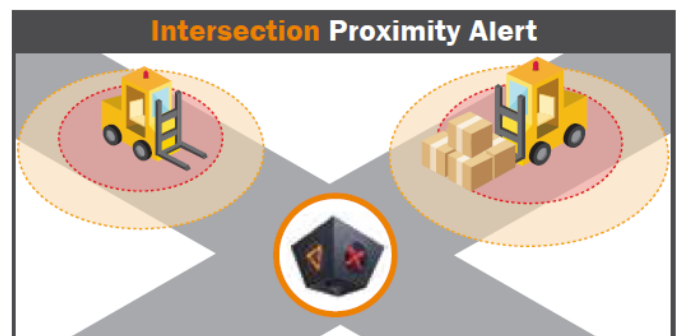
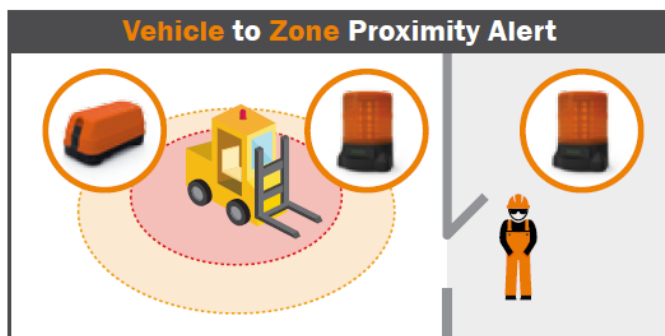


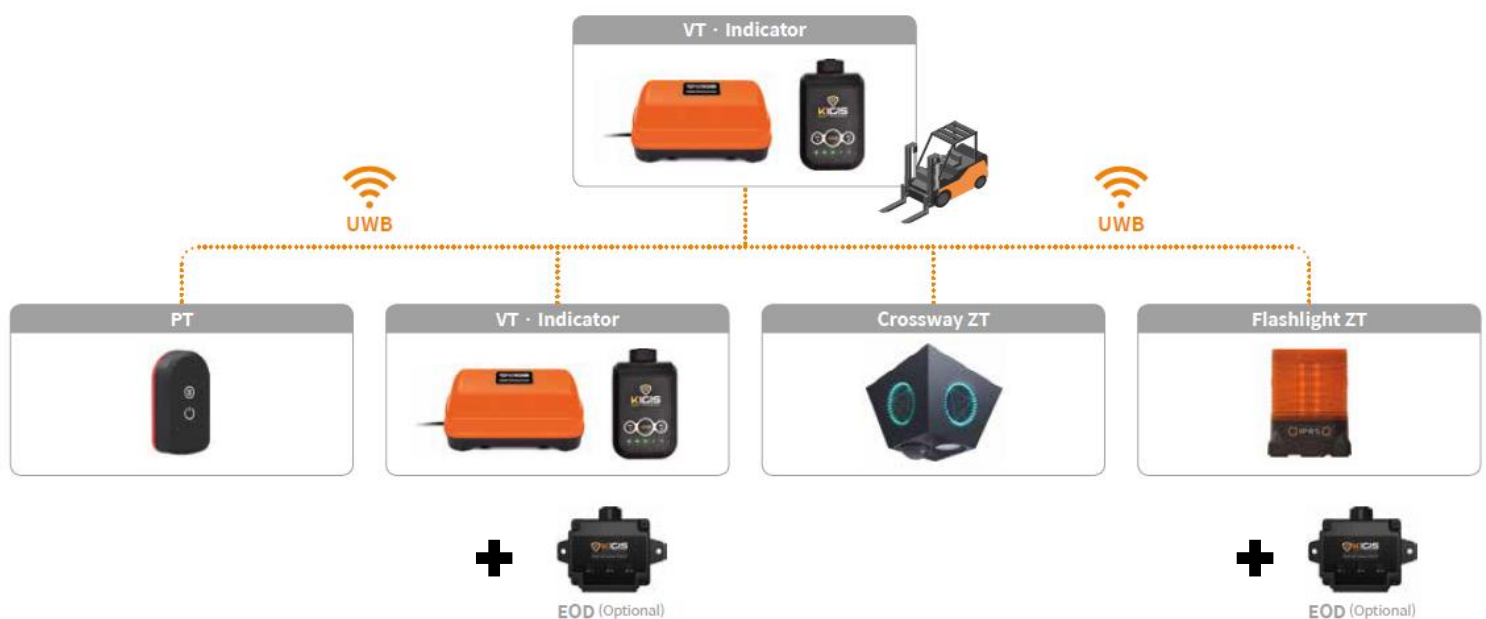
IPAS(Intelligent Proximity Alert System)

IPAS is designed to reduce the risk of collision between pedestrians and moving vehicles in your workplace. The system uses the cutting-edge RF technology to precisely measure the distance between the vehicles and pedestrians providing highly reliable collision warning.

● Functionality



● Key Map for Operating and Sensing



Datasheet

External Output Device is an intermediate device which allows additional devices to operate according to IPAS warning signal.



- Ultra Wideband based intelligent proximity alert system
- Standard deviation of distance measurement 10cm
- CAN bus interface with 12/24V external power
- Easy use without a setup
- Simple installation and detachment using magnetic pads and a lever
- Detecting functions are unaffected by wind, falling rain or snow, fog, humidity, air temperature, or light
- Tag operates in warehouse, factory, port and construction/mining site as a safety device
- IP65 enclosure withstands harsh environments

● Technical Data

General Specifications

Communication Method	Interface	Max. Detection Distance	Standard Deviation of Detecting Distance	Weight
UWB	CAN Bus 2.0	30m	2.9cm (400ms, 30m)	444g

Ultra Wideband RF Parameter

Method	Conducted Rx Sensitivity	Conducted Tx Power Density	Data Rate
UWB compliant IEEE802.15.1-2011 STD	-93dBm /500MHz (6.8Mbps, PER 1%)	Max. -41.3dBm/MHz	46.8Mbps

Electrical Characteristic

Power	Operating Voltage	Power Consumption
DC 12V / 24V	DC 9~32V	Below 4W

Operating Specifications

Operating Temperature	Storage Temperature	Ingress Protection Rating	Connector
-30~85°C	-40~85°C	IP65	I.P Connector PLUG 6P (M10xP0.5)

● Overview

IPAS Vehicle Tag is a safety-assisting device which prevents collisions between pedestrians and vehicles by signaling dangers in 2 way communication to both drivers and pedestrians in industrial working site. Signal processing tag determines the distance from the vehicle tag to the object based on the time delay of the return signal. The tag can be configured to a caution and a warning zone.

When a pedestrian enters into the caution and danger area of the vehicle tag, the sound alarm comes out from the indicator connected with the vehicle tag.

The two zones are factory pre-set to default distances; they can be reconfigured for different distances using buttons on IPAS Indicator installed with the vehicle tag. The tag and the indicator can be connected using IPAS Cable Harness.

The sensitivity was pre-calibrated at the factory, assuming that the detecting field will be clear of obstacles. The sensitivity cannot be adjusted by user's handling.

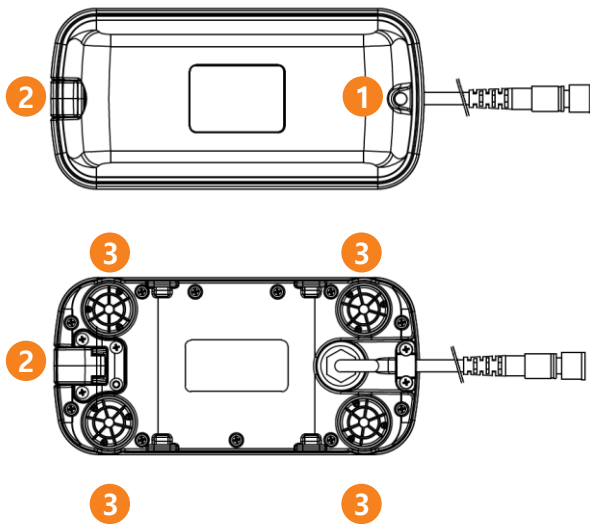


Figure 1. IPAS Vehicle Tag Features

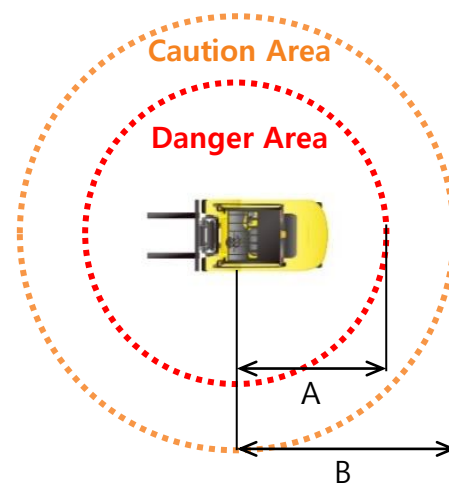


Figure 2. IPAS Vehicle Tag Detecting Distances

- ① LED Lamp : Power ON → Green ON,
Warning → Green & Red ON
- ② Detachment Lever
- ③ Magnetic Pad

	Minimum Distance	Maximum Distance
A	1m	30m
B	1m	30m

※ A must be set-up lower than B ($A < B$)

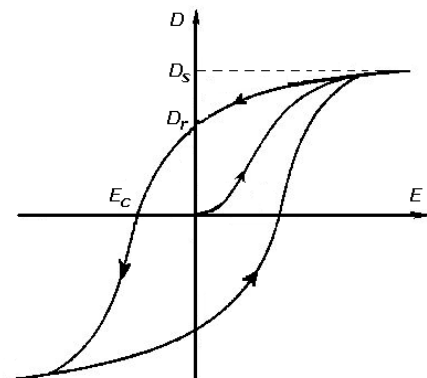


Figure 3. Hysteresis

Hysteresis, applies to IPAS, is a dynamic lag between an input and an output that disappears if the input is varied more slowly; this is known as rate-dependent hysteresis. However, phenomena such as the magnetic hysteresis loops are mainly rate-independent, which makes a durable memory possible.

Systems with hysteresis are nonlinear, and can be mathematically challenging to model. Some models such as the Preisach model (originally applied to ferromagnetism) and the Bouc-Wen model attempt to capture general features of hysteresis; and there are also phenomenological models for particular phenomena such as the Jiles-Atherton model for ferromagnetism.