|**SEEN** IRIS 860 sensor

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IRIS 860 trial guide

Trialing SEEN IRIS 860 sensors

Introduction

Thank you for your interest in Seen Safety's IRIS 860 sensors. This document will help you get the most out of your IRIS 860 trial and gain a better understanding of how IRIS 860 technology can improve the safety of your operation. **Please read this guide in full before starting your trial.**

Technology overview

- SEEN IRIS 860 sensors are mounted on mobile equipment and detect retroreflective tape on high-visability workwear and objects tagged with reflecitve tape.
- The highly targeted detection zone monitors critical risk zones (often behind the machine as it reverses).
- The sensor gives an audible alert to both the driver and the pedestrian if the pedestrian breaches the critical risk zone.
- Detection is unaffected by lighting conditions, from total darkness to bright sunlight.
- The sensor is rated IP-67 and is suitable for outdoor use.

> The sensor gives an **audible alert** to both the driver and pedestrian if the pedestrian breaches the predefined exclusion zone.

Before getting started

1. Check your reflective workwear

It is important that the workers involved in the trial are wearing a reflective vest (or equivalent) that can be detected by an IRIS 860 sensor. Please refer to the **SEEN Safety High-vis Workwear Recommendations** at the end of this guide. If you have any questions or concerns please contact SEEN customer support.

2. Inspect the trial area for sources of retroreflective material

IRIS 860 sensors work best when the main source of reflective tape is the high vis vests worn by people, or on objects specifically tagged for detection. If your site has a lot of road-cones, bollards, or reflective signs that will activate the IRIS 860 sensor and cause irrelevant alerts, think about how this might be managed. Too many non-relevant detections will result in operator annoyance and undermine the effectiveness of the system.

> If protecting people is your main concern avoid over tagging property because this will reduce the effectiveness of the alert when a person is detected. **Remember people are invaluable while property can always be replaced**.

3. Engage your workers

The best outcomes result from early engagement with your staff. **Before the trial begins, meet with the operators and workers involved and talk them through the system and explain how it works.** Explain that the sensors detect reflective tape and ask them for their feedback on what the detection zone settings should be.

When assigning the trial machines, **choose drivers who will give reliable and constructive feedback**.

4. Choose an appropriate detection zone

Setting the right detection zone is important to the success of the trial. While it is critical that the detection distance is set to alert before a person gets dangerously close to the machine, it is equally important that the detection zone is not set too large because this may result in irrelevant detections and an annoyed operator. Achieving this careful balance may require some experimentation during the trial.

There are 5 main aspects to consider when setting the detection zone:

1. Where should detection be targeted?
2. At what distance should the alarm be activated?
3. Is a Pre-alert needed?
4. What shape should the detection zone be?
5. Should detection be dependent on the machine's direction of travel?

Please refer to **SEEN IRIS 860 Detection Zone Guide** at the end of this guide for more information about each aspect.
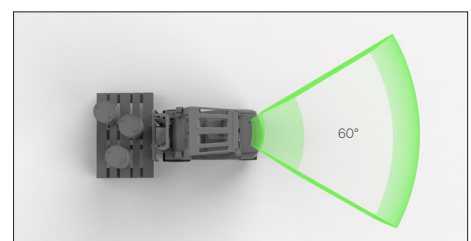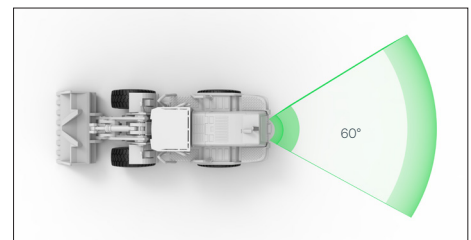
During the trial

1. Demonstration

Once the sensors are installed on the trial machine/s, but before they have been activated, demonstrate the system during a Tool Box meeting. Explain how the sensor and detection zone have been set, and what the alert sounds mean.

Let the operators know that although the number of alerts may be high at first, the idea is to encourage positive behaviour change and motivate pedestrians to stay out of the detection zone. The ultimate goal is to have as few detections as possible. Mention that the detection settings can be changed during the trial if necessary.

IMPORTANT Please ensure your operators are aware that although IRIS 860 sensors can provide collision warning assistance, they do not replace the need for best practice safe operating procedure and they remain fully responsible for the safe operation of the equipment.

2. Monitor the trial

Closely monitor the trial, especially in the first few days, and ask the drivers for their feedback. If the detection zone settings need adjustment, for example to reduce the number of non-critical detections, use SEEN's USB Config Cable and config software to make the required changes.

Plan to have a follow up meeting with the operators to seek further feedback.

2.1 Alert volume

If the sensor is mounted close to the driver's head (such as on a small forklift), the sensor's alert tone may be uncomfortably loud (94dB at 1m). Although the alarm is loud it is not harmful to hearing, even with continuous exposure.

The alert tone is deliberately loud to motivate positive behaviour change.

If someone asks if the alarm can be made quieter – tell them 'Yes the simplest way to do this is to maintain a safe distance from the machine!'

If the driver complains the alert is too loud, this could be symptomatic of:

1. Too many irrelevant detections. In this case refine the detection area and/or reduce the amount of unnecessary reflective material in the environment.
2. Too many pedestrians in the critical risk zone. This safety issue needs to be addressed.

> **If the alert volume is an issue**, the sensor can be set to 'reduced volume' in the config settings. If this reduction is not sufficient, please contact SEEN about other options.

Trial checklist

- [ ] Engage affected staff early.
- [ ] Ensure people are wearing suitable reflective high vis gear.
- [ ] Find a safe and practical balance between too many and too few detections.
- [ ] Survey the environment for sources of retroreflective material that may cause irrelevant detections.
- [ ] If detecting pedestrians is your main priority, avoid over-tagging property with reflective tape.
- [ ] Closely monitor the trial.
- [ ] Seek driver feedback early in the trial and make adjustments if needed.

Stay in touch

SEEN are here to help your trial be a success. If you encounter any problems or would like to speak to SEEN customer support, please **email support@seensafety.com** or **phone +64 (0)4 381 4475**.

IMPORTANT. SEEN IRIS 860 sensors can provide collision warning assistance to the operator but do not replace the need for proper operator training and best practice safe operating procedure. While IRIS 860 sensors can alert the machine operator to a potential collision, the operator is always fully responsible for the safe operation of the equipment. IRIS 860 sensors do not comply with the regulatory standards required for devices which are intended to directly control vehicle or machine safety functions. Using the sensor accessory port to control a vehicle or machine function is entirely your own risk. Detection can never be guaranteed.

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SEEN SAFETY
High-vis Workwear Recommendations

The Seen Safety IRIS 860 sensor uses non-visible infared laser light to detect retroreflective tape on high-vis workwear. This document outlines the reflective tape requirements for consistently reliable detection by an IRIS 860 sensor.

Requirements for Reliable Detection

1. Standard Compliant

All safety garments should be labelled with the certified standard and accompanied by the appropriate class number. SEEN recommends ANSI / ISEA 107-2020 or EN ISO 20471:2013 certified Class 2 high-vis vests or an equivalent standard.

XYZ Company
ANSI/ISEA 107-2015
100% Polyester
3M Scotchlite Reflective Material
Model #: Hi Vis Vest
Size: Large

Type R

Class 2
FR: F1506-08

Example label

USA	Europe	AU / NZ	Other
ANSI / ISEA 107-2020	EN ISO 20471:2013	AS / NZS 4602.1:2011	An equivalent standard

Meeting these standards ensures the reflective material meets a minimum performance standard.

2. Shoulder Bands

For best detection vests should have reflective shoulder bands over each shoulder and one or two horizontal bands around the torso. This configuration ensures sufficient reflective material is visible to the sensor when the person is side on or crouched down.

Vest should be zipped up.

3. 50mm / 2 inch Wide Retroreflective Tape

SEEN sensors detect retroreflective tape on high-vis workwear.
To ensure consistently reliable detection the bands of retroreflective material should be at least 50mm / 2 inches wide.

50mm / 2 inches
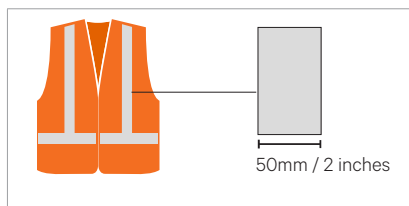
4. In Reasonable Condition

Although IRIS 860 sensors can reliably detect high-vis workwear in less-than-new condition, it is important to note that abrasion and washing will cause the reflective glass-beads to wear off over time. This will gradually reduce the reflective performance and eventually the reflective tape may become so worn that it can no longer be detected.

Replace high-vis workwear that is old, faded, or obviously worn.

<u>Warning</u>**: Garments like workshop overalls or tee-shirts that are frequently washed may no longer be detectable.**

! Whatever high-vis safety wear you use, always check it provides reliable detection in your conditions. It is your responsibility to ensure workers are suitably detectable. If you have any further queries regarding Seen Safety's high-vis workwear recommendations please contact SEEN customer support, email support@seensafety.com.

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SEEN SAFETY
Detection Zone Guide

Setting an appropriate detection zone is critical to the success of using IRIS 860 sensors. The detection area should be a careful balance between too little detection – resulting in reduced safety effect – and too much detection, resulting in many irrelevant alerts.

Five Aspects to Consider When Setting the IRIS 860 Detection Zone

1. Where should detection be targeted around the machine?

To avoid over-alerting, IRIS 860 sensors are designed to specifically target critical risk zones only. Each sensor has a 60° field of view and can be attached anywhere on the machine. Remember that the sensor requires line-of-sight to the reflective tape, so make sure it has an unobstructed view.

The most common setup is either one or two sensors mounted on the back of the machine to monitor the critical risk zone while reversing.
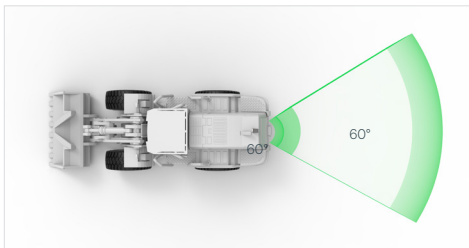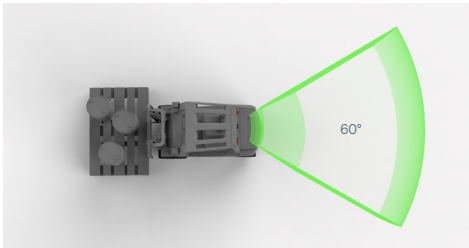
2. What distance should the critical detection range be set to?

Detection distance will depend on your unique conditions. Consider:
- The amount of separation you would like to enforce between pedestrians and your machines
- The speed of the machines and their stopping times

Making the detection zone too big will potentially result in many unnecessary alerts, but too small and the driver might not have time to react. The maximum detection range is 8 metres / 26 feet.

Remember to factor in the distance between the sensor and the extremity of the machine.

Detection range distance

Detection range distance

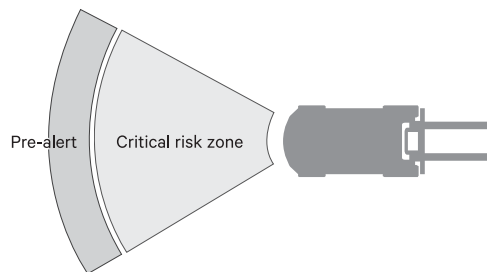www.seensafety.com | we've **Got Your Back**

3. Pre-alert zone

The detection area can be configured with two alert zones:
1. The critical risk zone (continuous audible alert)
2. The pre-alert zone (beeping audible alert)

Adding a pre-alert zone gives the driver and pedestrian time to modify their behaviour before they enter the critical zone.
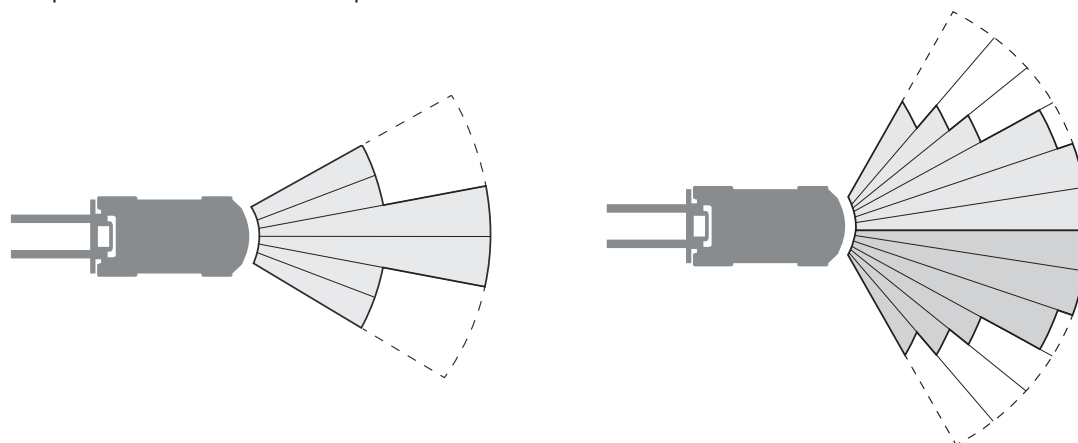
Pre-alert | Critical risk zone

4. What shape should the detection zone be?

The default 60° detection fan shape is suitable for most applications. Multiple sensors can be used together to achieve a wider field of view.
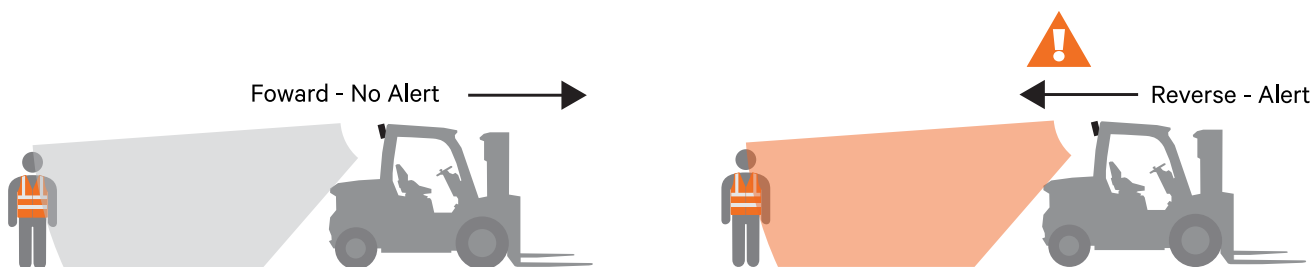
60°

60°

60°
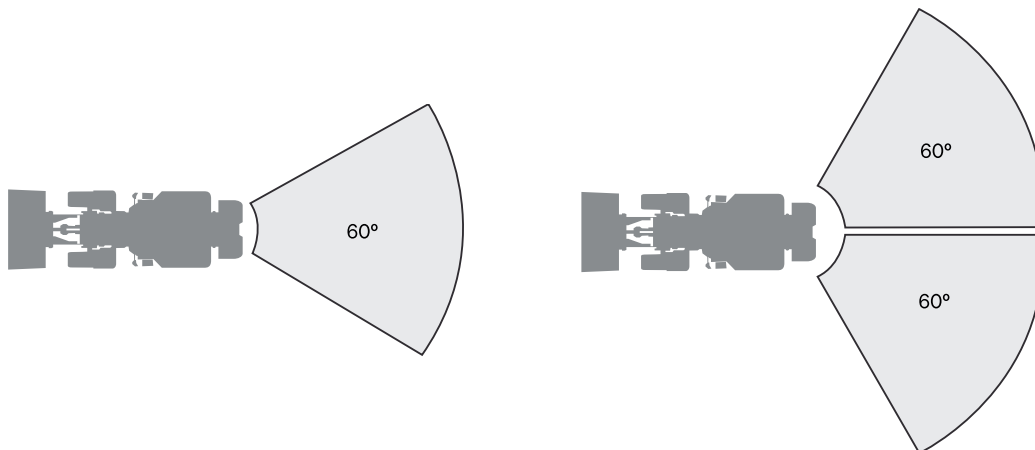
It is possible to customise the shape of the detection zone. More information about this can be found in the IRIS 860 User Guide.

5. Direction settings

IRIS 860 sensors can be set to only alert when the machine is in reverse gear. This direction dependent setting is frequently used to minimise irellevent detections.
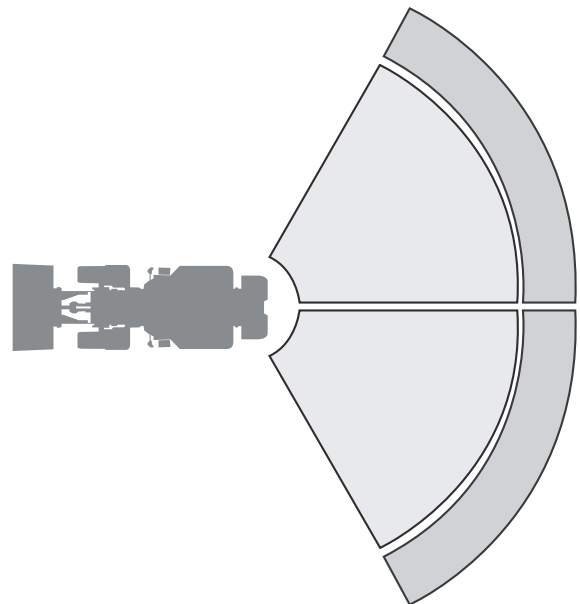
Foward - No Alert →

← Reverse - Alert
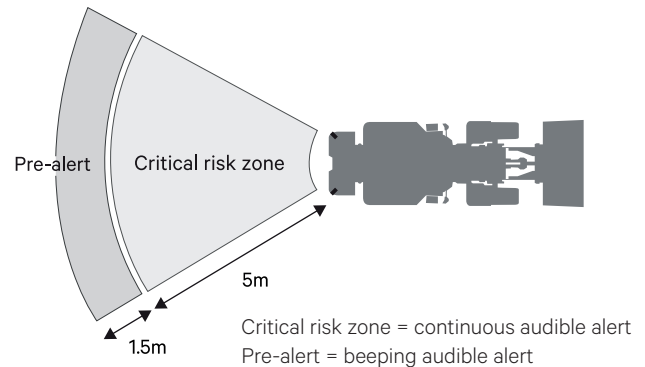
Typical Setup Examples

Forklift

- 1 or 2 sensors on the top-rear of the machine
- 3m critical risk zone
- 1m pre-alert zone
- Reverse only

Pre-alert | Critical risk zone

3m

1m

Critical risk zone = continuous audible alert
Pre-alert = beeping audible alert
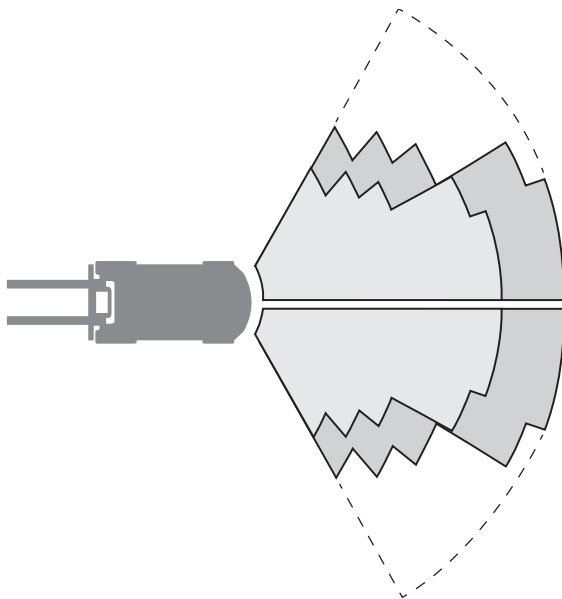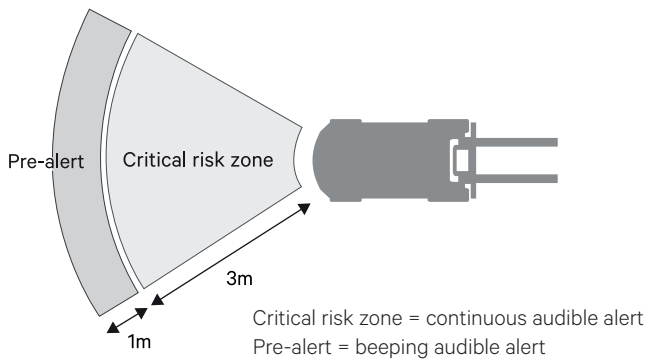
A customised detection zone can help to minimise non-critical detections.

Wheel-loader

- 1 or 2 sensors on the back of the machine mounted above the radiator
- A cab box inside the cab with cables connected back to the sensor/s
- 5m critical risk zone
- 1.5m pre-alert zone
- Reverse only

Pre-alert | Critical risk zone

5m

1.5m

Critical risk zone = continuous audible alert
Pre-alert = beeping audible alert

The detection scenarios indicated above are examples only, and may differ depending on your specific requirements. The final decision is yours and the settings can be easily changed.

For more information please contact SEEN customer support, email support@seensafety.com.

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