



Forklift Collision Avoidance System

Operating Manual

Sep 2023



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Product Safety Information

This Forklift Collision Avoidance System is designed to assist operators in the safe operation of material handling equipment. While every effort has been made to ensure the reliability and effectiveness of this system, it does not guarantee complete avoidance of accidents or collisions.

The system is intended to function as an additional safety aid and not as a replacement for vigilant operation, proper training, and adherence to all relevant safety procedures and guidelines. The operator remains responsible for the safe operation of the forklift at all times.

HarmTech Pty Ltd (HarmTech) and its affiliates, partners, and distributors shall not be held liable for any accidents, damages, injuries, or fatalities that may occur while operating the forklift, whether the safety system is engaged or not. All liability arising from the operation of the forklift rests with the operator and the employing entity.

Any modifications to, tampering with, or misuse of the safety system voids any warranties provided by HarmTech and may increase the risk of accidents. Always consult the manual and follow the manufacturer's recommendations for operation and maintenance.

By using this safety system, the operator and employing entity acknowledge and agree to these terms and assume all risks and liabilities associated with the operation of the forklift.

Introduction

Thank you for using the Forklift Collision Avoidance System from HarmTech. This manual provides guidance for forklift operators and supervisors regarding the correct use of the system as an additional safety aid.

Before using any equipment fitted with this system, ensure that you have read and fully understood the functioning and correct operation of the system as detailed in this manual.

System Operation

Distance Measurement

The system is fitted with the latest radio frequency (RF) Ultrawideband (UWB) technology which enables accurate, near real-time distance measurement between devices.

Due to the radio frequency characteristics of UWB, the product operates mostly in line of sight (LOS) mode, but also has limited ability to see around/through objects using those same RF characteristics. This limited ability is not guaranteed in all scenarios and should be tested thoroughly in specific locations to check its effectiveness.

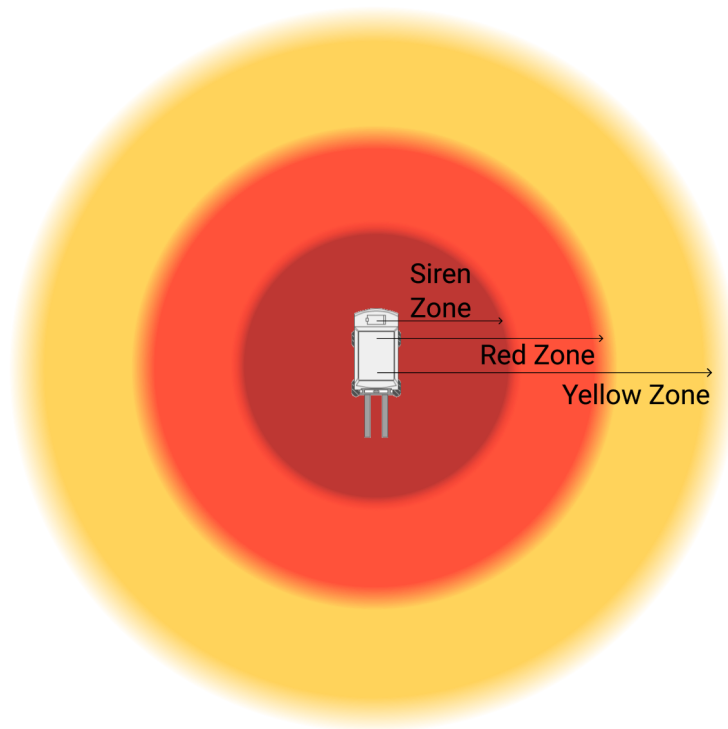
Typically, once installed, the system is measuring the distance between the devices every 0.5 seconds. These measurements are then used by the system to activate a range of operator alerts.

Anti-Collision Alerts

The system has the ability to be optionally fitted with one or more of the following alerts:

- Red strobe light
- Yellow strobe light
- Siren
- Speed limiting

Check with your installer or supervisor about which alerts are fitted to your equipment.



Siren Zone

The siren zone range is programmed by your system installer.

If a device moves from the red zone to the siren zone then the siren alert will activate immediately. However, if a device moves from the siren zone to the red zone, there will be a delay before the siren alert deactivates. This delay is typically also 2 seconds but can be modified by your installer.

The default siren zone range is 8m.

Red Zone

The red zone range is programmed by your system installer.

If a device moves from the yellow zone to the red zone then the red strobe alert will activate immediately. However, if a device moves from the red zone to the yellow zone, there will be a delay before the red strobe alert deactivates. This delay is typically also 2 seconds but can be modified by your installer.

The default red zone range is 12m.

Yellow Zone

The yellow zone range is programmed by your system installer. When another device enters the yellow zone, the yellow strobe alert will be activated.

If a device moves from the yellow zone to the red zone then the red alert will activate immediately. However, if a device moves outside the yellow, red and siren zones there will be a delay before the yellow strobe alert deactivates. This delay is typically also 2 seconds but can be modified by your installer.

The default yellow zone range is 20m.

Bubble Zone

The system includes a bubble zone which is a small zone centred around the forklift. Any devices that enters the bubble zone will be ignored by the alert system.

The bubble zone is used with operators who are wearing pedestrian safety tags. When the operator is using the equipment (i.e. they are in the bubble zone), they will be excluded from the alerts. When the operator leaves the bubble zone, they will then be able to activate the alerts.

The default bubble zone range is 2m.

Speed Limiting

Speed limiting can be configured to activate in one of the following modes:

- Disabled
- Speed limit in Red Zone
- Speed limit in Red and Yellow Zones

When activated, speed limiting will turn on the forklift's own speed limiting system, slowing it to its pre-programmed slow (or turtle) speed.

Note that not all forklifts are fitted with speed limiters. A speed limiter must be fitted and correctly programmed for this feature to work.

The Forklift Anti-Collision System does not set the slow mode speed of the forklift. This must be programmed separately by the forklift technician.

Lost Devices

When a device is currently in the red or yellow zones, but then moves into an area that is undetectable by the system (e.g. goes through a door, around a corner) it is termed Lost. Any alerts that were active due to this lost device will deactivate after a delay.

This delay is programmable by your system system installer. The default lost delay is 5 seconds.

Alert Acknowledgement

Your system may be fitted with an “Alert Acknowledgement” or “Silence Alert” button. Pressing this button will silence the alerts for any devices that are currently in the red or yellow zones.

The purpose of the acknowledgement button is:

- To prevent operators becoming desensitised to the alerts when continually operating in the vicinity of other devices.
- To enable the notification of new devices entering the alert zones by reactivating the alert (if the alert is continually active, operators are not able to distinguish when a new device enters its range).

By pressing the acknowledgement button, the operator acknowledges that they are aware of all the other forklifts around them and will take the necessary precautions to maintain safe operation.

After pressing the acknowledgement button, the alerts will activate when any of the following occurs:

- A new device enters the red or yellow zones
- A device that was acknowledged leaves the red and yellow zones then re-enters the red or yellow zones

Pre-operational Checks

Self-Test

The system will turn on and off with the forklift power. Whenever the system turns on, it will perform a startup self-test and test the following functions in sequence:

1. Activate speed limiting (remains active until end of test)
2. Activate yellow strobe alert
3. Activate red strobe alert
4. Activate siren alert
5. Deactivate speed limiting

The operator should verify each step in the sequence before operating the forklift.

Note that not all these alerts may be fitted to your forklift. Check with your installer or supervisor if unsure.

Full System Check

As part of your equipment pre-operational safety check, it is recommended to perform a full system check.

The recommended procedure for this is to drive the forklift past another system and verify that all the fitted alerts activate and deactivate as you pass through the red and yellow zones.

Note that the operator should verify the alerts on both systems (the forklift they are operating, and the other system) to ensure a fully working two-way system.

Some sites may have a dedicated test station configured for operators to drive past to test the system operation. Check with your supervisor for the correct test procedure.

Product Warranty

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law.

You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage.

You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Warranty Period:

HarmTech warrants this product against defects in materials and workmanship under normal use for a period of TWELVE (12) MONTHS from the date of purchase by the end user ("Warranty Period").

Limited Warranty:

If a hardware defect arises and a valid claim is received within the Warranty Period, HarmTech will, at its option and to the extent permitted by law, either

1. Repair the product at no charge, using new or refurbished replacement parts,
2. Exchange the product with a product that is new or refurbished to functionally equivalent to the original product, or
3. Refund the purchase price of the product.

HarmTech may request the original purchaser to return the defective product to its point of purchase or to HarmTech directly.

HarmTech will NOT be liable for any costs associated with:

- Removing the hardware from its point of installation.
- Re-installing the repaired or replaced hardware.
- Any indirect or ancillary costs related to hardware removal or re-installation.

The original purchaser will bear all such costs related to equipment removal, return, and reinstallation.

Warranty Exclusions:

This warranty does not cover problems or damage resulting from, but not limited to, any of the following:

- Wear and tear associated with normal use.

- Improper programming or installation by non-HarmTech technicians.
- Any modification, abuse, accident, disassembly, misapplication, or unauthorised repair.
- Any improper operation, including any use not in accordance with any supplied product instructions.
- Connection to any improper voltage supply or power surges.
- Inadequate maintenance.
- Any other cause which does not relate to a product defect in materials or workmanship.

Warranty Claims:

For warranty service, please contact:

1. The company that installed your product, or
2. HarmTech support at info@harmtech.co or +61 417 961 979.

Proof of purchase may be required to verify eligibility.

Limitation of Liability:

Except as provided in this warranty and to the maximum extent permitted by law, HarmTech is not responsible for direct, special, incidental, or consequential damages resulting from any breach of warranty or condition, or under any other legal theory.