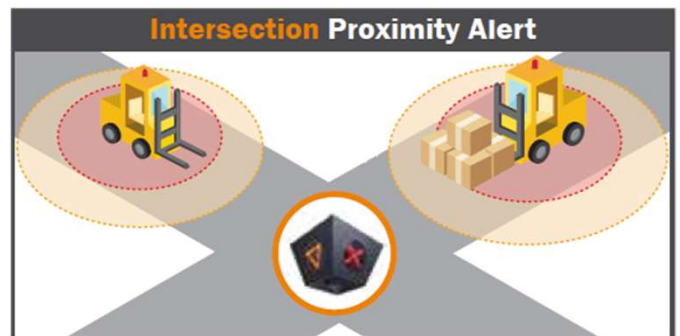## IPAS(Intelligent Proximity Alert System)

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**

Vehicle to Pedestrian Proximity Alert

Vehicle to Vehicle Proximity Alert

Vehicle to Zone Proximity Alert

Intersection Proximity Alert

● **Key Map for Operating and Sensing**

VT + Indicator or VT Flash Type

P.T

VT + Indicator or VT Flash Type

ZT Crossway

ZT Flash Type

IPAS Vehicle Tag small

Datasheet

Ultra wideband technology based vehicle tag for detecting moving pedestrians and vehicles.

- 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. Detectable Distance	Standard Deviation of Detecting Distance	Weight
UWB	CAN Bus 2.0	30m	2.9cm (400ms, 30m)	442g

Ultra Wideband RF Parameter

Method	Frequency	Bandwidth	Conducted Rx Sensitivity	Conducted Tx Power Density	Data Rate
UWB compliant IEEE802.15.4-2011 STD	3993.6MHz	499.2MHz	-93dBm /500MHz (6.8Mbps, PER 1%)	Max -41.3dBm/MHz	6.8Mbps

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℃	-40~85℃	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.
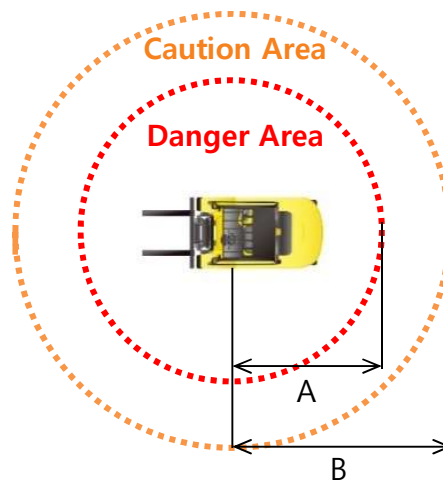
Figure 2. IPAS Vehicle Tag Detecting Distances

	Minimum Distance	Maximum Distance
A	1m	10m
B	1m	10m

※ A must be set-up lower than B (A < B)
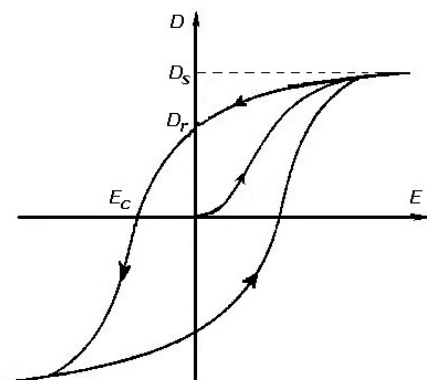
Hysteresis, applies to IPAS, is a dynamic lag between an input and an output that disappears if the input is varied more slowly; this is known as rate-dependent hysteresis. However, phenomena such as the magnetic hysteresis loops are mainly rate-independent, which makes a durable memory possible.

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.

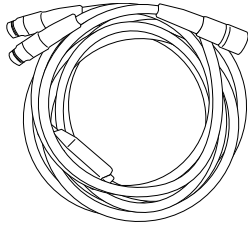Figure 3. Hysteresis
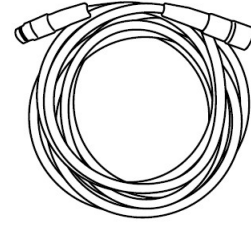
● Specifications

Dimension
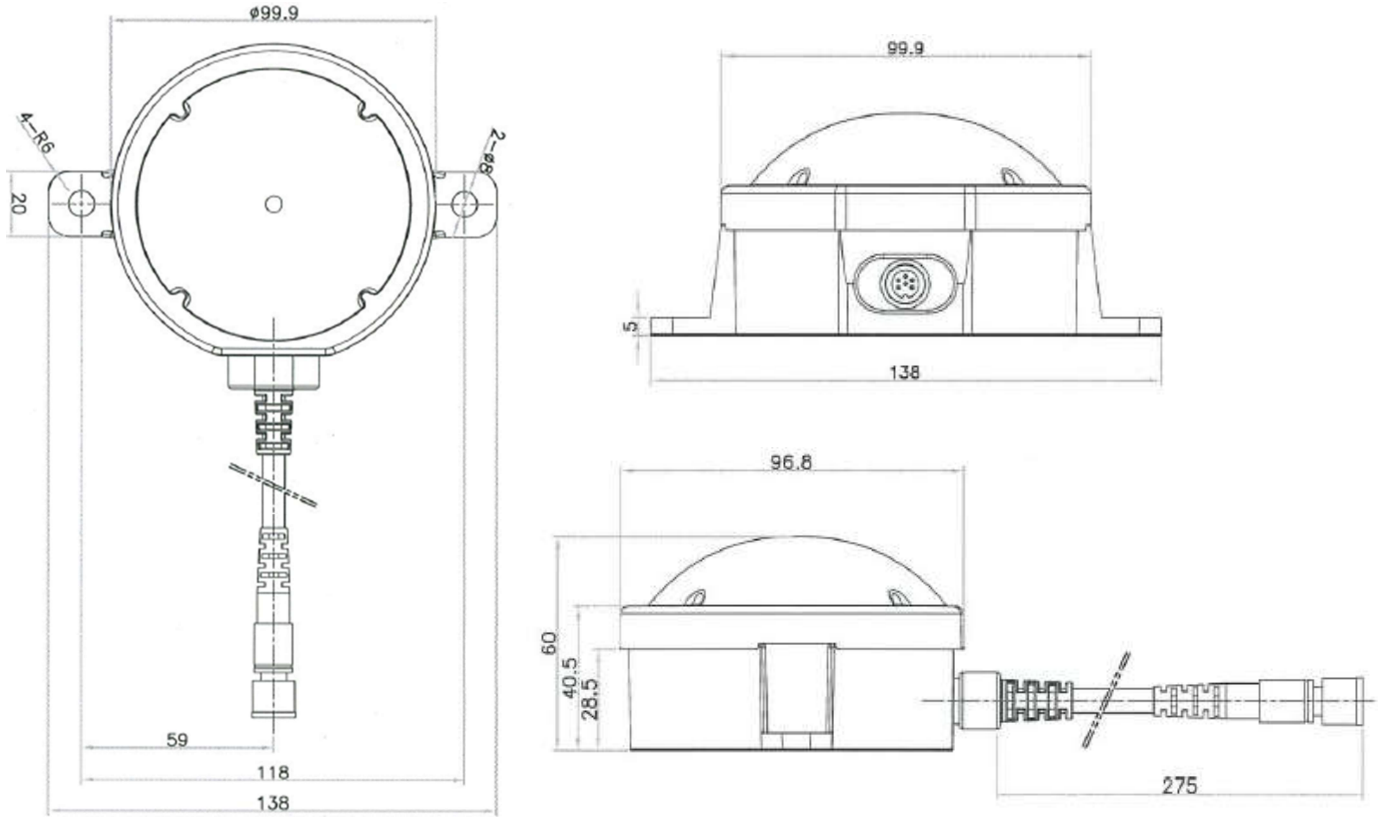
Connector Specifications
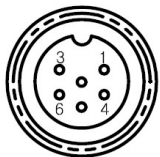
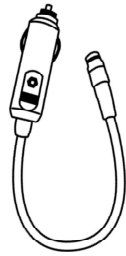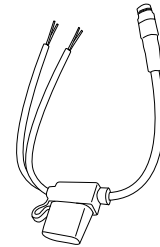| Pin No.	Function	Wire Description	
		Size	**Color**
P01	+12V		Red
P02	CAN_L		Yellow
P03	CAN_H	AWG #26	Blue
P04	RS232_TX		White
P05	RS232_RX		Green
P06	GND		Black

● **Accessory**

Products

IPAS Cable Harness(6M)

IPAS Extension Cable(6M)

IPAS Cable / Cigar Jack Adapter
(250V 5A Fuse Included)

IPAS Cable / Open Wire Adapter
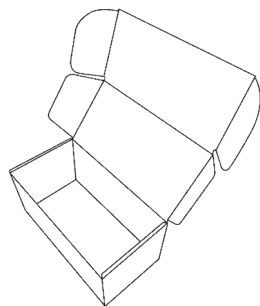(250V 5A Fuse Included)
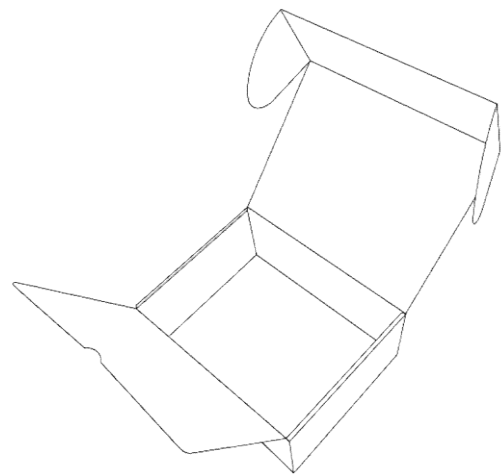
Packing

Figure 7. 1. Inner Box

Figure 7. 2. Gift Box

● Certifications

CE KC FC

CE: ETSI EN 302 065-1 V2.1.1 (2016-11)
KC: MSIP-CRM-KWO-PAS-K01-10

HS Code : 8531-10.9000
Country of Origin : Republic of Korea

Model No : PAS-K01-12
FCC ID : ZE8-PAS-K01-12
Manufacturer : KYUNGWOO SYSTECH, Inc. / KOREA

FCC notice to users

The following statement applies to all products that bear the FCC logo on the product label.
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. See 47 CFR Sec. 15.105(b). These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. See 47 CFR Sec. 15.19(a)(3).

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CAUTION : Make No Modification to this Product

Any modifications to this product not expressly approved by Kyungwoo Systech could void the user's authority to operate the product. Contact Kyungwoo Systech for more information.

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Kyungwoo Systech, Inc. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Kyungwoo Systech, Inc. will repair or replace, free of charge, any replace, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of KIGIS product.

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