INSTALLATION GUIDE

VIA Mobile360 Forklift Safety System
Left, Right & Rear People Detection
Important Safety Instructions

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 people. 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” 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!

License and Guarantee

Limited Use License

All intellectual property rights of this product belong to VIA. VIA only grants the purchaser of this product a non-exclusive license to use the software. The purchaser shall not: (a) modify, change or convert the software used in the product or provided with the product; (b) reverse assemble, decompile, disassemble or other attempts to obtain the source code of the software; (c) copying, selling, transferring, sub-licensing, leasing, renting, lending, transferring, distributing, or otherwise transferring or disclosing the software; or (d) remove, cover up, or change the property rights, trademarks or other rights statements on the product or corresponding documents.

Limited Guarantee

The limited warranty for this product (hereinafter referred to as the "limited warranty") is non-transferable. VIA promises to provide the original purchaser of this product with a one-year free warranty service from the date of shipment.

VIA is not responsible for any problems caused by installation. At the same time, the following conditions are not covered by the warranty: (a) damage caused by incorrect use, negligence, incorrect installation or accident; (b) installing this product on an inappropriate vehicle; (c) except for VIA, any third-party repairs or changes to the product; (d) due to accidental damage or due to factors other than the product, including but not limited to the use of the environment does not meet the requirements or exceed the protection standards, power outages, current surges, voltage instability, excessive damage caused by voltage, overload, short circuit, high temperature, high humidity, outdoor wind and rain, natural disasters or force majeure.

Disclaimer

This limited warranty is the only and exclusive warranty for this product. To the extent permitted by applicable laws, VIA does not assume any express or implied warranties or guarantees regarding product marketability or suitability for specific purposes. No representatives, distributors or agents are authorized to make statements, claims, or guarantees regarding this product on behalf of VIA. Except for the content clearly stated here, VIA will not make any other declarations or guarantees. Under no circumstances will VIA be liable for any special, incidental, direct, indirect, punitive, incidental, ancillary or punitive damages related to this product or caused by the use of this product.
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

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Remarks</th>
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<tr>
<td>1.05</td>
<td>14/07/2023</td>
<td>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.</td>
</tr>
<tr>
<td>1.04</td>
<td>28/03/2023</td>
<td>Updated descriptions in Appendix A for CVBS Display package contents and installation instructions.</td>
</tr>
<tr>
<td>1.03</td>
<td>11/11/2022</td>
<td>Updated camera calibration instructions to set left/right camera detection widths.</td>
</tr>
<tr>
<td>1.02</td>
<td>18/10/2022</td>
<td>Added 2M extension cable option.</td>
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<tr>
<td>1.01</td>
<td>05/10/2022</td>
<td>Updated speed limit suggestions.</td>
</tr>
<tr>
<td>1.00</td>
<td>20/07/2022</td>
<td>Initial Release</td>
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Packing List

- 1 x VIA Mobile360 M500 system (with waterproof cover)
- 2 x Vibration dampening strips
- 3 x IP67 FOV-190° left/right/rear cameras with mounting brackets (3M or 9ft. 10in. cable)
- 3 x Strong magnets with 6 x M5*12mm (¼ in.*¾ in.) bolts, 3 x 3M VHB GPH-160GF series tape
- 10 x M5*25mm (¼ in.*1 in.) Molly bolts for camera and system installation
- 1 x Speaker with 3M VHB GPH-160GF series tape (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

<table>
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<th>Part Number</th>
<th>Description</th>
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<tr>
<td>M360-M500-1L07A1</td>
<td>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)</td>
</tr>
<tr>
<td>M360-M500-2L07A1</td>
<td>7” IP67 CVBS (800x480) display kit with mounting plate, four Molly bolts, and screw pack (supports VESA plates)</td>
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</table>

Driver ID Option

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>M360-MX00-1SCRA0</td>
<td>NFC Card Reader with cable, pre-attached 3M tape, and one NFC card.</td>
</tr>
<tr>
<td>M360-MX00-1CRCA0</td>
<td>NFC card box (25 pcs)</td>
</tr>
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<td>M360-M500-2S00A0</td>
<td>Forklift speed and reverse light sensor kit with mounting bracket and cables</td>
</tr>
<tr>
<td>M360-M500-1S00A0</td>
<td>Forklift speed sensor kit with mounting bracket, cable and M8 (5/16 in.) cap</td>
</tr>
<tr>
<td>M360-M500-3S00A0</td>
<td>Forklift reverse light sensor kit with cable and M8 (5/16 in.) cap</td>
</tr>
<tr>
<td>M360-SBS-150030</td>
<td>Wireless forklift seatbelt sensor</td>
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### Wireless Module Options

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<tr>
<td>M360-LTE3-Q1APA2</td>
<td>4G LTE mobile broadband full-sized miniPCIe module for APAC region with</td>
</tr>
<tr>
<td></td>
<td>antenna puck, thermal pad and screw pack.</td>
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<tr>
<td>M360-LTE3-Q1EUA2</td>
<td>4G LTE mobile broadband full-sized miniPCIe module for EU region with</td>
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<td>antenna puck, thermal pad and screw pack.</td>
</tr>
<tr>
<td>M360-LTE3-Q1JPA2</td>
<td>4G LTE mobile broadband full-sized miniPCIe module for JP region with</td>
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<td>antenna puck, thermal pad and screw pack.</td>
</tr>
<tr>
<td>M360-LTE3-Q1USA2</td>
<td>4G LTE mobile broadband full-sized miniPCIe module for US region with</td>
</tr>
<tr>
<td></td>
<td>antenna, thermal pad and screw pack.</td>
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### Power Option

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<tr>
<td>M360-PWM-2P00A0</td>
<td>36V ~ 100V DC power module for EV forklifts</td>
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### Cable Options

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<td>M360-MX00-3C00A0</td>
<td>2M (6ft. 7in.) extension cable for cameras and 7&quot; CVBS Display</td>
</tr>
<tr>
<td>M360-MX00-5C00A1</td>
<td>DIO2 cable</td>
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### Mount Options

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<td>M360-RAM-1RM0A1</td>
<td>RAM® Mount Kit for system, AHD cameras and 7&quot; CVBS display</td>
</tr>
<tr>
<td>M360-M500-1HSYA0</td>
<td>VIA Mobile360 M500 VESA plate with screw pack</td>
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<tr>
<td>M360-M500-1HM2A0</td>
<td>AHD camera VESA plate with screw pack</td>
</tr>
<tr>
<td>M360-M500-2HLMA0</td>
<td>7&quot; CVBS display VESA plate with screw pack</td>
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<tr>
<td>M360-M500-1HDC0A0</td>
<td>DC power module VESA plate with screw pack</td>
</tr>
<tr>
<td>M360-M500-1HCRA0</td>
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1. Product Overview

Prevent accidents and injuries in busy warehouse and industrial environments with the VIA Mobile360 Forklift Safety System. This rugged and reliable people detection system alerts and warns the driver whenever someone steps within a hazardous range of their vehicle.

Simple to install and maintain, the VIA Mobile360 Forklift Safety System comes with 3 people detection cameras, a high-quality speaker and optional accessories such as a 7” CVBS display and a forklift speed 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 for both forklift accident aversion and enhancement of overall worksite health and safety standards.

1.1 System Layout

![Front panel I/O layout](image)

![Rear panel I/O layout](image)
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 M500 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.

<table>
<thead>
<tr>
<th>MicroSD Card Size</th>
<th>Recording Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>32GB</td>
<td>5.5 hours</td>
</tr>
<tr>
<td>64GB</td>
<td>11.2 hours</td>
</tr>
<tr>
<td>128GB</td>
<td>22.0 hours</td>
</tr>
<tr>
<td>256GB</td>
<td>44.4 hours</td>
</tr>
<tr>
<td>400GB</td>
<td>68.9 hours</td>
</tr>
<tr>
<td>512GB</td>
<td>88.2 hours</td>
</tr>
<tr>
<td>1TB</td>
<td>150.1 hours</td>
</tr>
</tbody>
</table>

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](image)

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](image)
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](image)

### 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](image)
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 1/2 in. x 2 3/4 in. x 12 3/4 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 (3/16 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 (left, right and rear) IP67-rated people detection cameras with 3m (9ft. 10in.) cables to be installed on the target forklift.

Each camera comes in a labeled box within the VIA Mobile360 Forklift Safety System package and include color-coded cables (brown for left, black for right and purple for rear) for easy identification. Also included for each camera are a strong magnet with two M5*12mm (¾ in.*¾ in.) bolts, one piece of double-sided 3M tape and two M5*25mm (¾ in.*1in.) Molly bolts.

Each camera provides approximately a 120° field of detection. To minimize occluded regions in the detection zone around the vehicle the cameras must be installed within the following criteria:

- All cameras must be installed between 1.6m ~ 2.7m (5ft. 3in. ~ 8ft. 10in.) off the ground and should have an unobstructed view (Cameras do not need to be installed at the same heights).
- All cameras must be installed with their horizon parallel to the ground.
- The rear camera should be installed in the center of the rear of the vehicle.
- The left and right cameras must be installed no further than 3.5m (11ft. 5in.) (X) to the left/right of the rear camera and no further than 2.0m (6ft. 7in.) (Y) from the rear (camera) towards the front of the vehicle.

![Figure 11: Rear & side camera installation locations](imageURL)
2.3.1 Scenario A: Side Cameras < 2.3m (7ft. 6in.) from Rear Camera

If the side cameras can be installed no further than 2.3m (7ft. 6in.) (X) from the left/right of the rear camera, the following table can be used to determine the maximum "Y" value the cameras can be installed from the rear camera towards the front of the vehicle. When installing the side cameras, they should be facing outwards and parallel with the side of the vehicle. This will provide roughly a 300° field of detection around the vehicle.

<table>
<thead>
<tr>
<th>Maximum Distance 'X' (meters)</th>
<th>Maximum Distance 'Y' (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50 (19 ¾ in.)</td>
<td>2.00 (6ft. 7in.)</td>
</tr>
<tr>
<td>0.75 (29 ½ in)</td>
<td>1.88 (6ft. 2in.)</td>
</tr>
<tr>
<td>1.00 (3ft. 3in.)</td>
<td>1.73 (5ft. 8in.)</td>
</tr>
<tr>
<td>1.25 (4ft. 1in.)</td>
<td>1.59 (5ft. 3in.)</td>
</tr>
<tr>
<td>1.46 (4ft. 9in.)</td>
<td>1.46 (4ft. 9in.)</td>
</tr>
<tr>
<td>1.50 (4ft. 11in.)</td>
<td>1.40 (4ft. 7in.)</td>
</tr>
<tr>
<td>1.75 (5ft. 9in.)</td>
<td>0.97 (38in.)</td>
</tr>
<tr>
<td>2.00 (6ft. 7in.)</td>
<td>0.53 (20 ¾ in.)</td>
</tr>
<tr>
<td>2.25 (7ft. 5in.)</td>
<td>0.10 (4in.)</td>
</tr>
<tr>
<td>2.30 (7ft. 7in.)</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table 02: Maximum side-to-rear camera distances
2.3.2 Scenario B: Side Cameras 2.3m ~ 3.5m (7ft. 6in. ~ 11ft. 5in.) from Rear Camera

If the side cameras need to be installed between 2.3m ~ 3.5m (7ft. 6in. ~ 11ft. 5in.) (X) to the left/right of the rear camera, they should be installed facing outwards with a 30° rotation towards the rear of the vehicle. The maximum "Y" value the cameras can be installed from the rear camera towards the front of the vehicle is 2.0m (6ft. 7in.). This will provide roughly a 240° field of detection around the vehicle.
2.3.3 Attaching the Cameras

After determining the ideal installation locations for each camera, follow the detailed instructions below to install the cameras:

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 (¾ in.*¾ in.) bolts (use a No. 8 or ⅝ wrench), then affix the 3M tape to the bottom of the magnet.

   ![Figure 15: Attaching magnets and 3M tape to rear and side cameras](image)

   **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, then 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. For each camera, mark the installation location with a line parallel to the ground/vehicle edge. If drilling will be used, also mark the location of the screw holes on the bottom of the camera bracket and drill the holes.

![Figure 16: Marking installation location and drilling](image)
If the side cameras need to be rotated towards the rear of the vehicle 30°, mark the line accordingly.

**Figure 17:** Marking side camera installation location rotated 30°

3. Next, attach the cameras:
   - 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, inserting the M5*25mm (3/16 in.*1in.) Molly bolts into the drilled holes and tighten.

**Figure 18:** Installing cameras with Molly bolts
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 (23 3/4 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 19: Speaker installation](image)

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 Mobile360 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 20.
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.
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 22: Front I/O cable connections**

**Rear Panel I/O**

- Connect the right 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 left 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 23: 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 24: M12 power cable](image)

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

![Figure 25: Blade fuse holder cables](image)
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.

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.

---

<table>
<thead>
<tr>
<th>LED Flash Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid On</td>
<td>System boot complete</td>
</tr>
<tr>
<td>Off</td>
<td>System is off</td>
</tr>
<tr>
<td>4 flashes per second</td>
<td>Firmware upgrading</td>
</tr>
<tr>
<td>1 flash per second</td>
<td>System powering on/powering off</td>
</tr>
</tbody>
</table>

Table 03: System LED status

Note: It is recommended to keep the system on for at least 10 minutes upon the first boot to ensure the system fully charges.
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 Mobile360 WorkX app. See section 4.3.2 for more details.

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

![Reset Button](image)

*Figure 26: 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 left, right and rear cameras.

3.1 Camera Alerts

The people detection zone covers an area of 240° - 300° around the side and rear of the vehicle up to 4~5 meters (13ft. 1in. ~ 16ft. 5in.) away. 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:

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

Figure 27: 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.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Voice Alert</th>
<th>Sound Alert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Warning Zone</td>
<td>&quot;Left, person detected&quot;</td>
<td>Slow pulse A</td>
</tr>
<tr>
<td>Left Critical Zone</td>
<td>&quot;Brake&quot;</td>
<td>Fast pulse A</td>
</tr>
<tr>
<td>Right Warning Zone</td>
<td>&quot;Right, person detected&quot;</td>
<td>Slow pulse A</td>
</tr>
<tr>
<td>Right Critical Zone</td>
<td>&quot;Brake&quot;</td>
<td>Fast pulse A</td>
</tr>
<tr>
<td>Rear Warning Zone</td>
<td>&quot;Rear, person detected&quot;</td>
<td>Slow pulse A</td>
</tr>
<tr>
<td>Rear Critical Zone</td>
<td>&quot;Brake&quot;</td>
<td>Fast pulse A</td>
</tr>
</tbody>
</table>

Table 04: People detection audio alerts

3.1.1 Camera Calibration

Before the VIA Mobile360 Forklift Safety System can provide people detection alerts, each camera needs to be calibrated using the VIA Mobile360 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.

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 "Camera Calibration" 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 5~14kph (3 ~ 9mph).

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

<table>
<thead>
<tr>
<th>Reaction Time</th>
<th>3M Boundary (9ft. 10in.)</th>
<th>4M Boundary (13ft. 1in.)</th>
<th>5M Boundary (16ft. 5in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7 secs</td>
<td>9kph (6mph)</td>
<td>12kph (7mph)</td>
<td>14kph (9mph)</td>
</tr>
<tr>
<td>2.5 secs</td>
<td>4kph (2mph)</td>
<td>5kph (3mph)</td>
<td>6kph (4mph)</td>
</tr>
<tr>
<td>3.0 secs</td>
<td>3kph (2mph)</td>
<td>4kph (2mph)</td>
<td>5kph (3mph)</td>
</tr>
</tbody>
</table>

Table 05: Speed limit reference

To calibrate a camera, follow the steps below:

1. Before using the VIA Mobile360 WorkX app to calibrate the cameras, place the calibration pattern (which is 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 28.
2. Open and connect the VIA Mobile360 WorkX app as described in section 3.1.1. From the "Camera Calibration" 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, 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.), Tap 'Next' to continue.

5. Adjust the camera to align the target overlay in the VIA Mobile360 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 29: Left/rear/right 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. The next step is to set the detection area that people detection alerts will be triggered within. In the interface there are two icons on the left-hand side to set the critical/warning zone boundary line distance and the max distance for warning detections (optional).

7. Tap the first icon on the top left-hand side and select the desired distance for the warning/critical zone boundary line. The critical zone will be the detection area less than the value selected, while the warning zone will be the detection area greater than the value selected up to 5m (16ft. 5 in.). 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.
8. If a detection range less than 5m (16ft. 5 in.) is desired, a second boundary line can be added to limit the maximum detection distance by selecting the second icon on the left-hand side (the first boundary line must be 3m (9ft. 10in.) or less to use this option). Select the desired maximum distance and a yellow preview line will be overlaid to show the location in front of the vehicle. To confirm the selection, Tap the icon to return to the main display. If it is not required, leave it set to off.

Note:
The distance between the first and second boundary lines must be at least 1 meter.

9. An additional icon is displayed on the bottom left side during left and right camera calibration. Tap this icon to adjust the range of each camera’s detection zone.

By default, "ALL" is selected to not limit the detection zone’s range and to deliver alerts for the full range. Selecting 120°, 90°, 60°, or 30° narrows the detection zone’s range towards the rear end of the vehicle. Select the desired angle and a preview area of the detection zone will be displayed. To confirm the selection, Tap the icon to return to the main display.

Figure 30: Full left camera detection zone range
Figure 31: Narrowed left camera detection zone range

10. After setting all the detection zone criteria for a camera, tap the "Confirm" button on the top right-hand corner of the app to complete the calibration process and return to the "Camera Calibration" tab in the app.

11. The status beside the camera will now show "Calibrated". A field to adjust the "People Detection Sensitivity" is also added. This can be used to adjust the detection 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.
4. VIA Mobile360 WorkX App

The VIA Mobile360 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 Mobile360 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.

![QR Code for Google Play](image1)

![QR Code for App Store](image2)

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 “Camera Calibration” 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 Mobile360 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 Mobile360 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** - App version information and privacy policy.

4.3.1  Camera Calibration

The "Camera Calibration" 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.
- **System Language** - Shows the language used for the audio alerts. Tapping on the current language will bring up a list of available system languages to choose from.
- **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:** After changing the SSID and/or Password, the VIA Mobile360 WorkX App will need to reconnect to the system as described in section 4.1 using the new name and/or password.

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:** It is recommended to change the default Wi-Fi name and password after the first connection in order to make the system identifiable with the forklift the system is installed in. This will make it easier to identify specific systems when multiple systems are operating in close proximity to one another.

- **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.
- **Display Layout** - Select '3 Camera' or 'Rear Only' to display camera view layouts on the 7" CVBS Display.
- **Volume** - Change the volume of the speaker.

**People Detection:**

- **Left/Right/Rear 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 7" display interface.
Optional Accessories: Allows activation and configuration of connected optional accessories, such as the speed, reverse light and wireless seatbelt sensors.

Note: For more information on:
* 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.
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.

<table>
<thead>
<tr>
<th>7&quot; CVBS Display Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Size</td>
</tr>
<tr>
<td>Resolution</td>
</tr>
<tr>
<td>Contrast</td>
</tr>
<tr>
<td>Brightness</td>
</tr>
<tr>
<td>Response Time</td>
</tr>
<tr>
<td>Power Consumption</td>
</tr>
<tr>
<td>Power Supply</td>
</tr>
<tr>
<td>Operating Temperature</td>
</tr>
<tr>
<td>IP Rating</td>
</tr>
<tr>
<td>Dimensions</td>
</tr>
</tbody>
</table>

Table 06: 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 32: 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:

![7" CVBS Display buttons](image)

**Figure 33: 7" CVBS Display buttons**

- **01 - Light sensor**
- **02 - Power indicator**
- **03 - Power button**
- **04 - Select back**
- **05 - Menu**
- **06 - Select forward**
- **07 - Mode switching / selection**

Pushing the "Menu" button will bring up the following items:

- **Brightness**
- **Contrast**
- **Color**
- **Hue**
- **Screen Rotation (TCON)**
- **Language** - This will only change the display language in the menu, it will not affect the UI language settings.
- **Auto Dim** - If this 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.)
- **Reset**
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 ¾ in. (W) x 2in. (H) x 5/16 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 provided Molly bolts, 25mm (1in.).

![Figure 34: Mounting plate fixing holes](image)

![Figure 35: Finding a suitable installation location for the CVBS Display](image)
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 36: Determine four screw holes suitable to fix the hinge on the mounting plate

Figure 37: 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 (⅞ in.) apart.

Figure 38: 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 (⅛ in.*¾ in.) Phillips head screws provided. Insert the screws into holes on the magnet mounting plate that align with the other four holes on the mounting plate that were not marked in step 2 for attaching the hinge.

Figure 39: 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.

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.

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 (⅜ 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 (⅜ in.) in each drill hole marked in step 2, then insert a Molly bolt into each drilled hole.

Figure 42: 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 (⅜ 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 43: 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.

Figure 44: Affix the hinge on the mounting plate

13. Attach the bracket on the CVBS Display to the hinge by inserting the provided four M4*10mm (5/32 in.*3/8 in.) hexagon screws and tighten them loosely to maintain a hold on the hinge.

Figure 45: Align the CVBS Display fixed bracket with the hinge
14. Adjust the CVBS Display viewing angle by carefully rotating the display panel left, right, up or down.

Figure 46: Affix the CVBS Display fixed bracket on the hinge

Figure 47: Adjust the display viewing angle by pushing left/right or up/down
If drilling was used to mount the display panel, the display viewing angle can also be adjusted by carefully rotating the display panel left/right.

Figure 48: 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 (\(\frac{3}{16}\) in.*\(\frac{3}{8}\) in.) hexagon screws holding the display panel to the hinge.

Figure 49: 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.

![CVBS Display cable connections](image)

**Figure 50: 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 rear camera-only or all-camera live views (based on user-configured settings in the VIA Mobile360 WorkX app), as well as visual alerts for people detection warnings.

The following images represent the 7" CVBS display interface depending on the Display Layout setting in the VIA Mobile360 WorkX app:

**Display interface with Rear Camera View only:**

![Display interface with Rear Camera View only](image)

**Figure 51: 7" CVBS display interface with rear camera view only**
Display interface with 3 Camera View:

- Left Camera View
- Left Detection Indicator
- Rear Camera View
- Rear Detection Indicator
- Right Camera View
- Wi-Fi Status
- MicroSD Card Status

**Figure 52: 7" CVBS display interface with 3 camera view**

The table below provides a description of the people detection icon behaviors:

<table>
<thead>
<tr>
<th>Detection Indicator</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left/Right/Rear People Detection Icons</td>
<td>Blue</td>
<td>Camera not calibrated</td>
</tr>
<tr>
<td></td>
<td>Gray</td>
<td>No alert</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>Person in warning zone detected</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>Person in critical zone detected</td>
</tr>
</tbody>
</table>

**Table 07: 7" CVBS panel alert icons**

The default UI language is English but can be changed to other supported languages with the VIA Mobile360 WorkX app. See section 4.3.2 for more details.
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 53: 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 3/4 in. (W) x 3 1/8in. (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.

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.
4. 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 55: DIO2 cable](image)

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

Table 08: 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
The diagram below shows the connections required.

![Diagram of DIO2 Cable installation](image)

**Figure 56: 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 Mobile360 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 Mobile360 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 Left PD Alerts
     - All Right PD Alerts
     - All Rear PD Alerts
     - Left PD Critical Alerts
     - Left PD Warning Alerts
     - Right PD Critical Alerts
     - Right PD Warning Alerts
     - Rear PD Critical Alerts
     - Rear PD Warning Alerts
   - **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:

- **Geofencing Alerts**
  - All Geofencing Alerts
  - Enter Geofence Zone Alert
  - Exit Geofence Zone Alert
- **Trip Registration Alerts**
  - Authorized Driver Alert
  - Unauthorized Driver Alert
- **Inspection Report Alerts**
  - Failed Critical Item Inspection Report 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 (5/8 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 (5/8 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 57: 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 (5/8 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 (5/8 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. ~ 1¼ 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.

![Diagram of speed sensor assembly](image)

**Figure 58: 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.

![Diagram of speed sensor installation](image)

**Figure 59: Speed sensor installation**

5. Check that the distance between the speed sensor head and magnet are within 1 ~ 3 cm (1/2 in. ~ 1 3/4 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 (5/16 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 60: 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 61: Connecting sensors to the VIA Mobile360 M500 system](image)

**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 Mobile360 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 Mobile360 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 Mobile360 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.

   ![Image]

   **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 Mobile360 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 Mobile360 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 Mobile360 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 (1/16 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.

![Remove waterproof screw](image)

Figure 62: Removing the M3 screw on the light sensor’s sensitivity control box

- Once the reverse light sensor is adjusted correctly, replace the M3 (1/16 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 Mobile360 WorkX app's Settings tab when the reverse light sensor is installed.

![Display Layout](image)

**Rear Dynamic** - If the reverse light sensor is installed, selecting this setting allows display layouts to be filtered when the forklift is in reverse.

- Driving in reverse: The display UI shows the full-screen rear camera view.
- Driving forward: The display UI shows the split-screen camera view.
- Stationary: The display UI shows the split-screen camera view.
The following images represent the 7" CVBS Display interface depending on display layout selection:

**Display interface with Rear Camera View only and Speed Reading:**

![Image of 7" CVBS display interface with rear camera view only and speed reading]

**Figure 63: 7" CVBS display interface with rear camera view only and speed reading**

**Display interface with 3 Camera View and Speed Reading:**

![Image of 7" CVBS display interface with 3 camera view and speed reading]

**Figure 64: 7" CVBS display interface with 3 camera view and speed reading**
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 Mobile360 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 Mobile360 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.4.2 for detailed instructions.

A.4.6 Deactivating the Sensors

If the speed or reverse light sensor’s features are no longer required, they can be deactivated in the VIA Mobile360 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.

   Seatbelt Sensor’s Magnetic Head

   Figure 65: Seatbelt sensor installation

4. Open the VIA Mobile360 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 Mobile360 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 Mobile360 WorkX app will now display the 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.

<table>
<thead>
<tr>
<th>Input Detected</th>
<th>Display</th>
<th>Voice Alert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seatbelt Fastened</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>Seatbelt Unfastened</td>
<td></td>
<td>&quot;Fasten your seatbelt&quot;</td>
</tr>
</tbody>
</table>

Table 09: Seatbelt sensor inputs with display and voice alert

The seatbelt must be fastened no more than 120 seconds before system boot-up or no less than 90 seconds after system boot-up to ensure the system detects the connected status of the seatbelt sensor.

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 over 40-second intervals. The Seatbelt unfastened alert then continues flashing on the 7” display if the seatbelt is not fastened after all voice alerts.
Display interface with 3-camera view and Seatbelt Status ON:

![Display interface with 3-camera view and Seatbelt Status ON]

Figure 66: 7” CVBS display interface with 3-camera view and seatbelt status ON

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.

<table>
<thead>
<tr>
<th>Average Operating Hours Per Week</th>
<th>Battery Lifespan (in months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>39</td>
</tr>
<tr>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>120</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 10: Battery lifespan based on average operating hours per week

When 30 days of battery lifespan is left, the CVBS Display and VIA Mobile360 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 Mobile360 WorkX app interface with Seatbelt Sensor Battery Status:

![VIA Mobile360 WorkX app interface with Seatbelt Sensor Battery Status]

Display interface with Seatbelt Sensor Battery Status:

![Display interface with Seatbelt Sensor Battery Status]

Figure 67: 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:][1] The keyway removal tool is recommended to open the casing without damage. Using a flat-head screwdriver may damage the casing.

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

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 Mobile360 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 Mobile360 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 Mobile360 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 Mobile360 WorkX app to find 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 (⅜ in.* ⅜ 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.

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.

![Image of 4G LTE module kit](image_url)
2. Remove the rubber seal cover on the compartment’s rim.

![Rubber Seal](image1.png)

Figure 72: Removing the rubber seal cover

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

![4G LTE antenna connectors](image2.png)

Figure 73: 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.

![Connecting antennas](image3.png)

Figure 74: 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.

![miniPCIe Slot](image4.png)

Figure 75: Inserting the 4G LTE miniPCIe module
6. Use the two M2*4mm (¼ in.* 3/16 in.) screws (provided in the 4G LTE wireless module kit) to secure the 4G LTE miniPCIe module tightly in place.

![Figure 76: Securing the 4G LTE miniPCIe module](image)

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 77: Thermal pad placement](image)

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

![Figure 78: Rubber seal cover replacement](image)

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 79: Replacing the 4G LTE miniPCIe module compartment cover](image)

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 80: 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 81: 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 Mobile360 WorkX app and the VIA Mobile360 Forklift Safety System is ready for VIA WorkX Connect Cloud registration.

Disable "Cloud Mode" in the VIA Mobile360 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)
- 2 x Vibration dampening strips
- M12 to M12 power extension cable (0.3M)
- 4 x M4*25mm screws and jack rivet nuts

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 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 screws securely.
9. Connect one end of the M12-M12 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.

![Image of power module]

- **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

<table>
<thead>
<tr>
<th>Supported Part</th>
<th>VESA Plate</th>
<th>Quantity</th>
<th>Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIA Mobile360 M500</td>
<td>75 x 75 or 35 x 75mm</td>
<td>1</td>
<td>• 5 x M5*15mm (3/8 in.- 5/16 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 5 x M4*0.7mm-14mm (1/8 in.- 9/16 in.)</td>
</tr>
<tr>
<td>AHD Cameras</td>
<td>35 x 75mm</td>
<td>3</td>
<td>• 7 x M5*10mm (7/16 in. - 3/8 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 5 x M4*0.7mm-14mm (1/8 in.- 9/16 in.)</td>
</tr>
<tr>
<td>7&quot; CVBS Display</td>
<td>35 x 75mm</td>
<td>1</td>
<td>• 5 x M4*10mm (7/16 in. - 3/8 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 3 x M2*4mm (1/8 in. - 3/32 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 5 x M4*0.7mm-14mm (1/8 in.- 9/16 in.)</td>
</tr>
<tr>
<td>NFC Card Reader</td>
<td>35 x 75mm</td>
<td>1</td>
<td>• 2 x M3*10mm (7/32 in. - 1/8 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 5 x M4*0.7mm-14mm (1/8 in.- 9/16 in.)</td>
</tr>
<tr>
<td>DC Power Module</td>
<td>75 x 75 or 35 x 75mm</td>
<td>1</td>
<td>• 5 x M4*10mm (7/16 in. - 3/8 in.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 5 x M4*0.7mm-14mm (1/8 in.- 9/16 in.)</td>
</tr>
</tbody>
</table>

Table 11: Contents in each VESA plate package

*Note:* After installing a VESA plate on a VIA Mobile360 FSS part, the M4*0.7mm-14mm (1/8 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 (½ in.* ¾ in.) screw into each aligned outer screw hole of the VESA plate and tighten each screw enough to secure a strong hold.

Figure 83: 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 (⅜ in.* ¾ 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 84: 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 (⅛ in.*⅜ 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 (¼ in.*⅜ in.) screws into the bracket’s top-bottom holes and tighten them enough to maintain hold on the VESA plate.

Figure 85: 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 86: 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 (1/8 in.* 3/8 in.) screw into each aligned outer screw hole of the DC Power Module and tighten each screw enough to secure a strong hold.

Figure 87: 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

<table>
<thead>
<tr>
<th>RAM® Mount Kit Part</th>
<th>Quantity</th>
<th>Supported Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 x 75mm VESA Ball Adapter</td>
<td>1</td>
<td>VIA Mobile360 M500 system</td>
</tr>
<tr>
<td>35 x 75mm VESA Ball Adapter</td>
<td>4</td>
<td>AHD cameras and 7” CVBS Display</td>
</tr>
<tr>
<td>6 in. Arm</td>
<td>1</td>
<td>7” CVBS Display</td>
</tr>
<tr>
<td>4 in. Arm</td>
<td>1</td>
<td>VIA Mobile360 M500 system and AHD cameras</td>
</tr>
<tr>
<td>Bar Clamp</td>
<td>5</td>
<td>VIA Mobile360 M500 system, AHD cameras and 7” CVBS Display</td>
</tr>
</tbody>
</table>

Table 12: RAM® Mounts Kit package contents

Figure 88: 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. **VESPA 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*0.7mm-14mm (½ in.- ¾ 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 89: 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**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
<th>Refer to Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power LED does not light up</td>
<td>Power was not delivered to the system</td>
<td>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.</td>
<td>2.6.1</td>
</tr>
<tr>
<td>Power LED lights up</td>
<td>System crashed</td>
<td>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.</td>
<td>2.7.1</td>
</tr>
</tbody>
</table>

**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 Mobile360 WorkX App Issues**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
<th>Refer to Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIA Mobile360 WorkX app crashes or does not start at all</td>
<td>VIA Mobile360 WorkX app is not up to date</td>
<td>Check Google Play Store or Apple Store for latest updates</td>
<td>4.1</td>
</tr>
<tr>
<td>VIA Mobile360 WorkX app is not showing system information</td>
<td>System was not powered on</td>
<td>Power on the system</td>
<td>2.7</td>
</tr>
<tr>
<td>VIA Mobile360 WorkX app is not connected to the system through Wi-Fi</td>
<td>VIA Mobile360 WorkX app was not connected to the system through Wi-Fi</td>
<td>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.</td>
<td>4.1</td>
</tr>
<tr>
<td>VIA Mobile360 WorkX app is not showing the recorded videos</td>
<td>SD Card came loose</td>
<td>Check if MicroSD card is inserted properly into the system</td>
<td>2.1.1</td>
</tr>
</tbody>
</table>
### People Detection Issues

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
<th>Refer to Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical/Warning Alerts do not sound off when people are in the detection areas</td>
<td>Critical/Warning Alerts were not enabled</td>
<td>Check VIA Mobile360 WorkX app and select &quot;All Alerts&quot; or &quot;Critical Alerts Only&quot; for rear and side cameras (left and right).</td>
<td>4.3.2</td>
</tr>
<tr>
<td></td>
<td>Speaker is not working properly</td>
<td>Check &quot;Speaker Issues&quot;</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>Camera detached from the system</td>
<td>Check camera connection</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>Camera was not calibrated</td>
<td>Calibrate camera with the VIA Mobile360 WorkX app</td>
<td>3.1.1</td>
</tr>
<tr>
<td></td>
<td>Camera view was blocked</td>
<td>Check VIA Mobile360 WorkX app to see if any objects are blocking the camera view. Remove the objects that are blocking the camera view.</td>
<td>4.3.1</td>
</tr>
<tr>
<td></td>
<td>Camera was bumped or moved and is no longer pointing towards the desired detection area</td>
<td>Recalibrate the camera with the VIA Mobile360 WorkX app</td>
<td>3.1.1</td>
</tr>
<tr>
<td></td>
<td>People Detection Sensitivity set too low</td>
<td>Check VIA Mobile360 WorkX app and raise People Detection Sensitivity Settings</td>
<td>3.1.1</td>
</tr>
<tr>
<td></td>
<td>Too many false alerts</td>
<td>People Detection Sensitivity set too high</td>
<td>Check VIA Mobile360 WorkX app and lower People Detection Sensitivity Settings</td>
</tr>
</tbody>
</table>

### Display Issues

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
<th>Refer to Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing is shown on the screen</td>
<td>Screen detached from the system.</td>
<td>Check screen connection</td>
<td>A.1.3</td>
</tr>
<tr>
<td>UI on the screen is rotated or flipped</td>
<td>Screen settings were incorrect.</td>
<td>Use screen rotation function to rotate or flip the UI</td>
<td>A.1.2</td>
</tr>
<tr>
<td>Rear camera view only or 3-camera view are not shown on the screen</td>
<td>Display Layout settings not configured as required in VIA Mobile360 WorkX app.</td>
<td>Check Display Layout settings in VIA Mobile360 WorkX app.</td>
<td>4.3.2</td>
</tr>
<tr>
<td></td>
<td>Cameras detached from the system</td>
<td>Check camera connections</td>
<td>2.6</td>
</tr>
<tr>
<td>Left, Right or Rear People Detection icons stay blue</td>
<td>Left, Right, or Rear People Detection cameras not calibrated.</td>
<td>Calibrate the rear and side cameras (left and right) with the VIA Mobile360 WorkX app</td>
<td>3.1.1</td>
</tr>
</tbody>
</table>
### Speaker Issues

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
<th>Refer to Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>No sound coming from the speaker</td>
<td>Speaker detached from the system.</td>
<td>Check the speaker connection</td>
<td>2.4</td>
</tr>
<tr>
<td>System volume was too low.</td>
<td>System volume was too low.</td>
<td>Raise the system volume</td>
<td>4.3.2</td>
</tr>
</tbody>
</table>

### Miscellaneous Issues

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
<th>Refer to Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>System is not recording videos</td>
<td>SD card came loose or damaged.</td>
<td>Check if the MicroSD card is</td>
<td>2.1.1</td>
</tr>
<tr>
<td></td>
<td>SD card was not formatted.</td>
<td>inserted properly into the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>system, replace the card if</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>damaged</td>
<td></td>
</tr>
<tr>
<td>System is not sending alert signals to</td>
<td>Custom devices are disconnected from</td>
<td>Check cable connections</td>
<td>A.3</td>
</tr>
<tr>
<td>custom devices.</td>
<td>system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>System's Output interfaces are not</td>
<td>Check Output interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>configurations in the VIA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mobile360 WorkX app</td>
<td></td>
</tr>
</tbody>
</table>

### NFC Card Reader Issues

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
<th>Refer to Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFC card scanning has failed.</td>
<td>Cable connection is damaged or loose.</td>
<td>Replace the cable if damaged,</td>
<td>A.2.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or fully secure it if loose.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Card reader is not working.</td>
<td>Check the vehicle’s profile on</td>
<td>2.6.1 of the VIA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the VIA WorkX Connect Cloud</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>to confirm that the card reader</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>is working.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4G LTE connectivity is poor or lost.</td>
<td>• Check if the SIM card is</td>
<td>A.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>properly inserted in the system.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Move the forklift to another</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>location.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Restart the vehicle.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The NFC Card driver login method is not</td>
<td>Enable the NFC Card login</td>
<td>2.7.3 of the VIA</td>
</tr>
<tr>
<td></td>
<td>enabled for the forklift.</td>
<td>method on the VIA WorkX Connect</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cloud.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Card is not registered to the driver or the</td>
<td>Check the driver’s profile on</td>
<td>2.6.2 of the VIA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the vehicle.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If required, update the profile</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>with the NFC Card ID, or add</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>the vehicle to the authorized</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>vehicles list.</td>
<td></td>
</tr>
</tbody>
</table>
## Symptom | Possible Cause | Solution | Refer to Section
--- | --- | --- | ---
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

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
<th>Refer to Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed sensor does not report the correct speed reading on the display</td>
<td>An incorrect tire dimension value has been inputted</td>
<td>Confirm the correct tire dimension has been inputted</td>
<td>A.4.4.1</td>
</tr>
<tr>
<td>Over-speed audio alert does not play</td>
<td>Speaker is not working</td>
<td>Check &quot;Speaker Issues&quot;</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>Maximum speed limit has not been inputted</td>
<td>Input a maximum speed limit</td>
<td>A.4.4.1</td>
</tr>
<tr>
<td>Display does not switch to the rear view</td>
<td>&quot;Rear Dynamic&quot; display layout is not enabled</td>
<td>Check VIA Mobile360 WorkX app and select &quot;Rear Dynamic&quot; as the display layout</td>
<td>A.4.5</td>
</tr>
<tr>
<td></td>
<td>Reverse light sensor is not activated</td>
<td>Activate the reverse light sensor</td>
<td>A.4.4.1</td>
</tr>
<tr>
<td></td>
<td>Reverse light sensor is not detected</td>
<td>Check if the system is receiving a signal from the reverse light sensor</td>
<td>A.4.4.2</td>
</tr>
<tr>
<td></td>
<td>Check cable connections</td>
<td>A.4.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase the reverse light sensor’s sensitivity</td>
<td>A.4.4.2</td>
<td></td>
</tr>
<tr>
<td>Display switches to rear view when not in reverse</td>
<td>Reverse light sensor’s sensitivity is set too high</td>
<td>Decrease the reverse light sensor’s sensitivity</td>
<td>A.4.4.2</td>
</tr>
</tbody>
</table>
## Seatbelt Sensor Issues

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
<th>Refer to Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Seatbelt sensor is unpaired.</td>
<td>Pair seatbelt sensor with system.</td>
<td>A.5</td>
</tr>
<tr>
<td>Seatbelt sensor is not properly installed.</td>
<td></td>
<td>Ensure that the seatbelt sensor is firmly attached to the seatbelt buckle's bottom surface and pair sensor again.</td>
<td>A.5</td>
</tr>
<tr>
<td>A metallic object accidentally fell between the seatbelt sensor and the seatbelt buckle.</td>
<td></td>
<td>Remove the metallic object and ensure that the seatbelt sensor is firmly attached to the seatbelt buckle.</td>
<td>A.5.2</td>
</tr>
<tr>
<td>Seatbelt sensor is out of power.</td>
<td></td>
<td>Check the seatbelt sensor’s battery status on the CVBS Display and in the VIA Mobile360 WorkX app, and replace coin battery (type CR2032H) if required.</td>
<td>A.5</td>
</tr>
<tr>
<td>The Wi-Fi/GPS antenna is not installed properly.</td>
<td></td>
<td>Check and secure the antenna’s installation.</td>
<td>2.5</td>
</tr>
<tr>
<td>Speaker is not working properly</td>
<td></td>
<td>Check &quot;Speaker Issues&quot;</td>
<td>B</td>
</tr>
</tbody>
</table>