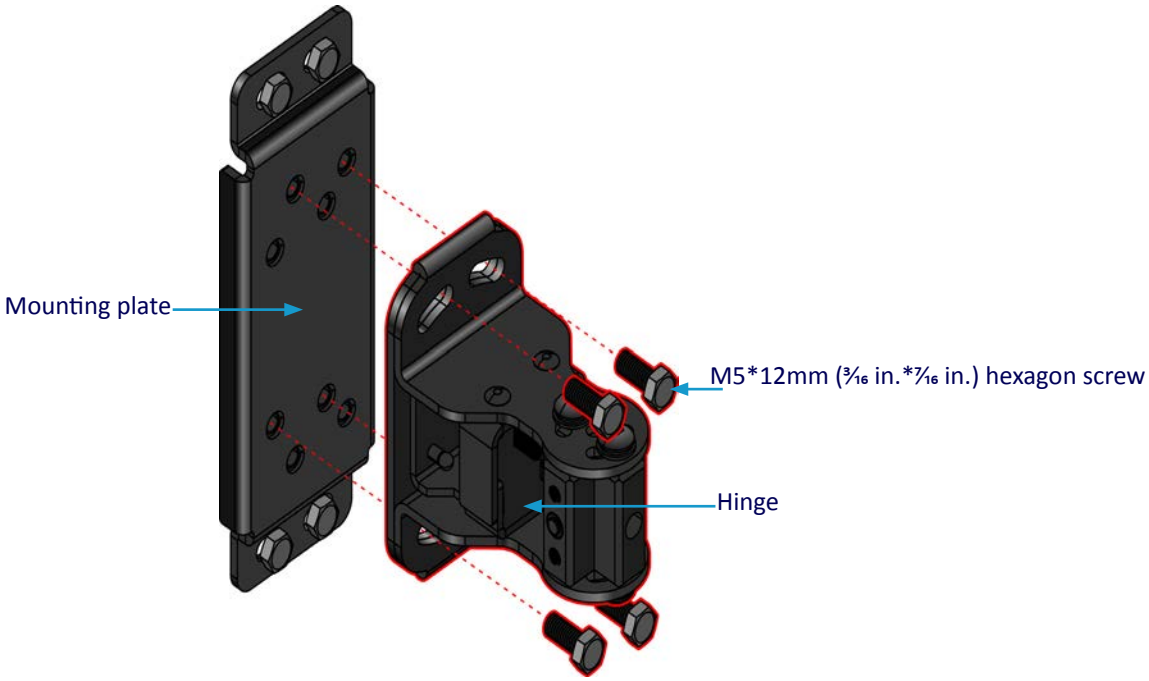


Figure 42: Affix the hinge on the mounting plate

13. Attach the bracket of the CVBS Display to the hinge by inserting the provided four M4*10mm (3⁄16 in.*3⁄8 in.) hexagon screws and tighten them enough to maintain hold on the hinge.

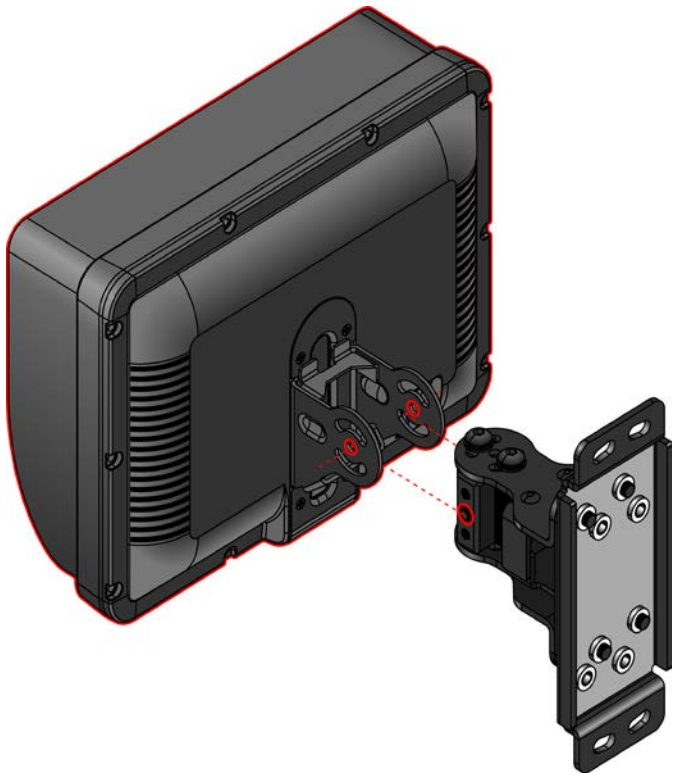


Figure 43: Align the CVBS Display fixed bracket with the hinge

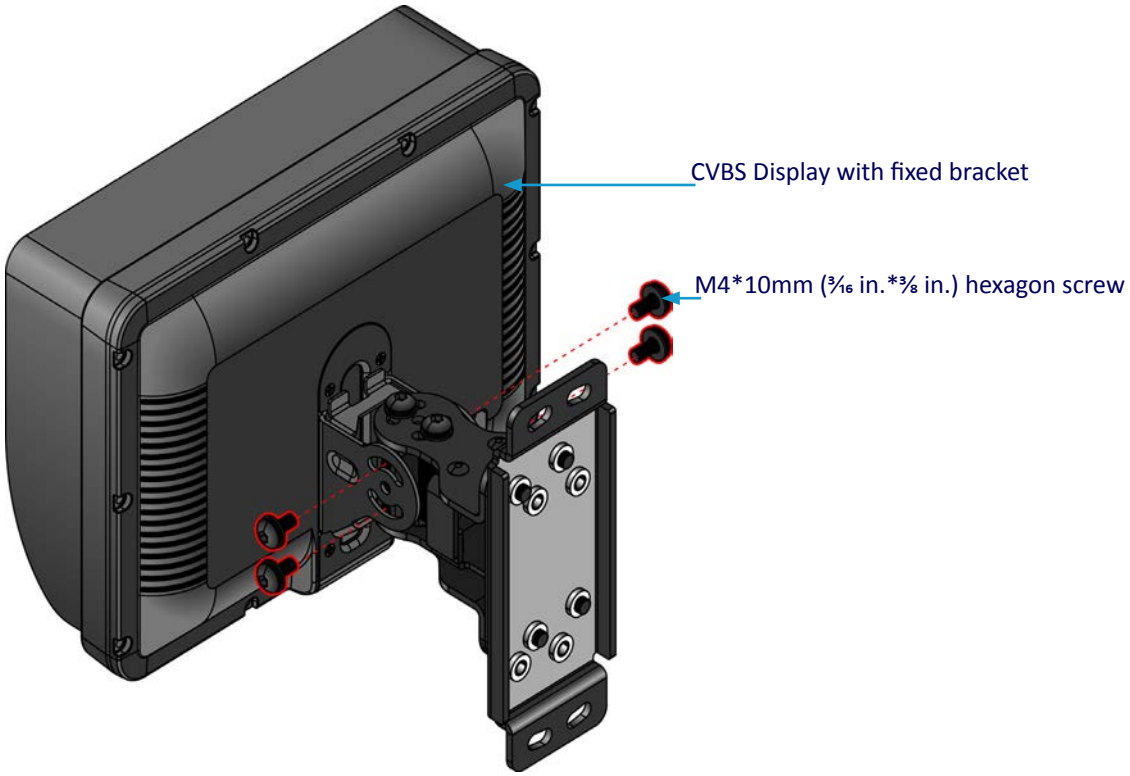


Figure 44: Affix the CVBS Display fixed bracket on the hinge

14. Adjust the CVBS Display viewing angle by carefully rotating the display panel left, right, up or down.

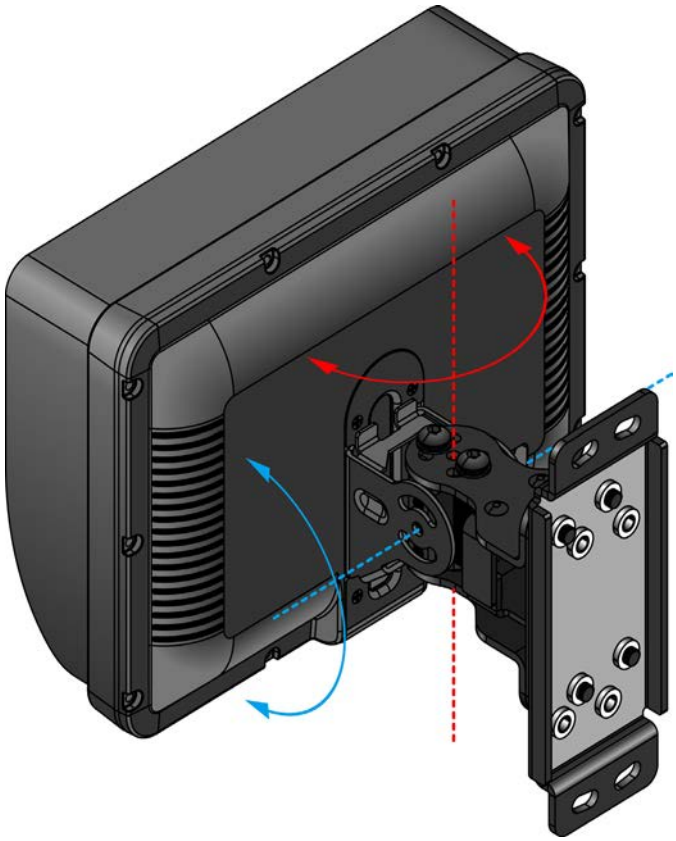


Figure 45: Adjust the display viewing angle by pushing left/right or up/down

If drilling is used to mount the display panel, the display viewing angle can also be adjusted by carefully rotating the display panel left/right.

Figure 46: Adjust the display viewing angle by rotating left/right

15. Once the CVBS Display viewing angle is confirmed, fix the CVBS Display panel's position by tightening the M4*10mm (3⁄16 in.*3⁄8 in.) hexagon screws holding the display panel to the hinge.

Figure 47: Tighten screws holding the display panel to the hinge

16. Route the cable back to the VIA Mobile360 M500 system, ensuring no part of the cable is hanging or exposed from the forklift to prevent accidental disconnection or injury. It is suggested to use zip ties or tape to help secure the cables when routing.

17. Make sure the system is turned off, then connect the CVBS Display (white cable) to the "CVBS" port designated in white on the rear panel I/O.

Note:
It is strongly recommended to secure the CVBS cable connection with LOCTITE 243 Threadlocker (not included) prior to installation. See section 2.6 for instructions.

Figure 48: 7" CVBS Display cable connections

18. Start the forklift and the display will automatically be detected by the VIA Mobile360 Forklift Safety System and powered on.

A.1.4 Display Interface

Once connected, the 7" CVBS Display provides the driver with live views of the front and rear cameras, as well as visual alerts for people detection and driver safety system warnings.

Display interface with front, rear and driver cameras installed:

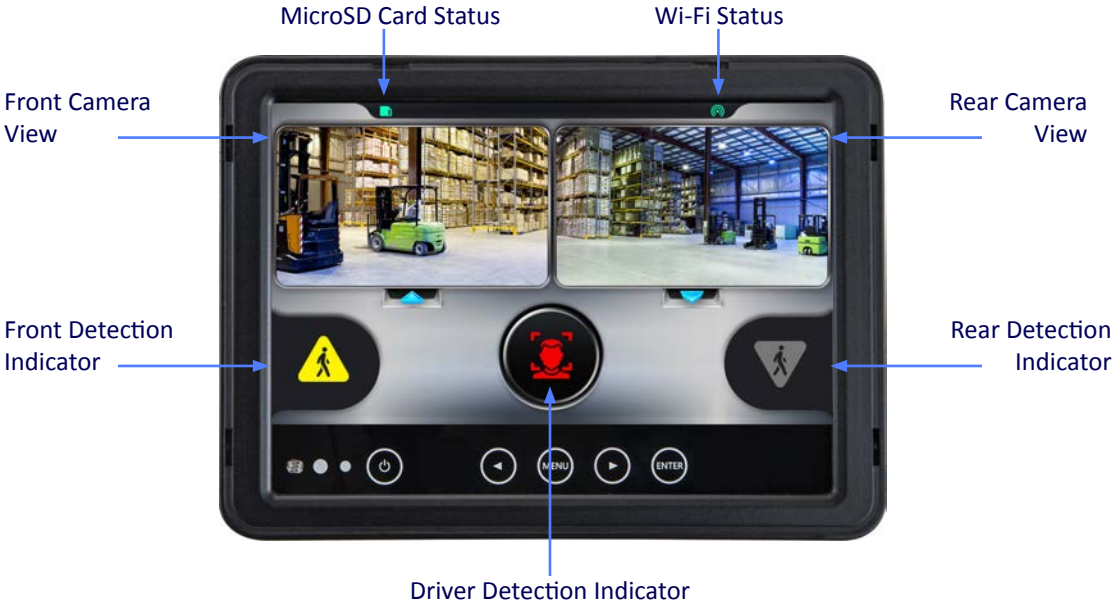


Figure 49: 7" CVBS Display interface if driver camera installed

Display interface with only front and rear cameras installed:

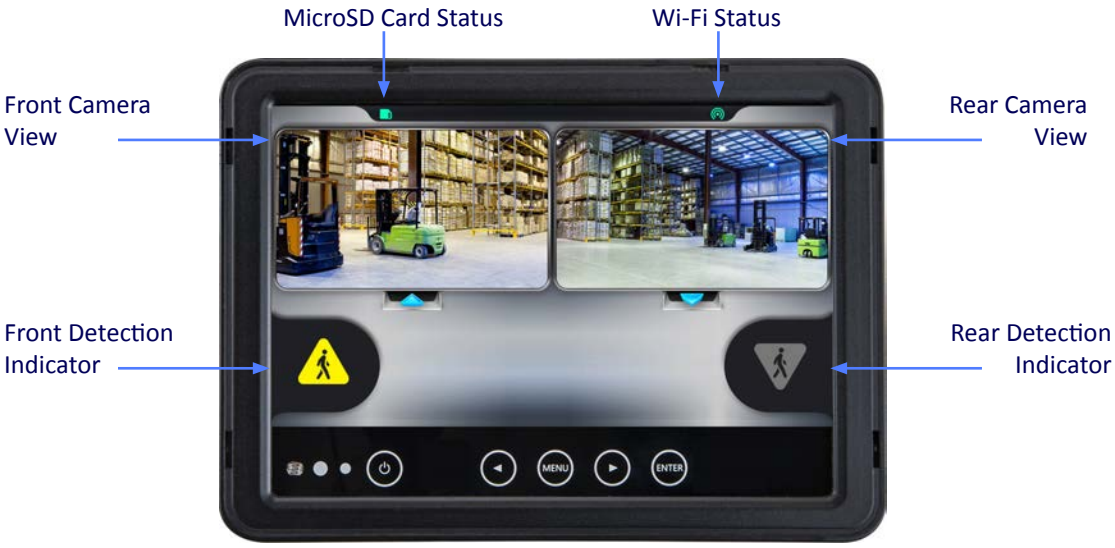


Figure 50: 7" CVBS Display interface if no driver camera installed

The table below provides a description of the detection icon behavior.

Detection Indicator	Color	Description
Front/Rear People Detection Icon	Blue	Camera not calibrated
	Gray	No alert
	Yellow	Person in warning zone detected
	Red	Person in critical zone detected
Driver Safety System Detection Icon	Blue	Camera not calibrated
	Gray	No alert
	Red	Driver safety system alert detected

Table 09: 7" CVBS panel alert icons

Note:
The Driver Detection Indicator will only be displayed on the CVBS Display interface if the driver camera is connected to the VIA Mobile360 M500 system and has been calibrated with the VIA WorkX App.

A.2 NFC Card Reader

An optional NFC card reader is available to provide NFC card driver registration for forklifts registered to the VIA WorkX Connect Cloud.

A.2.1 Package Contents

- NFC card reader [3.0m (10ft) cable] with pre-attached 3M tape
- One NFC card

Figure 51: The NFC card reader

A.2.2 Installation

Follow the steps below to install the NFC card reader:

1. Find a suitable installation location to mount the device on the forklift and wipe its surface with alcohol to remove dirt and debris. While identifying a suitable installation location, consider the following requirements:
   - The device can easily be found and reached by drivers.
   - The device and its mount will be safe from physical damage.
   - The installation location has sufficient surface area to affix the device that has dimensions of 70mm (W) x 70mm (H) x 25mm (D) [2 ¾ in. (W) x 3 ⅛in. (H) x 1in. (D)].
2. Peel off the protective cover on the 3M tape pre-attached at the back, and place the device at the chosen installation location. Press firmly to ensure complete adhesion.
3. Route the cable back to the VIA Mobile360 M500 system, ensuring no part of the cable is hanging or exposed from the forklift to prevent accidental disconnection or injury. It is suggested to use zip ties or tape to help secure the cables when routing.
4. Make sure the system is turned off, then connect the NFC card reader (green cable) to the "CAN/COM" port designated in green on the front panel I/O.

Note:
It is strongly recommended to secure the card reader's cable connection with LOCTITE 243 Threadlocker (not included) prior to installation. See section 2.6 for instructions.

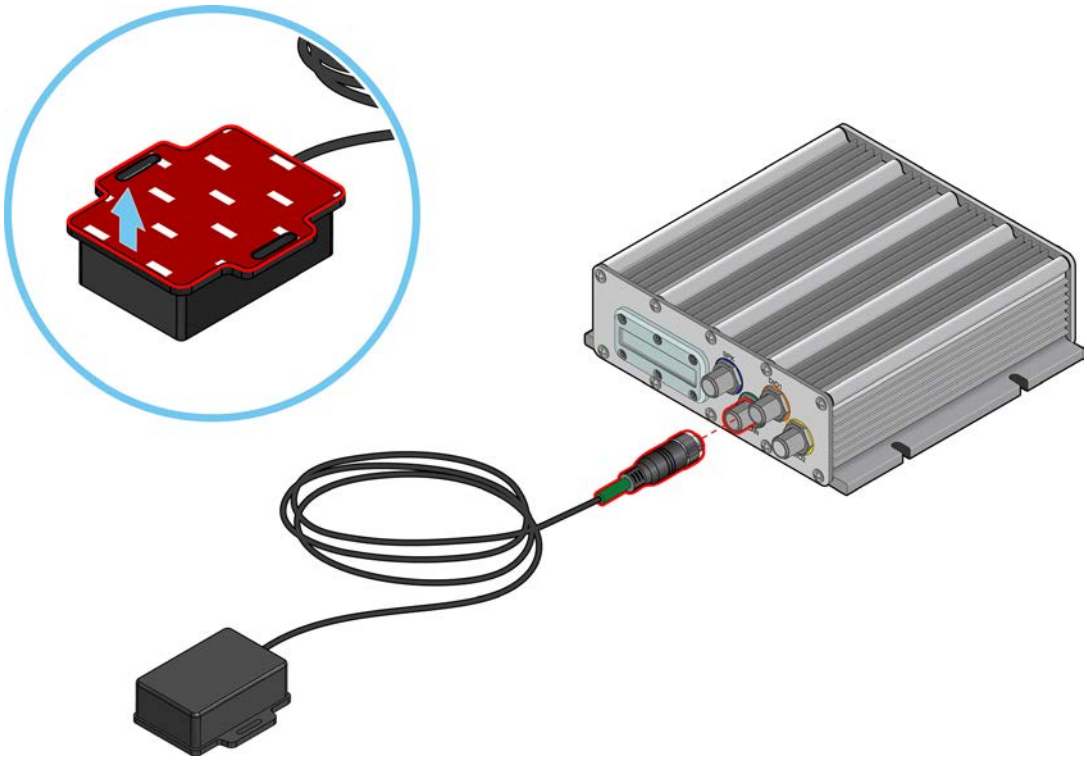


Figure 52: NFC card reader cable connection

5. Start the forklift. The NFC card reader will automatically be detected by the VIA Mobile360 Forklift Safety System and powered on.

A.3 DIO2 Cable

The optional DIO2 cable accessory supports connections to the VIA Mobile360 M500 system's custom output interfaces to relay alert signals to custom controller devices. The cable includes an M12 connector, and bullet head connectors for GPIO, 12V DC-Out and ground connections specified as follows:

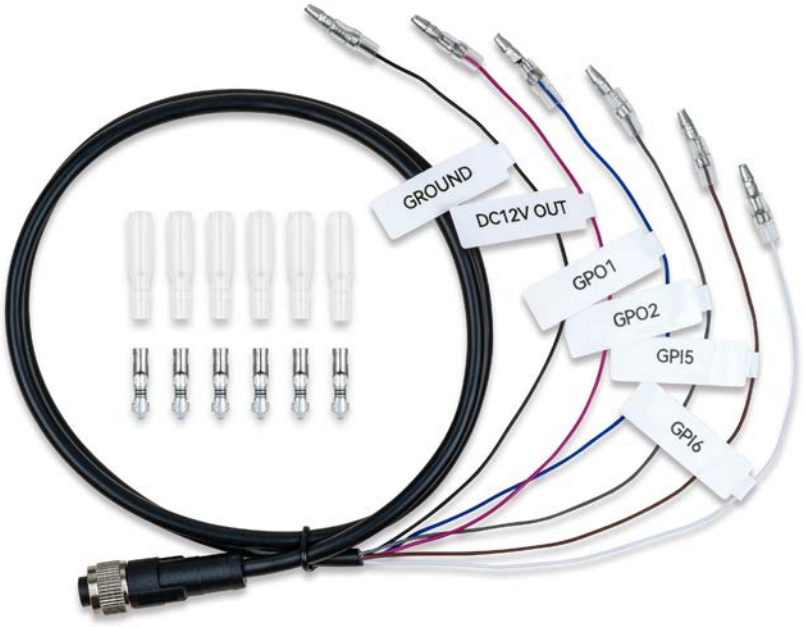


Figure 53: DIO2 cable

Wire Color	Pin Signal	Pin Direction	VIH/VOH	VIL/VOL
Red	12V DC-Out	Out	12V±5% @100mA Max	0V
Brown	GPI5	In	7 - 36V @1mA Max	0~2V @0.1mA Max
White	GPI6	In		
Blue	GPO1	Out	Vout = Vin - 0.9V ; Iout = Vout / 1kΩ @30mA Max	0V @0mA
Gray	GPO2	Out		
Black	Ground	Out	0V	0V

Table 10: DIO2 Cable bullet head connectors specifications

Note:
To receive the 12V DC-Out from the DIO2 cable, a power supply of 12V or higher is required from the forklift.

Make sure the vehicle is powered OFF and follow the steps below to install the DIO2 Cable:

1. Connect the DIO2 Cable's M12 connector to the yellow color-coded DIO2 port on the front panel of the VIA Mobile360 M500 system.

Note:
It is strongly recommended to secure the DIO2 cable connection with LOCTITE 243 Threadlocker (not included) prior to installation. See section 2.6 for instructions.

2. Connect the Output 1 or Output 2 cables to relay alert signals to a custom controller device. The diagram below shows the connections required.

The diagram below shows the connections required.

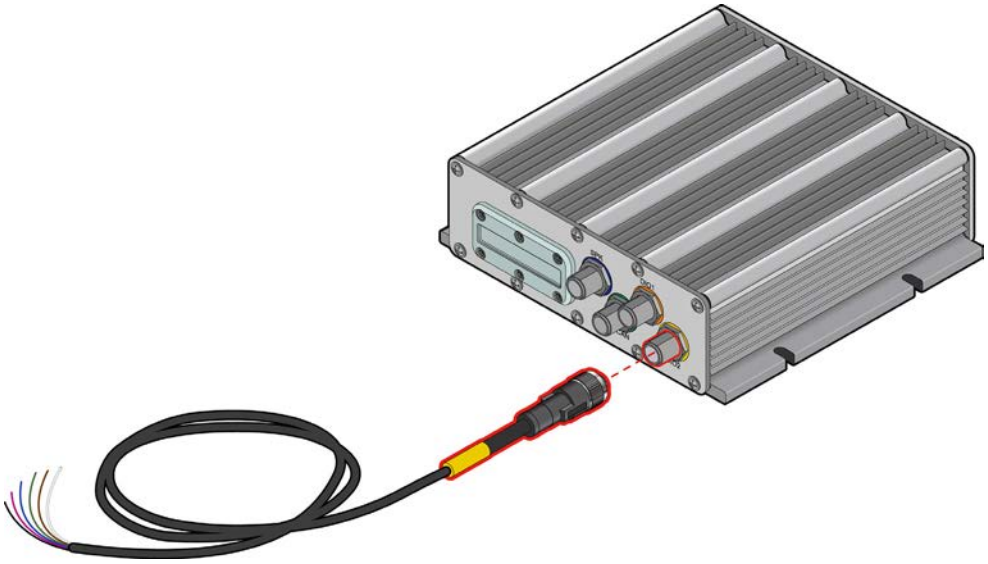


Figure 54: DIO2 Cable installation

After cable installation, configure the VIA Mobile360 M500 system's Output signals as described in the steps below:

1. Power on the vehicle and wait for the VIA Mobile360 Forklift Safety System to fully boot.
2. Open the VIA WorkX app on a mobile device and connect to the target VIA Mobile360 Forklift Safety System as described in section 4.1.
3. Tap the 'Settings' tab in the VIA WorkX app to find the Output signal configuration options in the 'Output Customization' section.
4. Tap the desired Output to bring up the 'Output Voltage' options.
5. Select "Pull High", "Pull Low" or "N/A" as the desired Output signal, and tap 'OK'.
6. Each Output cable can provide one alert type. Select the desired alert from the following list:
    - PD Alerts
        - All PD Alerts
        - All PD Critical Alerts
        - All PD Warning Alerts
        - All Front PD Alerts
        - All Rear PD Alerts
        - Front PD Critical Alerts
        - Front PD Warning Alerts
        - Rear PD Critical Alerts
        - Rear PD Warning Alerts
    - DSS Alerts
        - All DSS Alerts
        - Phone Usage Alert
        - Smoking Alert
        - Fatigue Alert
        - Blocked Camera

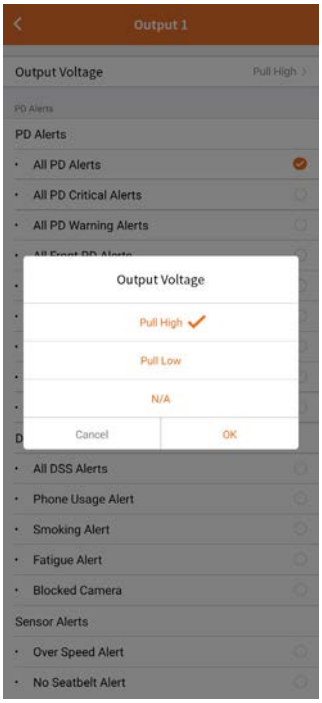
- Sensor Alerts
  - Over Speed Alert
  - No Seatbelt Alert

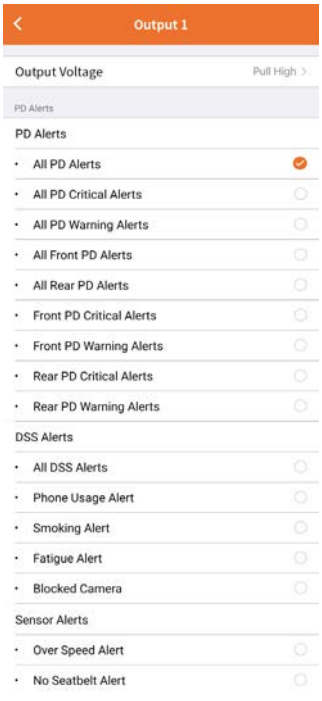
Note:
To receive sensor alerts, ensure that corresponding alerts are enabled.

If the VIA Mobile360 Forklift Safety System is registered to a vehicle on the VIA WorkX Connect Cloud, the following alert options will also be available for selection in the VIA WorkX Connect mobile app:

- Authorized Driver Alert
- Unauthorized Driver Alert
- Failed Critical Item Inspection Report Alert
- All Geofencing Alerts
- Enter Geofence Zone Alert
- Exit Geofence Zone Alert

7. Return to the 'Settings' screen and repeat steps 4 - 6 above for the other Output if required.





A.4 Speed and Reverse Light Sensor Kit

The optional speed and reverse light sensor accessory kit can be used with the VIA Mobile360 Forklift Safety System to determine a target forklift's speed and direction of motion.

Note:
The speed and reverse light sensors are intended for use with the optional 7" CVBS Display. New display layout configuration options will be available in settings depending on sensors activated.

A.4.1 Package Contents

- M18 (11⁄16 in.) IP67 speed sensor [4.1m (13ft. 5in.) cable with M8 (5⁄16 in.) 3-pin connector]
- Speed sensor magnet [diameter 20mm (¾ in.) and thickness 3mm (¼ in.)]
- Speed sensor L-mounting bracket
- 2 x M18 (11⁄16 in.) hexagonal nuts and circular washers
- IP66 reverse light sensor with 3M sticker [5.4m (17ft. 9in.) cable with an M8 (5⁄16 in.) 4-pin connector and sensitivity control waterproof box]
- DIO1 Y-splitter cable [1.63m (5ft. 4in.)]

Figure 55: Speed and reverse light sensor kit

A.4.2 Installation

This section contains instructions for speed sensor and reverse light sensor installation.

A.4.2.1 Speed Sensor Installation

The speed sensor package consists of an M18 (11⁄16 in.) IP67 speed sensor [including a 4.1m (13ft. 5in.) cable with M8 (5⁄16 in.) 3-pin connector], an L-mounting bracket, two M18 (11⁄16 in.) hexagonal nuts and circular washers, and a magnet [diameter 20mm (¾ in.) and thickness 3mm (¼ in.)].

The speed sensor should be installed on one of the wheels on the forklift's non-steering axis. A distance of 1 ~ 3cm (½ in. ~ 1¾ in.) is required between the speed sensor head installed on the forklift and the magnet installed on the tire rim for accurate speed readings.

Follow the steps below to install the speed sensor:

1. Assemble the speed sensor as shown in the diagram below.

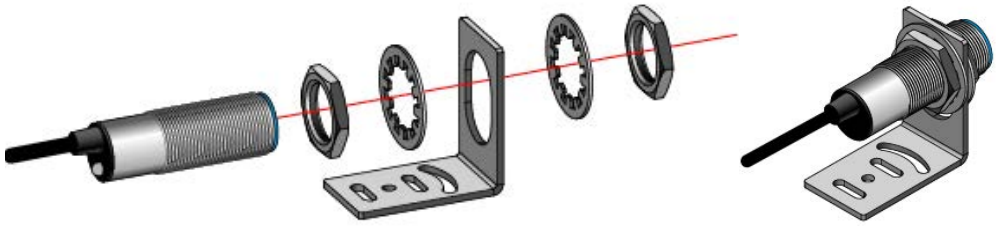


Figure 56: Assembling the speed sensor and mounting bracket

2. Find a suitable location near one of the wheels on the forklift's non-steering axis to install the speed sensor. The location should allow the speed sensor head to be positioned close to the tire rim so that the magnet can be attached directly opposite to it.

Note:
It is strongly recommended to use LOCTITE EA E-20HP epoxy adhesive (not included) to secure the speed sensor's L-mounting bracket.

3. Clean the tire rim with alcohol to remove dirt and debris.
4. Place the magnet on the tire rim so that it is directly opposite the speed sensor head.

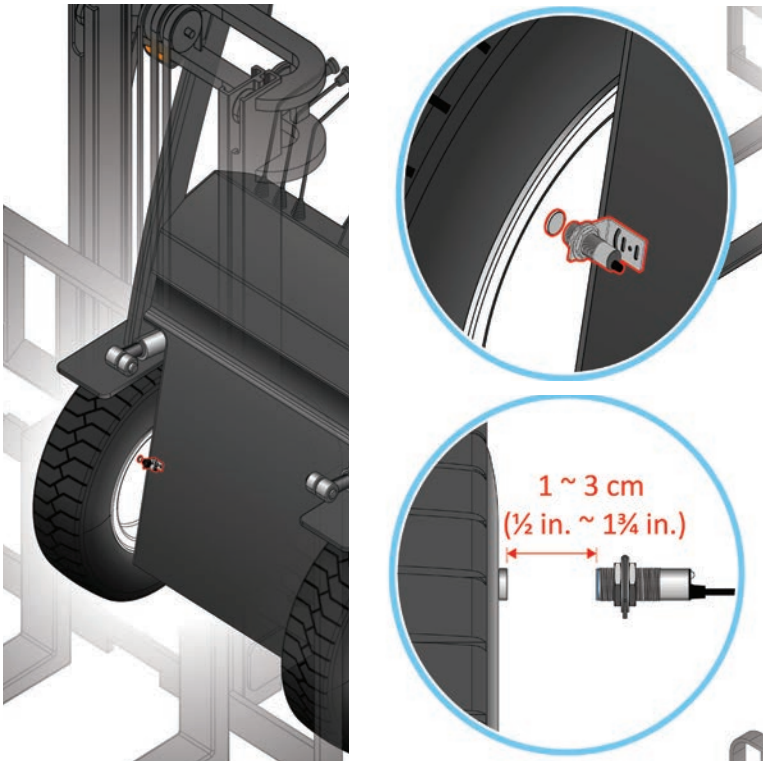


Figure 57: Speed sensor installation

5. Check that the distance between the speed sensor head and magnet are within 1 ~ 3cm (½ in. ~ 1¾ in.) of each other. If not, adjust the positioning of the speed sensor's nuts and washers so that the speed sensor's head is within the desired range of the magnet.

A.4.2.2 Reverse Light Sensor Installation

The reverse light sensor package consists of an IP66 reverse light sensor [including a 5.4m (17ft. 9in.) cable with an M8 (⅝ in.) 4-pin connector and sensitivity control waterproof box].

Follow the steps below to install the reverse light sensor:

1. Turn the forklift on and put it into reverse gear while applying the brakes. Check which light turns on to identify the reverse light on the rear of the forklift.
2. Clean the target surfaces of any dirt and debris with alcohol.
3. Remove the protective 3M tape cover and affix the reverse light sensor to the surface of the reverse light, ideally in the center. Press firmly to ensure proper adhesion.
4. Remove the protective 3M tape cover and affix the sensitivity control box to a suitable surface on the forklift. Press firmly to ensure proper adhesion.

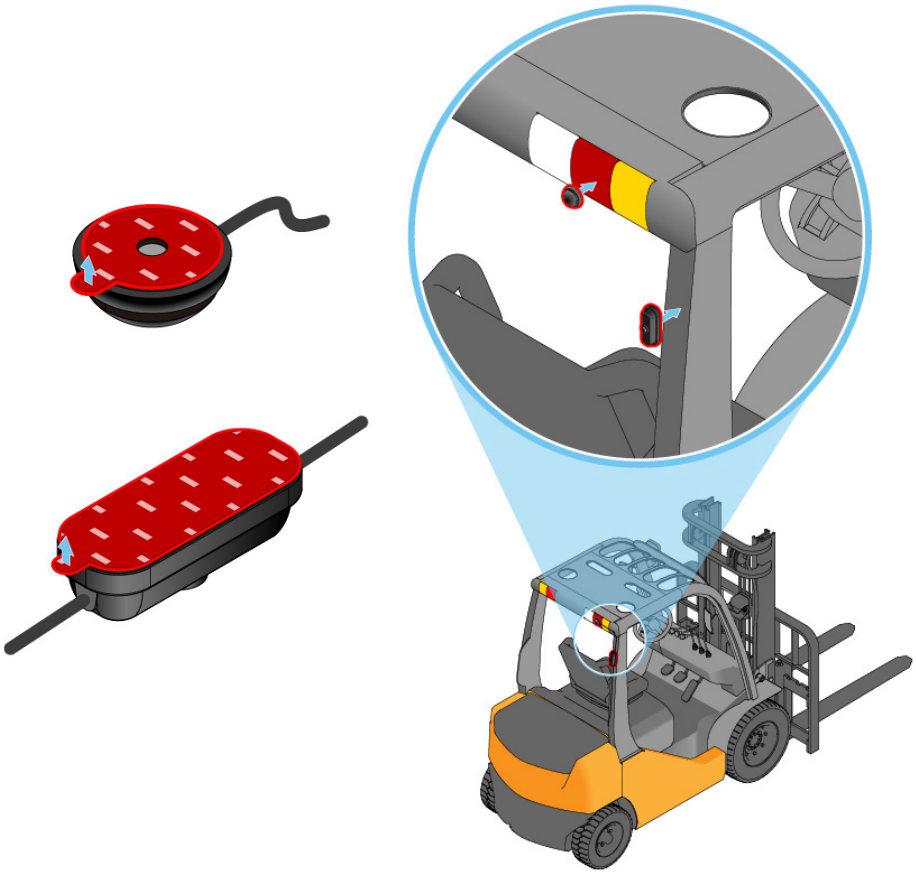


Figure 58: Attaching the reverse light sensor to forklift's reverse light

A.4.3 Connecting Sensors to VIA Mobile360 M500 system

Follow the steps below to attach the sensors to the VIA Mobile360 M500 system.

1. Route the speed and light sensors' cables back to the VIA Mobile360 M500 system, ensuring no part of the cables are hanging or exposed from the forklift to prevent accidental disconnection or injury. It is suggested to use zip ties or tape to help secure the cables when routing.
2. Connect the color-coded M8 cables of each sensor to the corresponding connections on the DIO1 cable.
   - Green - Speed sensor
   - Yellow - Light sensor
3. Make sure the system is turned off and then connect the cable to the "DIO1". port designated in orange on the front panel I/O of the VIA Mobile360 M500 system.

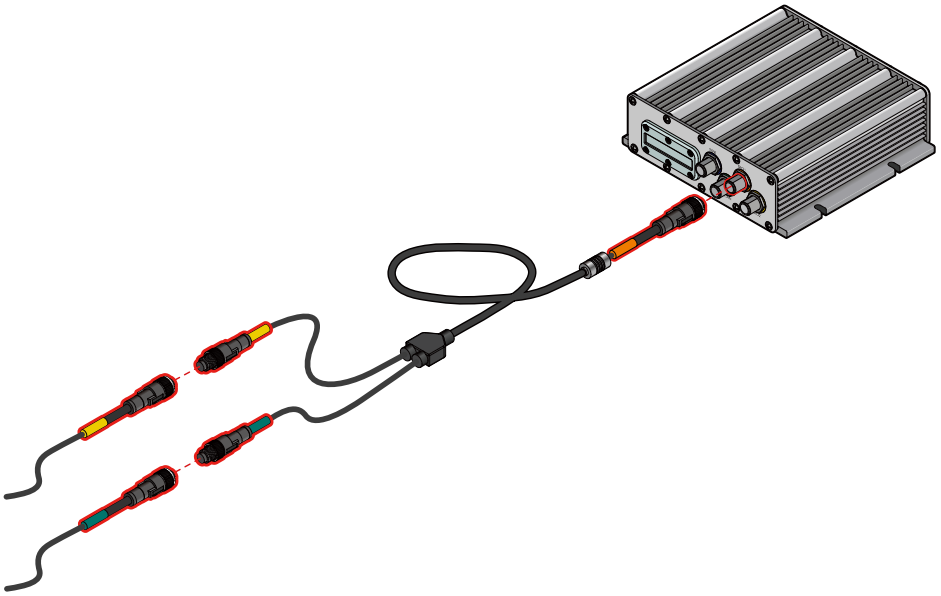


Figure 59: Connecting sensors to the VIA Mobile360 M500 system

Note:
It is strongly recommended to secure the cable connection with LOCTITE 243 Threadlocker (not included) prior to installation. See section 2.6 for instructions.

A.4.4 Sensor Configuration

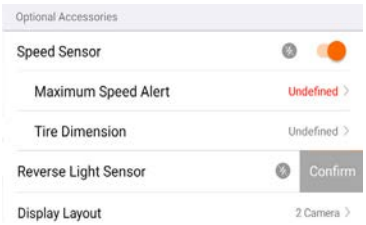
After connecting the speed and reverse light sensors to the VIA Mobile360 M500 system, the sensors must be activated and configured for use with the VIA Mobile360 Forklift Safety System.

A.4.4.1 Speed Sensor Configuration

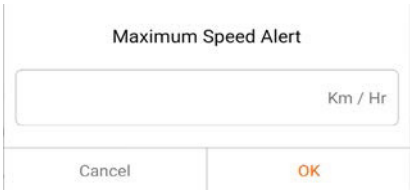
Follow the steps below to activate and configure the speed sensor:

1. Power on the forklift and wait for the VIA Mobile360 Forklift Safety System to fully boot.
2. Open the VIA WorkX app on a mobile device and connect to the target VIA Mobile360 Forklift Safety System as described in section 4.1.
3. Tap the 'Settings' tab in the VIA WorkX app to find the speed detection and activation options in the 'Optional Accessories' section.

4. Drive forward for a short distance ensuring the magnet has passed the speed sensor at least once. When the speed sensor detects a signal, the color of the speed sensor's signal detection icon in the VIA WorkX app will change from grey to green and the 'Confirm' button will change to orange.
5. Tap the 'Confirm' button to activate the speed sensor and open the configuration settings.



6. Enter the values for 'Maximum Speed Alert' and 'Tire Dimension' as follows:
   - Maximum Speed Alert - Enter the maximum speed value that will trigger a speed alert detection.
   - Tire Dimension - Enter the diameter of the wheel the speed sensor is attached to measured from tire edge to tire edge.



Note:
If an incorrect value is entered for 'Tire Dimension', speed detection will be inaccurate.

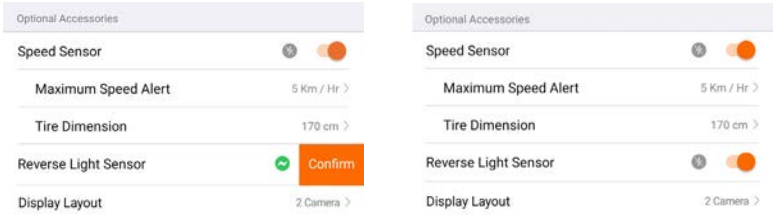
Once the 'Maximum Speed Alert' and 'Tire Dimension' values are set, the system will be able to send speed alerts based on the value entered for the 'Maximum Speed Alert' value. An audio alert "Slow Down" will be played when it is detected that the forklift has exceeded the 'Maximum Speed Alert' value. If the 7" CVBS Display is attached, the speed indicator will be displayed as well.

A.4.4.2 Reverse Light Sensor Configuration

Follow the steps below to configure the reverse light sensor:

1. Power on the forklift and wait for the VIA Mobile360 Forklift Safety System to fully boot.
2. Open the VIA WorkX app on a mobile device and connect to the target VIA Mobile360 Forklift Safety System as described in section 4.1.
3. Tap the 'Settings' tab in the VIA WorkX app to find the reverse light sensor detection and activation options in the 'Optional Accessories' section.
4. Shift the forklift's gear to reverse while keeping the brakes applied. When the reverse light sensor detects that the reverse light is on, the color of the reverse light sensor's signal detection icon in the VIA WorkX app will change from grey to green and the 'Confirm' button will change to orange, indicating that the reverse light sensor's signal has been detected.

5. Tap the 'Confirm' button to activate the reverse light sensor.



Troubleshooting Reverse Light Sensor Activation Issues

If the reverse light sensor is not detected after putting the forklift into reverse, the sensitivity can be adjusted as follows:

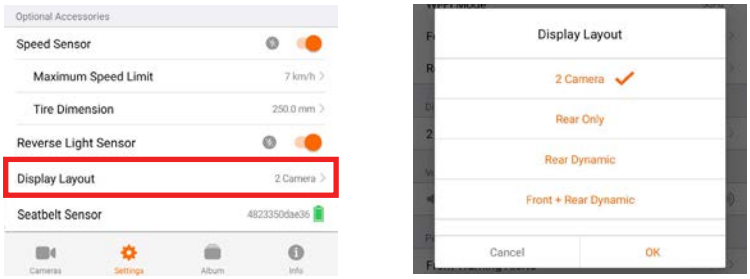
- Use a #1 Phillips head screwdriver to remove the waterproof M3 (⅛ in.) screw on the reverse light sensor's sensitivity control box.
- Use a #0 Phillips head screwdriver to adjust the sensitivity as follows:
  - If the reverse light sensor does not respond when the reverse light is active, turn the screw clockwise to increase the sensitivity until the signal is detected.
  - If the reverse light sensor detects a signal when the reverse light is not active, turn the screw counterclockwise to decrease the sensitivity until the signal is no longer detected.

Figure 60: Removing the M3 screw on the light sensor's sensitivity control box

- Once the reverse light sensor is adjusted correctly, replace the M3 (⅛ in.) screw and tighten securely. Complete the activation process and the system will now identify the direction the forklift is moving from detection of the reverse light and speed sensors inputs.

A.4.5 Selecting the Display Layout

Additional 'Display Layout' configuration options appear in the VIA WorkX app's Settings tab when the speed and reverse light sensors are installed.



Rear Dynamic - If the reverse light sensor is installed, an additional 'Rear Dynamic' option appears under 'Display Layout'. This setting allows display layouts to be filtered when the forklift is in reverse.

- Driving in reverse: The 7" CVBS Display UI shows the full-screen rear camera view.
- Driving forward: The 7" CVBS Display UI shows the split-screen camera view.
- Stationary: The 7" CVBS Display UI shows the split-screen camera view.

Front + Rear Dynamic - If both the speed and reverse light sensors are installed, an additional 'Front + Rear Dynamic' option appears under 'Display Layout'. This setting allows display layouts to be filtered when the forklift is in reverse or moving forward.

- Driving in reverse: The 7" CVBS Display UI shows the full-screen rear camera view.
- Driving forward: The 7" CVBS Display UI shows the full-screen front camera view.
- Stationary: The 7" CVBS Display UI shows the split-screen camera view.

The following images represent the 7" CVBS Display interface depending on display layout selection:

Split-screen Camera View:

Figure 61: 7" CVBS Display interface with split-screen camera view

Full-screen Front Camera View:

Figure 62: 7" CVBS Display interface with full-screen front camera view

Full-screen Rear Camera View:

Figure 63: 7" CVBS Display interface with full-screen rear camera view

A.4.6 Selecting the Alert Direction

The 'Alert Direction' setting can be configured in the VIA Mobile360 Work app to send front and rear camera people detection alerts based on the vehicle's moving direction.

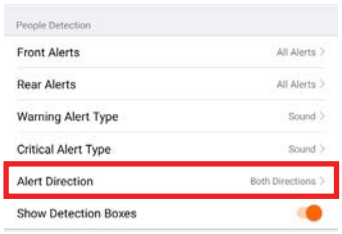
Note:
The reverse light sensor is required to enable the setting in the VIA WorkX app.

Option 1: 'Both Directions':

This setting allows both front and rear camera people detection alerts to be sent regardless of the vehicle's movement. This is the default behavior of the VIA Mobile360 Forklift Safety System without the speed and reverse light sensors connected.

Option 2: 'Moving Direction Only':

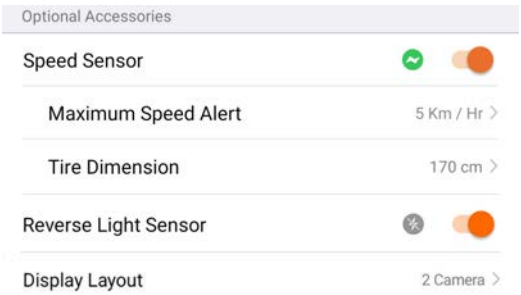
- If both sensors are installed: This setting allows alerts to be filtered based on the vehicle's moving direction.
  - Driving in reverse: Only rear camera alerts are detected and sent.
  - Driving forward: Only front camera alerts are detected and sent.
  - Stationary: Alerts from either camera are detected and sent.
- If only reverse light sensor is installed: This setting allows alerts to be filtered when the forklift is in reverse.
  - Driving in reverse: Only rear camera alerts are detected and sent.
  - Driving forward: Alerts from either camera are detected and sent.
  - Stationary: Alerts from either camera are detected and sent.



Troubleshooting Speed & Light Sensor Issues

If the expected behavior is not shown, such as, the 7" display UI is not switching camera views based on direction or no speed reported, follow the steps below to troubleshoot potential issues:

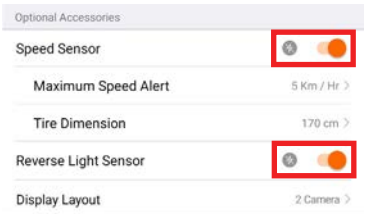
1. Power on the forklift and wait for the VIA Mobile360 Forklift Safety System to fully boot.
2. Open the VIA WorkX app on a mobile device and connect to the target VIA Mobile360 Forklift Safety System as described in section 4.1.
3. Tap the 'Settings' tab in the VIA WorkX app to find speed and reverse light sensor settings in the 'Optional Accessories' section.
4. Make sure that both sensors have been activated.
5. If the sensors are activated, check to see if the system is receiving a signal by driving the forklift forward (speed sensor detection), or putting the vehicle in reverse (light sensor detection). The icons will turn green if the system is receiving the signal.



6. If the connection icons do not turn green, check to make sure the cables are attached securely and that they have not been damaged. Test again to see if the system receives a signal from each sensor.
7. If the cables are not damaged and are securely attached. Check the installation procedures to make sure the sensors have been installed correctly. Refer to section A.4.3 for detailed instructions.

A.4.7 Deactivating the Sensors

If the speed or reverse light sensor's features are no longer required, they can be deactivated in the VIA WorkX app and then physically disconnected from the VIA Mobile360 M500 system.



Note:
It is necessary to deactivate the desired sensor before physically disconnecting it from the VIA Mobile360 M500 system.

To reactivate the desired sensors, check Appendix section A.4.4 for instructions.

A.5 Seatbelt Sensor

The optional wireless seatbelt sensor accessory can be used with the VIA Mobile360 Forklift Safety System to determine the fastened/unfastened status of the driver seatbelt.

Follow the steps below to install and pair the seatbelt sensor:

1. Use alcohol to clean the seatbelt buckle target surface located beneath the seatbelt slot.
2. Peel off the protective 3M tape on the seatbelt sensor and affix the sensor to the seatbelt buckle target surface. Ensure the following while affixing the seatbelt sensor to the seatbelt buckle:
   - The seatbelt slot is exactly at the same level as the white line marker on the left and right sides of the sensor.
   - The sensor's magnetic head remains uncovered.
3. Press firmly to ensure proper adhesion.

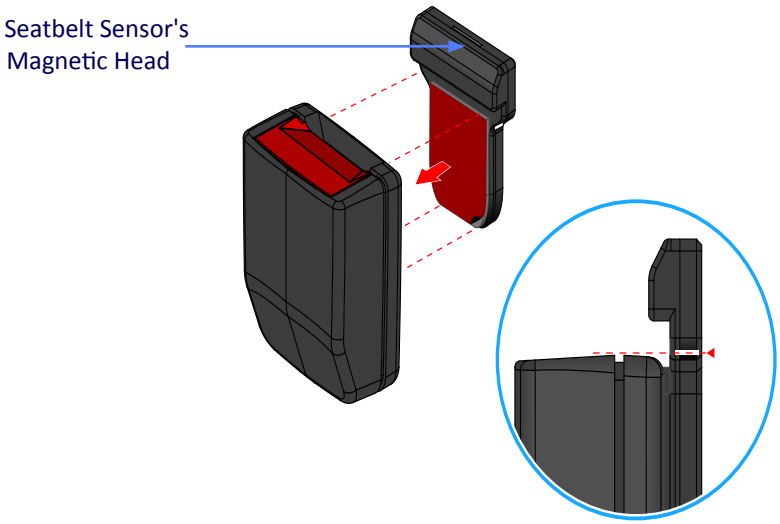
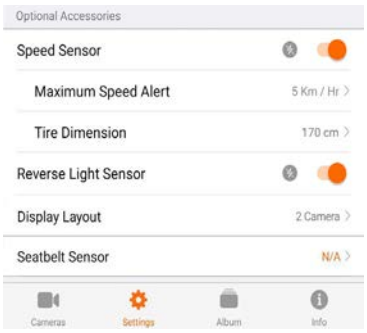


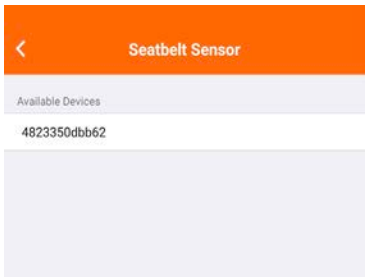
Figure 64: Seatbelt sensor installation

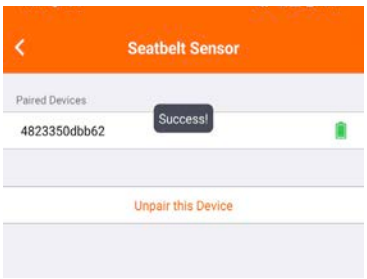
4. Open the VIA WorkX app on a mobile device and connect to the target VIA Mobile360 Forklift Safety System as described in section 4.1.
5. Tap the 'Settings' tab in the VIA WorkX app to find seatbelt sensor settings in the 'Optional Accessories' section.
6. Tap 'Seatbelt Sensor' and then tap 'Add a Seatbelt Sensor' on the next screen.

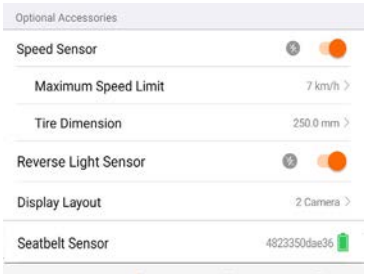


7. The VIA Mobile360 Forklift Safety System will now search for available seatbelt sensors nearby. Fasten and release the seatbelt to trigger the broadcast signal for the seatbelt sensor. The VIA WorkX app will now display the seatbelt sensor's MAC address in the 'Available Devices' list.
8. Tap the MAC address of the desired seatbelt sensor within 120 seconds to bind it to the VIA Mobile360 Forklift Safety System. After successfully pairing, the seatbelt sensor's MAC address and battery status will now be displayed under 'Paired Devices'. Return to the 'Settings' screen to find the seatbelt sensor's ID and battery status displayed in the 'Optional Accessories' section.

Note:
The seatbelt sensor's MAC Address is printed on the label affixed to it.







A.5.1 Display Interface and Alerts

After pairing the seatbelt sensor, the VIA Mobile360 Forklift Safety System can detect the seatbelt fastened/ unfastened status. The system then shows the status on the 7" display and plays a voice alert if it detects the seatbelt is not buckled after starting the vehicle.

Input Detected	Display	Voice Alert
Seatbelt Fastened		None
Seatbelt Unfastened		"Fasten your seatbelt"

Table 11: Seatbelt sensor inputs with display and voice alert

The seatbelt must be fastened between 120 seconds before system boot-up and 90 seconds after system boot-up, to ensure that the system detects the seatbelt sensor is connected.

If the seatbelt is unbuckled during forklift runtime, the system flashes the Seatbelt unfastened alert on the 7" display and plays the voice alert up to five times, with 30-second intervals between alerts. The Seatbelt unfastened alert then continues flashing on the 7" display if the seatbelt is not fastened after all voice alerts.

Display interface with Split-screen Camera View and Seatbelt Fastened Status:

Figure 65: 7" CVBS Display interface with split-screen camera view and seatbelt fastened status

A.5.2 Replacing the Battery

The seatbelt sensor's battery lifespan is subject to the extent of usage. Refer to the table below to check estimated battery lifespan based on average operating hours per week.

Average Operating Hours Per Week	Battery Lifespan (in months)
40	39
80	20
120	13

Table 12: Battery lifespan based on average operating hours per week

When 30 days of battery lifespan is left, the CVBS Display and VIA WorkX app will display the yellow battery icon for the seatbelt sensor. When 7 days of battery lifespan is left, the red battery icon is displayed.

VIA WorkX app interface with Seatbelt Sensor Battery Status:

Display interface with Seatbelt Sensor Battery Status:

Figure 66: 7" CVBS Display interface with seatbelt sensor battery status

To replace the battery, follow the steps below:

1. Gently pry open the seatbelt sensor casing using a keyway removal tool.

Note:
The keyway removal tool is recommended to open the casing without damage. Using a flat-head screwdriver may damage the casing.

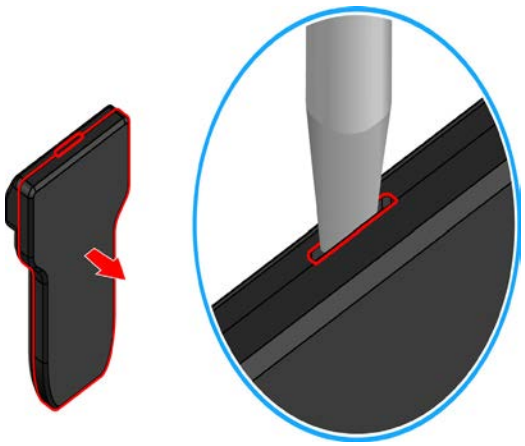


Figure 67: Open the seatbelt sensor casing

2. Replace the CR2032H coin battery with the "+" side facing up.

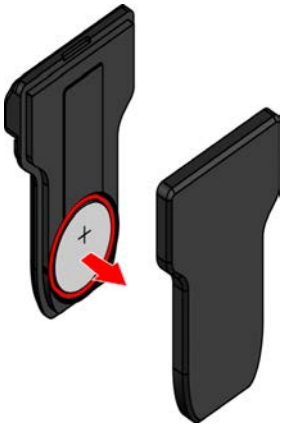


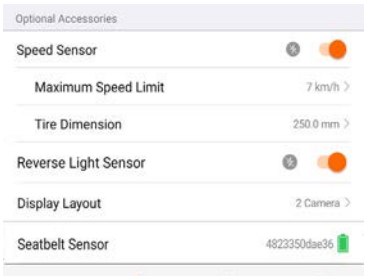
Figure 68: Replace the battery

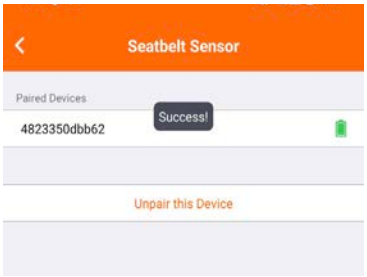
3. Close the seatbelt sensor casing, ensuring both pieces of the casing are firmly held together and clicked shut.
4. Check the seatbelt sensor's battery life in the VIA WorkX app. If the battery life is still displayed with the yellow or red battery icon, fasten and release the seatbelt to trigger the broadcast signal for the seatbelt sensor. The VIA WorkX app will update and display the green battery icon.

A.5.3 Unpairing the Seatbelt Sensor

If the seatbelt sensor is no longer required, it can be unpaired. Follow the steps below to unpair the seatbelt sensor:

1. Open the VIA WorkX app on a mobile device and connect to the target VIA Mobile360 Forklift Safety System as described in section 4.1.
2. Tap the 'Settings' tab in the VIA WorkX app to find the seatbelt sensor settings in the 'Optional Accessories' section.
3. Tap 'Seatbelt Sensor' and then tap 'Unpair this Device' below on the next screen. The seatbelt sensor will be unpaired.





A.6 4G LTE Wireless Module Kit

The optional 4G LTE wireless module accessory kit includes a 4G miniPCIe module with a thermal pad and an M5*4mm (3⁄16 in.* 3⁄16 in.) screw pack as well as an antenna module to provide connectivity for cloud enabled deployments (SIM card not included).

Note:
The 4G LTE wireless module kit is required to connect with the VIA WorkX Connect Cloud Management Service.
An activated Micro SIM card is also required.

Figure 69: The 4G LTE wireless module kit

To install the 4G LTE wireless module kit in the VIA Mobile360 M500 system, follow the steps below.

1. Remove the eight screws with a Phillips head screwdriver to remove the cover from the bottom panel of the VIA Mobile360 M500 system.

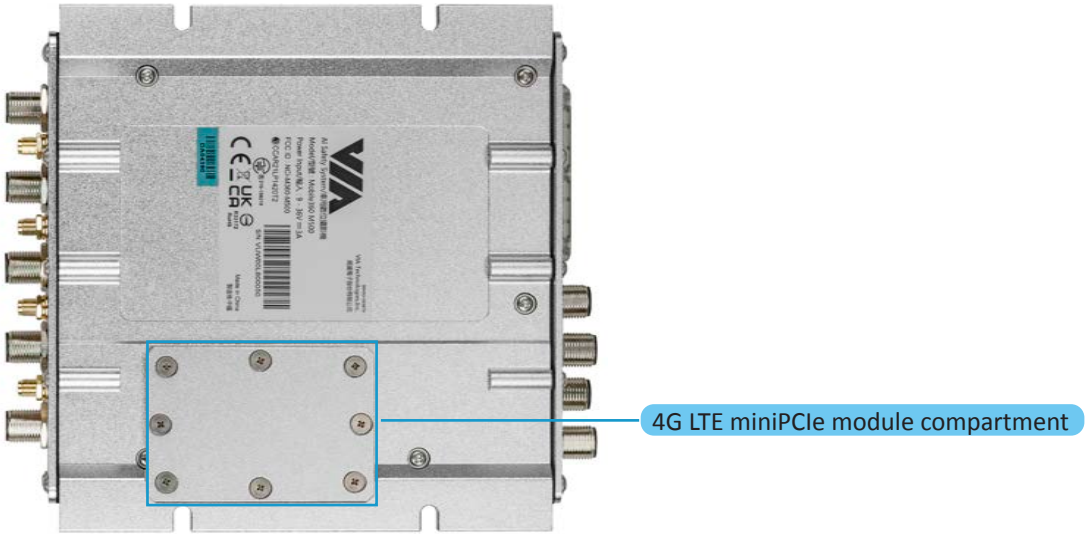


Figure 70: Location of the 4G LTE miniPCIe module compartment

2. Remove the rubber seal cover on the compartment's rim.

Figure 71: Removing the rubber seal cover

3. Remove the yellow insulation tape holding down the two antenna connectors.

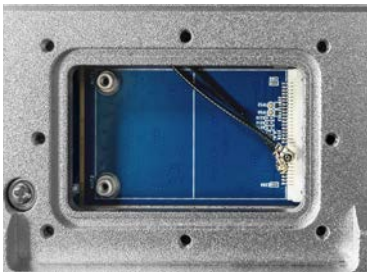


Figure 72: 4G LTE antenna connectors

4. Refer to the figure below to connect the two antenna plugs to the 4G LTE miniPCIe module.
   - Connect the antenna with a red marking on the antenna connector plug to the MAIN port on the 4G LTE miniPCIe module.
   - Connect the other antenna with no marking on the antenna connector plug to the DIV port on the 4G LTE miniPCIe module.

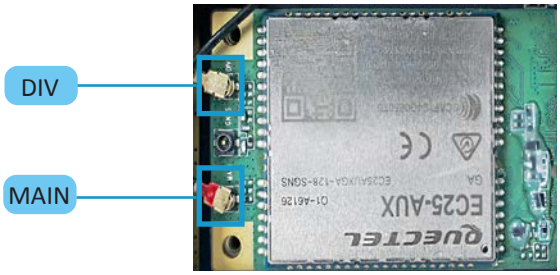


Figure 73: Connecting antennas to the 4G LTE miniPCIe module

5. Carefully insert the 4G LTE miniPCIe module into the miniPCIe slot located in the open compartment.

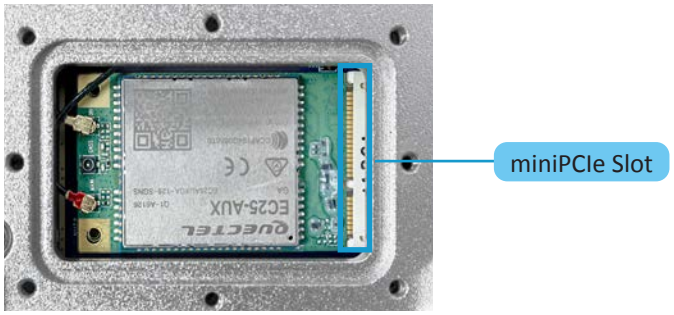


Figure 74: Inserting the 4G LTE miniPCIe module

6. Use the two M2*4mm (1⁄16 in.* 3⁄16 in.) screws (provided in the 4G LTE wireless module kit) to secure the 4G LTE miniPCIe module tightly in place.

Figure 75: Securing the 4G LTE miniPCIe module

7. Remove the protective film from both sides of the thermal pad (provided in the 4G LTE accessory kit) and place it on top of the 4G LTE miniPCIe module's shielding, taking care to align the corners of the pad with the corners of the 4G LTE miniPCIe module's shielding.

Figure 76: Thermal pad placement

8. Place the rubber seal cover back on the compartment's rim.

Figure 77: Rubber seal cover replacement

9. Place the 4G LTE miniPCIe module compartment's lid back on top of the rubber seal cover and secure the lid tightly in place as shown in the figure below.

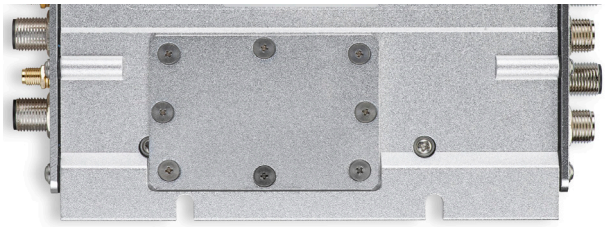


Figure 78: Replacing the 4G LTE miniPCIe module compartment cover

10. Find a suitable location with a flat surface in the target vehicle on which the 4G LTE antenna module can be mounted.
11. Clean the target surface of any dirt and debris with alcohol.

12. Remove the protective 3M tape cover and affix the 4G LTE antenna module on the target surface. Press firmly to ensure proper adhesion.

Figure 79: 4G LTE Antenna module protective 3M tape cover removal

13. Connect the 4G LTE antenna module's cables to the corresponding color-coded antenna connectors on the rear panel of the VIA Mobile360 M500 system.

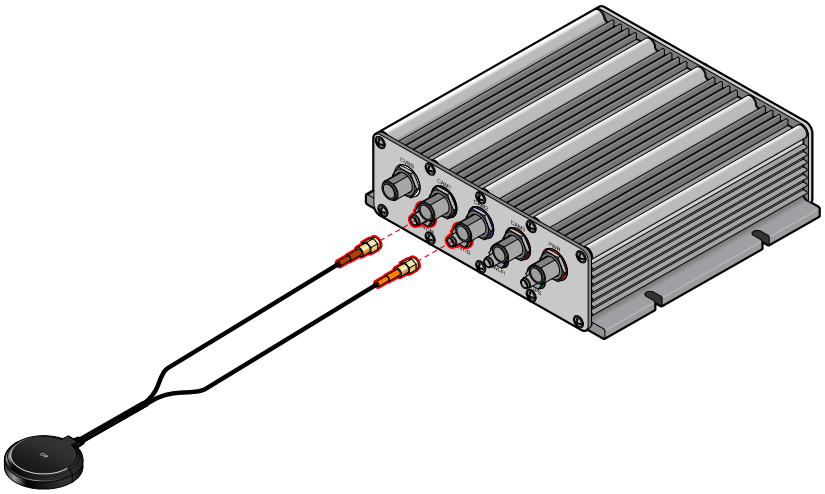


Figure 80: Connecting the 4G LTE antenna module

Note:
It is strongly recommended to secure the I/O port connection on the VIA Mobile360 M500 system with LOCTITE 243 Threadlocker (not included) before connecting a cable. Refer to section 2.6 for instructions.

14. To activate 4G LTE wireless network connectivity on the VIA Mobile360 M500 system:
    - Prepare an activated 4G LTE Micro SIM card.
    - Locate the SIM slot on the front panel of the VIA Mobile360 M500 system.
    - Ensure that the correct end of the SIM card is facing the slot.
    - Gently push the SIM card in the slot (using a fingernail or a pin) until a 'click' sound is heard, indicating that it is fully inserted.
    - Finally, power the system on.

Note:
Installation of the 4G LTE wireless module automatically enables the "Cloud Mode" after system bootup. When the "Cloud Mode" is enabled, only the "Info" tab appears in the VIA WorkX app and the VIA Mobile360 Forklift Safety System is ready for VIA WorkX Connect Cloud registration.

Disable "Cloud Mode" in the VIA WorkX app if connection to the VIA WorkX Connect Cloud is not required.

For System Registration on the VIA WorkX Connect Cloud, refer to the VIA WorkX Connect Cloud Quick Start Guide.

A.7 DC Power Module

The VIA Mobile360 Forklift Safety System supports power input ranging from 9V ~ 36V but can be extended to support EV vehicles which provide between 36V ~ 100V with the optional VIA Mobile360 DC power module.

A.7.1 Package Contents

- 36V ~ 100V VIA Mobile360 DC power module with +BATTERY (power) - ACC/IGN - GROUND Y-terminal cables [2.0M (6ft. 7in.)]
- 2 x Vibration dampening strips
- M12 to M12 (3⁄64 in. to 3⁄64 in.) power extension cable [0.3m (11¾ in.)]
- 4 x M4*25mm (3⁄16 in.*1in.) screws and jack rivet nuts

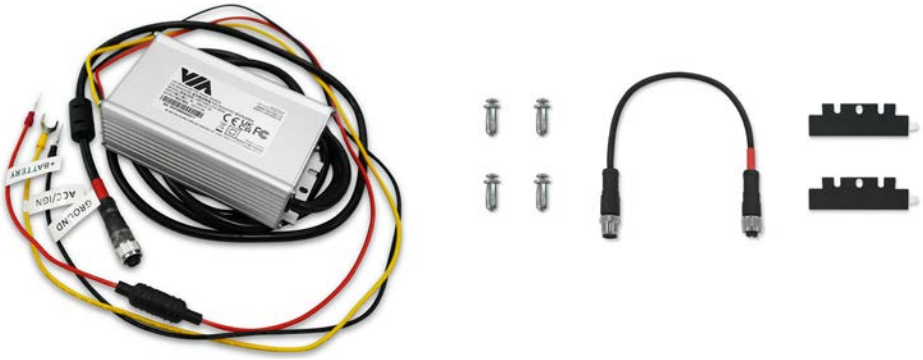


Figure 81: DC Power Module

A.7.2 Installation

The DC power module for the VIA Mobile360 Forklift Safety System includes three cables to be connected to the designated EV forklift:

- Yellow wire - ACC/IGN, enables system to be turned on and off with the vehicle
- Red wire - Power
- Black wire - Ground

Note:
Before connecting power for the VIA Mobile360 Forklift Safety System, ensure the target forklift can supply the required system power ranging from 36V ~ 100V DC.

Make sure the vehicle is turned off and follow the steps below to install the DC power module:

1. Attach the two vibration dampening strips to the bottom of the DC power module by removing the adhesive backings and aligning with the screw holes along each side.


2. Reference the vehicle's user manual to find the location of the positive battery terminal as well as an ignition controlled circuit which is turned on and off with the forklift.

3. Confirm the positive battery terminal and ACC/IGN locations on the target forklift. Measure the voltage of the positive battery terminal when the forklift is off. Make sure the voltage matches the forklift's specifications and is between 36V ~ 100V. Next measure the voltage of the ignition controlled circuit to ensure no power is drawn when the forklift is off. Turn the forklift on and measure the voltage again to ensure power is supplied matching the forklift's specifications and it is between 36V ~ 100V.

4. Find a suitable location to attach the black ground cable near the power terminal in the forklift. (The bolt used to secure the vehicle's battery is a recommended location).

5. Loosen the screw of the ignition controlled circuit identified in step 4 and attach the Y terminal of the yellow ACC/IGN cable, then tighten securely.

6. Loosen the screw of the positive battery terminal identified in step 4 and attach the Y terminal of the red +Battery (power) cable, then tighten securely. The green LED inside the cable head coming out of the DC power module will light up when the red cable and black cable are secured properly, indicating power is being supplied from the DC power module.

7. Next, find a suitable location to install the DC power module in the forklift. Ensure the power + extension cable [maximum distance of 2.3m (7ft. 7in.) from the DC power module] can reach the red power (PWR) port of the VIA Mobile360 M500 system. Once the location is determined, mark the screw holes on either side of the module and drill holes.
8. Place the DC power module such that the screw holes line-up with the drilled holes, then insert the 4 jack rivet nuts and tighten the M4*25mm (3⁄16 in.*1in.) screws securely.

9. Connect one end of the M12-M12 (³⁄₆₄ in. to ³⁄₆₄ in.) power extension cable to the DC power module. Route the cable back to the VIA Mobile360 M500 system and attach the other end to the red power (PWR) port.

Note:
Ensure all cables are tucked away and fastened securely within the forklift to ensure they will not be damaged during operation.

10. Finally, turn on the forklift and check if the VIA Mobile360 Forklift Safety System powers on. Turn the forklift off to ensure the VIA Mobile360 Forklift Safety System also turns off.

A.8 VESA Plates

Optional VESA plates are available for mounting supported VIA Mobile360 FSS parts if the mounts provided with the parts are not suitable for installation, or if installations with third-party VESA-compatible mounts are desired.

A.8.1 Package Contents

Supported Part	VESA Plate	Quantity	Screws
VIA Mobile360 M500 system	75 x 75 or 35 x 75mm	1	• 5 x M5*15mm (3⁄16 in.* 9⁄16 in.) • 5 x M4*14mm (3⁄16 in.* 9⁄16 in.)
AHD Cameras	35 x 75mm	3	• 7 x M5*10mm (3⁄16 in.* 3⁄8 in.) • 13 x M4*14mm (3⁄16 in.* 9⁄16 in.)
7" CVBS Display	35 x 75mm	1	• 5 x M4*10mm (1⁄8 in.* 3⁄8 in.) • 3 x M2*4mm (1⁄16 in.* 3⁄16 in.) • 5 x M4*14mm (3⁄16 in.* 9⁄16 in.)
NFC Card Reader	35 x 75mm	1	• 2 x M3*10mm (1⁄8 in.* 3⁄8 in.) • 5 x M4*14mm (3⁄16 in.* 9⁄16 in.)
DC Power Module	75 x 75 or 35 x 75mm	1	• 5 x M4*10mm (1⁄8 in.* 3⁄8 in.) • 5 x M4*14mm (3⁄16 in.* 9⁄16 in.)

Table 13: Contents in each VESA plate package

Note:
After installing a VESA plate on a VIA Mobile360 FSS part, the M4*14mm (3⁄16 in.* 9⁄16 in.) screws included in the VESA plate's package can be used to attach the VESA plate to a third-party VESA-compatible mount like the RAM® Mounts described in the following section.

A.8.2 Installation

Follow the instructions below to attach a VESA plate to a desired VIA Mobile360 FSS part:

VIA Mobile360 M500 System

1. Place the VIA Mobile360 M500 system VESA plate on the bottom panel of the VIA Mobile360 M500 system chassis, aligning the 4 outer screw holes of the VESA plate with the 4 outer screw holes of the chassis.
2. Insert an M5*15mm (3⁄16 in.* 9⁄16 in.) screw into each aligned outer screw hole of the VESA plate and tighten each screw enough to secure a strong hold.

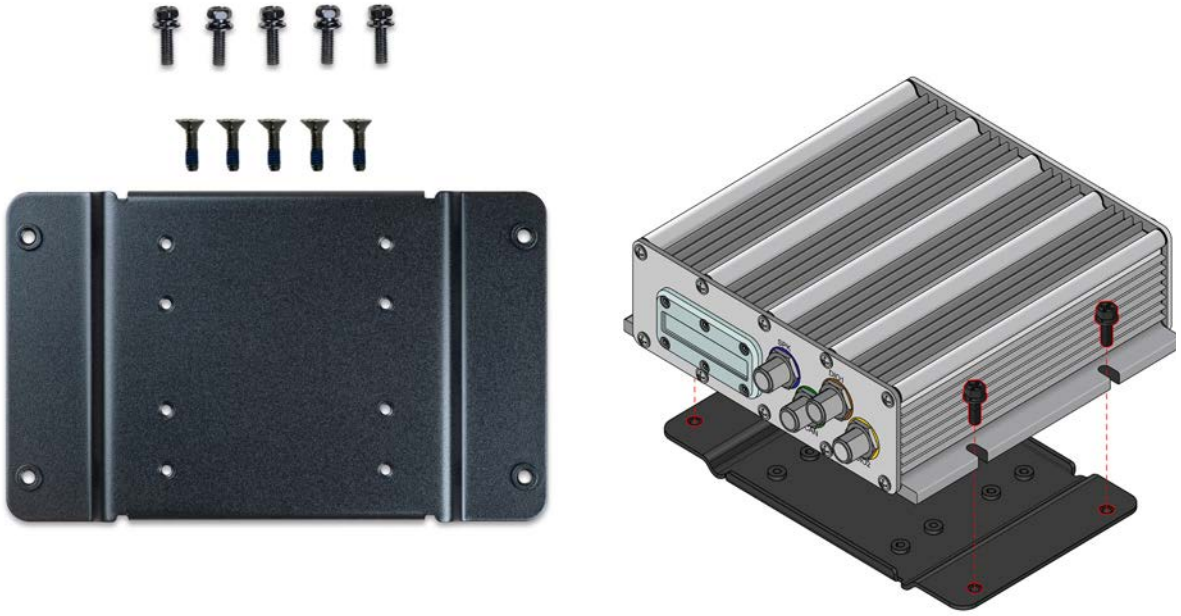


Figure 82: Install the system VESA plate

AHD Cameras

1. Place an AHD camera's bottom bracket on an AHD camera VESA plate, aligning the 2 outer screw holes of the camera's bottom bracket with the 2 outer screw holes located at the center of the VESA plate.
2. Insert an M5*10mm (3⁄16 in.* 3⁄8 in.) screw into each aligned outer screw hole of the camera's bottom bracket and tighten each screw enough to secure a strong hold.
3. Repeat the process for the other 2 AHD cameras.

Figure 83: Install a camera VESA plate

7" CVBS Display

1. Insert the 7" CVBS Display VESA plate into the 7" CVBS Display's bracket.
2. Align the center holes of the bracket with those of the VESA plate, then insert the provided two M2*4mm (1⁄16 in.* 3⁄16 in.) screws into the bracket's center holes and tighten them enough to maintain hold on the VESA plate.
3. Next, insert the provided four M4*10mm (⅛ in.* ⅜ in.) screws into the bracket's top-bottom holes and tighten them enough to maintain hold on the VESA plate.

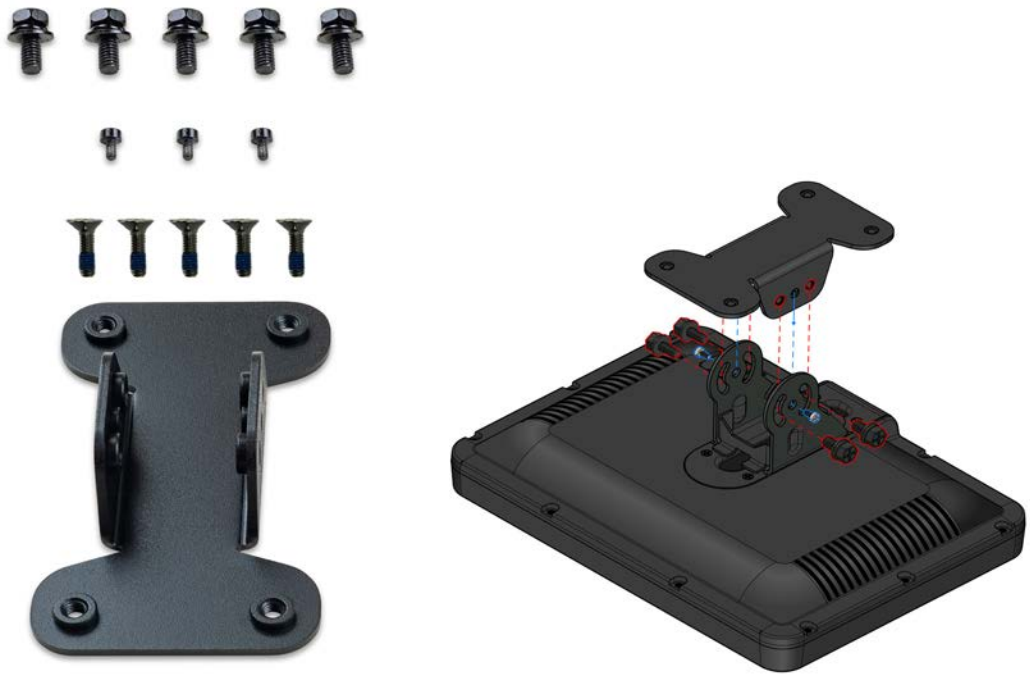


Figure 84: Install the CVBS Display VESA plate

NFC Card Reader

1. Place the NFC Card Reader on the NFC Card Reader VESA plate, aligning the center of the NFC Card Reader's screw holes with the inner screw holes of the VESA plate.
2. Insert a provided M3*10mm (⅛ in.* ⅜ in.) screw into each aligned screw hole of the NFC Card Reader and tighten each screw enough to secure a strong hold.

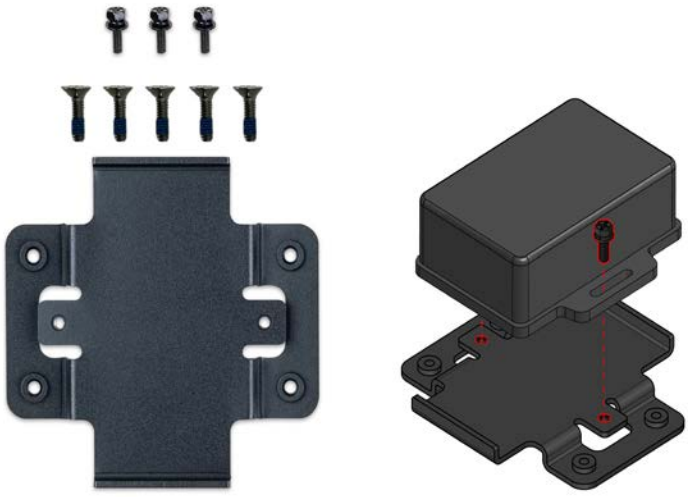


Figure 85: Install the card reader VESA plate

DC Power Module

1. Place the DC Power Module on the DC Power Module VESA plate, aligning the 4 outer screw holes of the DC Power Module with the 4 outer screw holes of the VESA plate.
2. Insert a provided M4*10mm (⅛ in.* ⅜ in.) screw into each aligned outer screw hole of the DC Power Module and tighten each screw enough to secure a strong hold.

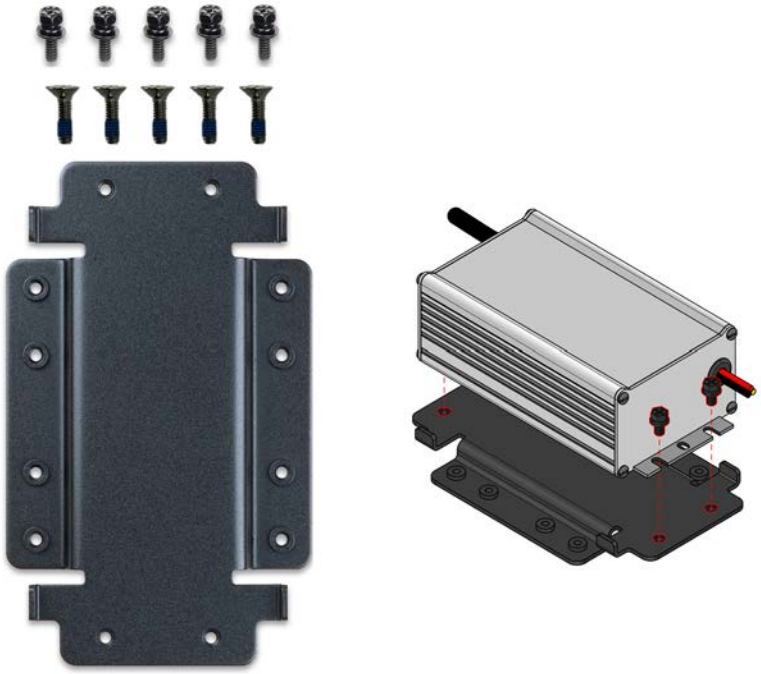


Figure 86: Install the power module VESA plate

A.9 RAM® Mounts Kit

An optional RAM® Mounts kit is available to be used with the VESA plates for mounting supported VIA Mobile360 FSS parts.

A.9.1 Package Contents

RAM® Mount Kit Part	Quantity	Supported Part
75 x 75mm VESA Ball Adapter	1	VIA Mobile360 M500 system
35 x 75mm VESA Ball Adapter	4	AHD cameras and 7" CVBS Display
6 in. Arm	1	7" CVBS Display
4 in. Arm	1	VIA Mobile360 M500 system and AHD cameras
Bar Clamp	5	VIA Mobile360 M500 system, AHD cameras and 7" CVBS Display

Table 14: RAM® Mounts Kit package contents

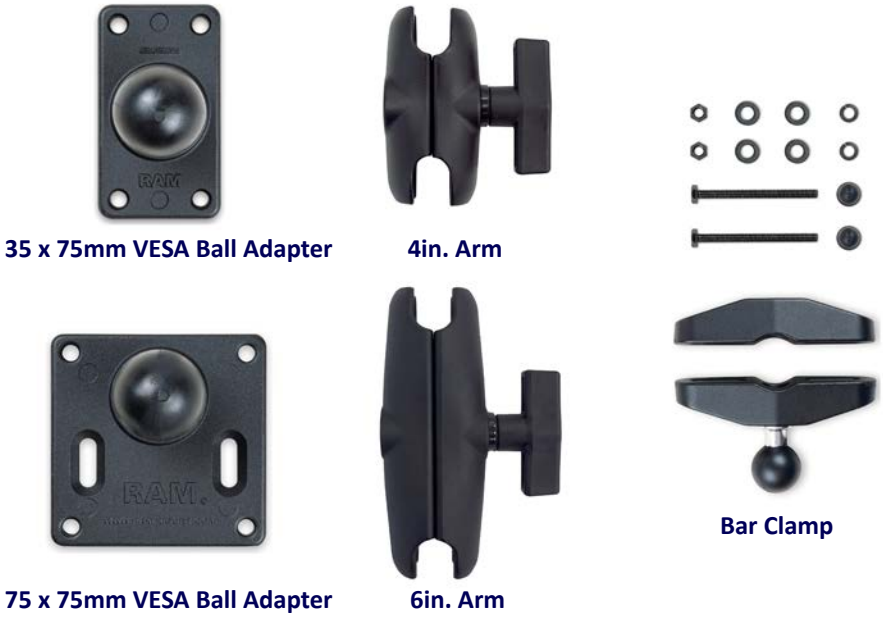


Figure 87: Parts of the RAM® Mounts Kit

A.9.2 Installation

Follow the steps below to install a RAM® mount for supported VIA Mobile360 FSS parts:

1. **VESA Plate Attachment:** Attach a VESA plate to the corresponding VIA Mobile360 FSS part. Refer to section A.8.2 for installation instructions.
2. **RAM® VESA Ball Adapter Attachment:** Attach a provided RAM® VESA ball adapter to a compatible VESA plate using the five M4*14mm (⅜ in.* ⅝ in.) screws provided with the VESA plate.
3. **RAM® Arm and Bar Clamp Attachment:**

   Step 1

   Loosen a provided RAM® arm. Be careful while loosening the RAM® arm, as the RAM® arm is spring-loaded.

Step 2

Insert a RAM® VESA ball adapter into one end of the arm, and insert the ball of a provided RAM® bar clamp into the other end of the arm.

Step 3

Tighten the arm enough for a firm grip on the ball adapter and the bar clamp.

4. **Find a mounting location:** Find a suitable location on a forklift bar to mount the VIA Mobile360 M500 system, AHD camera, or CVBS Display. Consider the following while finding installation locations:
   - The width of the forklift bar at the location should be 1.75in. - 4in. to install a provided RAM® bar clamp.
   - The location should have sufficient surface area to mount the system, camera, or CVBS Display.
5. **Finish mounting:** Affix the RAM® bar clamp at the desired installation location on the forklift bar to finish mounting.

The following example illustrates the assembly of a camera VESA plate, 35 x 75mm RAM® VESA ball adapter, 4in. RAM® arm, and a RAM® bar clamp.

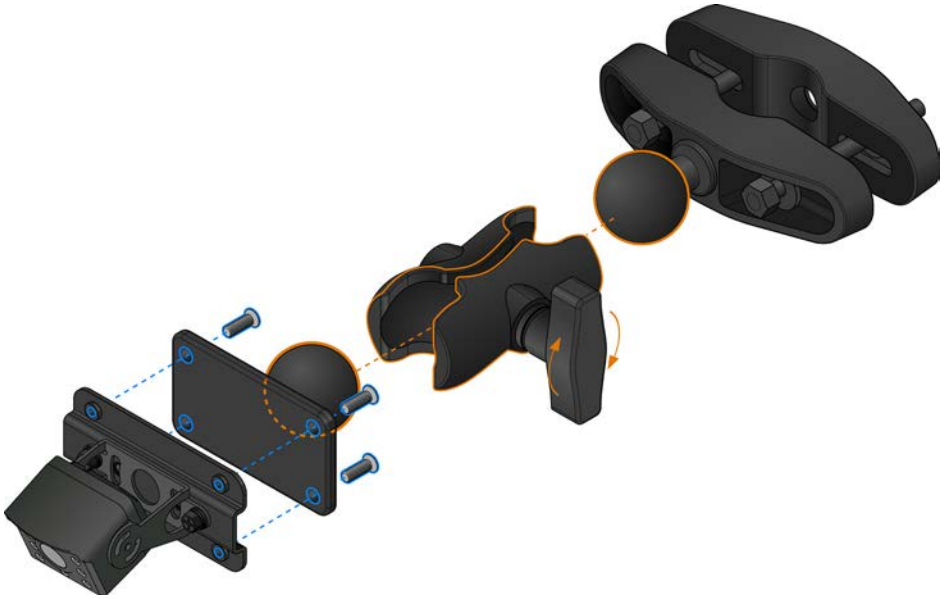


Figure 88: An example VESA plate - RAM® mount assembly

Appendix B Troubleshooting

Check the table below to troubleshoot if the system is not working properly. If the symptom is not listed below or the proposed solution does not bring your system back to an operational state, check the warranty section for further assistance.

System Power ON/OFF Issues

Symptom		Possible Cause	Solution	Refer to Section
System does not turn on	Power LED does not light up	Power was not delivered to the system	Check power cable connection. Check both power fuse and ACC fuse cable connection. Check if power fuse or ACC fuse came loose. Check if power fuse or ACC fuse broke.	2.6.1
	Power LED lights up	System crashed	Long press reset button on the front panel for 3 seconds to reboot the system. If the above step does not work, long press reset button on the front panel for 8 seconds to factory reset the system. If pressing the reset button still does not fix the issue, disconnect then reconnect the power cable and try again.	2.7.1
System does not power down		System crashed	Long press reset button on the front panel for 3 seconds to reboot the system. If the above step does not work, long press reset button on the front panel for 8 seconds to factory reset the system. If pressing the reset button still does not fix the issue, disconnect then reconnect the power cable and try again.	2.7.1

VIA WorkX App Issues

Symptom	Possible Cause	Solution	Refer to Section
VIA WorkX app crashes or does not start at all	VIA WorkX app is not up to date	Check Google Play Store or Apple Store for latest updates.	4.1
VIA WorkX app is not showing system information	System was not powered on	Power on the system.	2.7
	VIA WorkX app was not connected to the system through Wi-Fi	Check Wi-Fi name and password are entered correctly. Check if the mobile device has switched to cellular connection or connected to other Wi-Fi access points.	4.1
VIA WorkX app is not showing the recorded videos	SD Card came loose	Check if MicroSD card is inserted properly into the system.	2.1.1

Symptom	Possible Cause	Solution	Refer to Section
The "Language Packs" list in the "Info" tab is empty.	Mobile device is not connected to the Internet.	Connect the mobile device to Internet and check again.	4.3.4
	All available optional language packs and updates are already downloaded.	Tap "Manage" on the top-right corner of the "Language Packs" screen and check the list of downloaded optional language packs.	
An optional language pack cannot be selected as an Alert Language in the "Settings" tab.	The downloaded optional language pack is not added to the system.	Check the "Languages Available" section on the "Alert Language" screen, select the desired language pack, and tap "Confirm" on the top right corner of the screen. If the language is not listed in the section, the language is not downloaded on the mobile device.	4.3.2
	The optional language pack was not downloaded to the mobile device.	Check the list of "Languages Available" on the "Alert Language" screen. If the desired language pack is not in the list, connect the mobile device to Internet, go to the "Info" tab to download the language pack if available.	4.3.4

People Detection Issues

Symptom	Possible Cause	Solution	Refer to Section
Critical/Warning Alerts do not sound off when people are in the detection areas	Critical/Warning Alerts were not enabled	Check VIA WorkX app and select "All Alerts" or "Critical Alerts Only" for front and rear cameras.	4.3.2
	Speaker is not working properly	Check "Speaker Issues".	B
	Camera detached from the system	Check camera connection.	2.6
	Camera was not calibrated	Calibrate camera with the VIA WorkX app.	3.1.1
	Camera view was blocked	Check VIA WorkX app to see if any objects are blocking the camera view. Remove the objects that are blocking the camera view.	4.3.1
	Camera was bumped or moved and is no longer pointing towards the desired detection area	Recalibrate the camera with the VIA WorkX app.	3.1.1
	People Detection Sensitivity set too low	Check VIA WorkX app and raise People Detection Sensitivity Settings.	3.1.1
Too many false alerts	People Detection Sensitivity set too high	Check VIA WorkX app and lower People Detection Sensitivity Settings.	3.1.1

Driver Safety System Issues

Symptom	Possible Cause	Solution	Refer to Section
No alerts sound off	Speaker is not working properly	Check "Speaker Issues".	B
	Camera detached from the system	Check camera connection.	2.6
	Camera was not calibrated	Calibrate camera with the VIA WorkX app.	3.2.1
	Camera was bumped or moved and is no longer pointing towards the driver	Recalibrate the camera with the VIA WorkX app.	3.2.1
	Driver Safety System Alerts were turned off	Check VIA WorkX app and turn on the Driver Safety System Alerts.	4.3.2

Display Issues

Symptom	Possible Cause	Solution	Refer to Section
Nothing is shown on the screen	Screen detached from the system.	Check screen connection.	A.1.3
UI on the screen is rotated or flipped	Screen settings were incorrect.	Use screen rotation function to rotate or flip the UI.	A.1.2
Front and Rear camera views are not shown on the screen	Cameras detached from the system.	Check camera connections.	2.6
Front or Rear People Detection icon stays blue	Front or Rear People Detection camera not calibrated.	Calibrate the Front/Rear camera with the VIA WorkX app.	3.1.1
Driver Safety System icon stays blue	Driver camera not calibrated.	Calibrate the Driver camera with the VIA WorkX app.	3.2.1

Speaker Issues

Symptom	Possible Cause	Solution	Refer to Section
No sound coming from the speaker	Speaker detached from the system.	Check the speaker connection.	2.4
	System volume was too low.	Raise the system volume.	4.3.2

Miscellaneous Issues

Symptom	Possible Cause	Solution	Refer to Section
System is not recording videos	SD card came loose or damaged.	Check if the MicroSD card is inserted properly into the system, replace the card if damaged.	2.1.1
	SD card was not formatted.	Check the VIA WorkX app and format the MicroSD card.	4.3.2

Symptom	Possible Cause	Solution	Refer to Section
System is not sending alert signals to custom devices.	Custom devices are disconnected from system.	Check cable connections.	A.3
	System's Output interfaces are not configured.	Check Output interface configurations in the VIA WorkX app.	

NFC Card Reader Issues

Symptom	Possible Cause	Solution	Refer to Section
NFC card scanning has failed.	Cable connection is damaged or loose.	Replace the cable if damaged, or fully secure it if loose.	A.2.2
	Card reader is not working.	Check the vehicle's profile on the VIA WorkX Connect Cloud to confirm that the card reader is working.	2.6.1 of the VIA WorkX Connect Cloud Quick Start Guide
	4G LTE connectivity is poor or lost.	• Check if the SIM card is properly inserted in the system. • Move the forklift to another location. • Restart the vehicle.	A.6
	The NFC Card driver login method is not enabled for the forklift.	Enable the NFC Card login method on the VIA WorkX Connect Cloud.	2.7.3 of the VIA WorkX Connect Cloud Quick Start Guide
	Card is not registered to the driver or the driver is not authorized to drive the vehicle.	Check the driver's profile on the VIA WorkX Connect Cloud. If required, update the profile with the NFC Card ID, or add the vehicle to the authorized vehicles list.	2.6.2 of the VIA WorkX Connect Cloud Quick Start Guide
	Card was placed with other electronic cards while scanning.	Remove other electronic cards before trying again.	NA
	Card is damaged.	Register a new card to the driver on the VIA WorkX Connect Cloud.	2.6.2 of the VIA WorkX Connect Cloud Quick Start Guide

Speed and Reverse Light Sensor Issues

Symptom	Possible Cause	Solution	Refer to Section
Display does not switch to front view	"Front + Rear Dynamic" display layout is not enabled	Check VIA WorkX app and select "Front + Rear Dynamic" as the display layout.	A.4.5
	Speed sensor is not activated	Confirm the speed sensor has been activated.	A.4.4.1
		Confirm the correct tire dimension has been inputted.	
	Speed sensor is not detected	Check if the system is receiving a signal from the speed sensor.	A.4.4.1
		Check the cable connections and confirm that sensor's red LED (located at the back) is lit when the system is powered.	A.4.3
		Confirm the distance between the speed sensor head and magnet is 1 ~ 3cm (½ in. ~ 1¾ in.).	A.4.2.1
Speed sensor does not report the correct speed reading on the display	An incorrect tire dimension value has been inputted	Confirm the correct tire dimension has been inputted.	A.4.4.1
Over-speed audio alert does not play	Speaker is not working	Check "Speaker Issues".	B
	Maximum speed limit has not been inputted	Input a maximum speed limit.	A.4.4.1
Display does not switch to the rear view	"Rear Dynamic" or "Front + Rear Dynamic" display layout is not enabled	Check VIA WorkX app and select "Rear Dynamic" or "Front + Rear Dynamic" as the display layout.	A.4.5
	Reverse light sensor is not activated	Activate the reverse light sensor.	A.4.4.1
	Reverse light sensor is not detected	Check if the system is receiving a signal from the reverse light sensor.	A.4.4.2
		Check cable connections.	A.4.3
		Increase the reverse light sensor's sensitivity.	A.4.4.2
Display switches to rear view when not in reverse	Reverse light sensor's sensitivity is set too high	Decrease the reverse light sensor's sensitivity.	A.4.4.2
Critical and Warning Alerts do not sound off only in the direction the forklift is moving.	Critical and Warning Alerts are enabled for both directions irrespective of the forklift moving direction.	Check VIA WorkX app and select "Moving Direction Only".	A.4.6

Seatbelt Sensor Issues

Symptom	Possible Cause	Solution	Refer to Section
The seatbelt status icon is not shown on the 7" CVBS Display. OR Display is showing incorrect seatbelt usage status. OR Seatbelt OFF voice alert does not play.	Seatbelt sensor is unpaired.	Pair seatbelt sensor with system.	A.5
	Seatbelt sensor is not properly installed.	Ensure that the seatbelt sensor is firmly attached to the seatbelt buckle's bottom surface and pair the sensor again.	A.5
	A metallic object accidentally fell between the seatbelt sensor and the seatbelt buckle.	Remove the metallic object and ensure that the seatbelt sensor is firmly attached to the seatbelt buckle.	
	Seatbelt sensor is out of power.	Check the seatbelt sensor's battery status on the CVBS Display and in the VIA WorkX app, and replace coin battery (type CR2032H) if required.	A.5.2
	The Wi-Fi/GPS antenna is not installed properly.	Check and secure the antenna's installation.	2.5
	Speaker is not working properly.	Check "Speaker Issues".	B

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