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Forklift Alarming System V9.1

Part 1 : Installation Instruction

Part 2 : Manual

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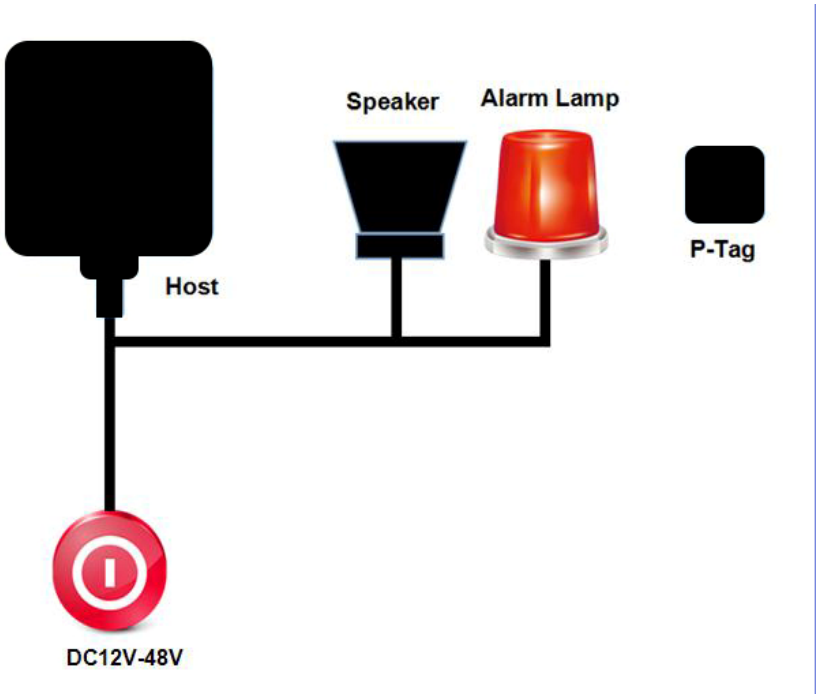
Part I. Installation Instructions

1. Wiring Diagram



2. Components List

1) Host: 1 set
2) Host Installation Components: metal plates (2 pcs); M6X106 Screws (4 pcs); M6X70 Screws (4 pcs)
3) P-Tag: 4 sets
4) Circular Velcro sticker used for sticking P-Tag on helmet: 8 sets
5) Components for P-Tag installation on vest: plates (4 pcs); Screws and nuts (4 sets)
6) Velcro Band used to tie the P-Tags on arms or wrist (4 pcs)
7) P-Tag AC/DC Adapter: 4 sets
8) P-Tag AC/DC Adapter cables: 4 sets
9) Host power cable switch Velcro: 2 pcs
10) Alarm flash light and audio speaker: 1 set
11) Alarm installation components: metal plates (2 pcs); Screws (2 sets); Screw Key (1 pcs)
12) This manual

3. Main Components

Host

Power Cable

P-Tag

Alarm Flash Light & Audio Speaker

P-Tag AC/DC Adapter

Power Cable Switch

Installation Notes:

* Please note that ONLY a qualified technician may install this Alarming System.
* All installation and operating instructions should be followed per the manual.
* During installation, please do not damage the system by using electric drill, electric saw and other tools.
* This product must be used in accordance with all applicable laws and regulations.

4. Installation Instructions

4.1 Host

1) The host has been screwed on the metal base at the factory. We suggest installing the host horizontally on the outside top of the forklift frame using the screws and plates provided. The host should not be blocked by any metal objects, or it will affect the detected distance.
2) Connect the Power Cable's aviation plug to the host socket.
3) Tie the Power Cable on the vertical beam of the forklift using Velcro attached.
4) Slide the Power Cable Switch to "O", then following signs on Power Cable to connect it to 12V-48V DC power supply of Forklift.
5) After installing the Alarm Flash Light and Audio Speaker, turn on P-Tags, slide the Power Cable Switch to "I" to turn on the alarming system.

4.2 Pedestrian Tag (P-tag)

4.2.1 Installation on safety helmet: Stick the P-Tag on the helmet by using Velcro P-Tag, with USB interface faces down. We suggest putting the P-Tag on the left/right-hand side; this may increase visibility for the host in most cases.

4.2.2. Installation on Vest:
Step 1: Put P-Tag on the surface of the Vest (left/right-hand side), see picture1
Step 2: Put P-Tag Base Plate beneath the Vest; align it with the P-Tag, see Picture 2

Step 3: Tighten two screws through the Vest and nuts, see picture 3

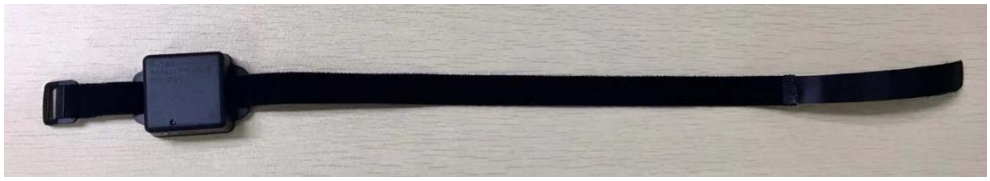
P-Tag Base Plate

Picture 1

Picture2

Picture 3

4.2.3. Installation on arm or wrist: Bind the Velcro band through the two holes on the P-Tag and, hoop the Velcro Band on arm or wrist, and then tie the Velcro Band using the buckle.



move the P-tag close to the buckle end of the Velcro band

on the arm

on the wrist

4.3 Alarm Flash Light and Audio Speaker

4.3.1 Installation: The Alarm Flash Light and Audio Speaker have been mounted on a metal box at the factory. We suggest installing the box on the top of a forklift using attached screws and plates (there are two plate and screw options for different forklifts), to make the driver and pedestrians see and hear it easily.

Alarm Flash Light and Audio Speaker

Plate Option I

Plate Option II

4.3.2. Cable Connections: per the labels on the cords, connect the cable plugs to the alarm light and audio speaker sockets.

4.4 Installation Illustration:

Part II. Operating Manual

This Forklift Alarming system V9.1 is designed to use audible and visual alarm to improve the workplace safety by lowering the risk of collision between personnel and forklifts. It is intended to be an aid to the driver and is not intended in any way to replace existing safety processes or remove and/or minimize the driver's diligence and duty for safety.

The operators need to read the manual carefully before using.

Default Set of Alarming Distance in factory is 30 feet. The user may adjust the alarming distance by turning the knob on the Host. The alarming distance is designed from 10' to 70' in increments of 10'.

Due to different forklift speeds and working environments, alarm distance deviation may occur. In an open field without interference, at a relative speed of 6 miles/hr between forklift and P-Tag wearer, alarm distance deviation is about ± 12 feet.

Cautions of using Forklift Alarming System V9.1

***Forklift Alarming System V9.1 is intended to be an aid to the driver and is not intended in any way to replace existing safety processes or remove and/or minimize the driver's diligence and duty for safety.**

Forklift Alarming System V9.1 will receive and transmit radio signal while the power is on. It may experience interference when the system is near an airport, an aircraft or other inadequately shielded electronic devices. Please power off the system when it is near the above mentioned places.

***Due to the wireless signal's limitation, transmission and reception of data may not be guaranteed. Data may be missed or totally lost at certain times due to the environment, other machine, or malfunction of electronic components.**

Do not operate this system in areas where blasting is in progress, where explosive atmospheres may be present or when it is close to any medical equipment, life supporting equipment, or any equipment which may be susceptible to any form of radio interference. The Forklift Alarming System V9.1 must be powered OFF in the above environment.

Do NOT dispose of Pedestrian Tag units (P-TAG) in a fire, furnace or other extreme heat sources. These units contain Lithium batteries that may explode under extreme temperatures.

Please ensure adequate ventilation, keep at least 8” black space around the device, and do not place any items on the device.

Do not put the system close to a fire, furnace or other extreme heat source. Its working environment should be free from any liquid getting into the system. Please connect power cable with caution and avoid possible damages.

Please turn off power and seek assistance if any of the following conditions occur:

① Power cable is broken or damaged
② Liquid splashed into the system
③ The system falls off or the outside case is broken.
④ The system doesn’t work properly
⑤ Maintenance or repair is needed

Any information in our documents is subject to change without prior notice. We and/or our affiliates will not be liable for any damage (whether physical, economic or non-economic) arising out of the use or the inability to use our product(s), even if we and/or our affiliates have been notified of the possibility of such damage or such damage is foreseeable or for claims by a third party.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

1. Technical Data

Host	
Rated Voltage	12V – 48V DC
Dimension / Weight	120 x 120 x 61(mm) / 0.60 lb
Working Temperature	14° to 122° Fahrenheit (if below -8° Fahrenheit, must order special battery)
Frequency & Range	UWB (Ultra-Wide Band) 3.5G-6.5Ghz; No License Fees Required
	Range: 10-70 feet
Tags Limit	Maximum P-Tags Detecting: 30
Antenna	Built-in
Shell Enclosure	ABS, with metal plate
Gross Weight	~ 1.61 lb

P-Tag	
Power Supply	Embedded 500mAh Lithium battery
Dimension	40×40×15(mm)
Working Temperature	14° to 122° Fahrenheit (if below -8° Fahrenheit, must order special battery)
Frequency & Range	UWB (Ultra-Wide Band) 3.5G-6.5Ghz; No License Fees Required
	Range: 10-70 feet
Antenna	Built-in
Enclosure	ABS
Gross Weight	~ 0.92 oz

Accessories		
Host Power Cable	Length (m)	9.84 ft
P-Tag AC/DC Adapter	Input	100–245V~50/60Hz
	Output Voltage	5V/1A
	Environmental	Indoor use only
Alarm Flash Light	Dimension	73×73X46(mm)
	Voltage	12V DC
	Environmental	Rain proof
Audio Speaker	Dimension	102×102×124(mm)
	Voltage	12V DC
	Environmental	Rain proof

2. Host:

2.1 Working Temperature: 14° to 122° Fahrenheit. The host may not work beyond this temperature range.

2.2 Default Set of Alarming Distance in factory: 30 feet. The user may adjust the alarming distance by turning the knob on the Host. The alarming distance is designed from 10’ to 70’ in increments of 10’. After adjusting the Distance Knob, please wait for 30 seconds, so that the host finishes setting.

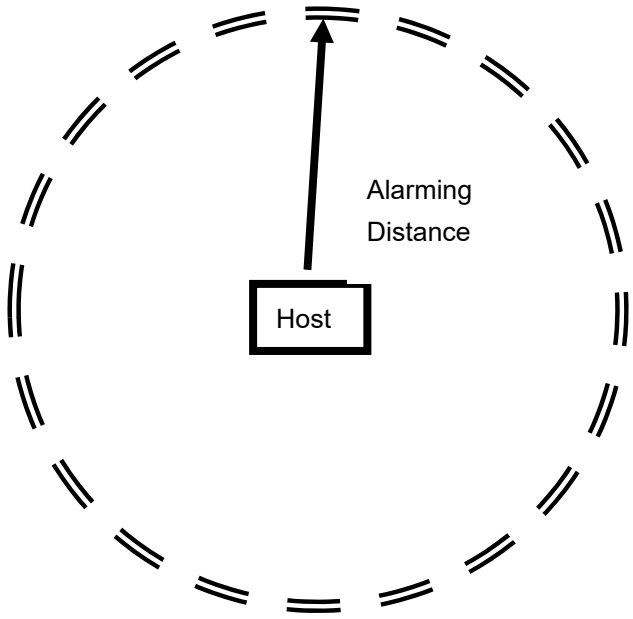


Diagram 1

2.3 Alarming: when a P-Tag is entering into the alarming distance, the flashing light and the audio speaker will go off and last for about 6 seconds and then pause. If the P-Tag stays within the range, the alarm will go off each 30 seconds (the burst alarm lasts 2~4 seconds). When a new P-Tag is entering into the alarming distance, the burst alarm will also go off and last 2~4 seconds and the alarm will go off each 30 seconds against each new P-Tag. If more than one P-Tag stays within the alarming distance, the burst alarm will continue to activate every 30 seconds.

2.4 Switching on the power cable: If the user needs to turn the alarming system on/off during forklift operation, the operator should slide the switch to “I” or “O”.

3. P-Tag

3.1 Working Temperature: 14° to 122° Fahrenheit. The P-Tag may not work beyond this temperature range.

3.2 On/Off Switch: user may turn on/off the P-Tag by sliding this switch. We suggest user turn off the P-Tag after work; and turn it on before work and make sure the P-Tag is working by verifying the P-Tag status light flashes every 3 seconds.

3.3 P-Tag status: the LED light will flash each 3 seconds if the P-Tag is working

3.4 P-tag indicator light status:

- Green = battery fully charged
- Yellow = battery not fully charged
- Red = battery needs charging
- Blue = P-tag activated by host

3.5 Battery Charging: Using the included **P-Tag AC/DC Adapter**. It takes around six hours for full charging. The LED light will flash during charging, and the LED light will be off when it is fully charged. You may charge the P-Tag with the P-Tag switch in on/off position.

3.6 P-Tag Alarming: When a P-Tag is entering into host alarming distance, the P-Tag will go off by vibration. The alarming will last 6 seconds. If the P-Tag stays within range, the P-Tag alarming will go off each 30 seconds (the burst alarm lasts 2~4 seconds) until the P-Tag moves out of set range. P-Tag vibration can consume a lot of battery. You may need to charge the P-Tag more often depending on use.

3.7 Dormant Status: If a P-tag wearer doesn't move for over 60 seconds and is outside the detected range, this P-Tag will enter into dormant status and the alarm between the Host and this P-Tag will pause. This P-Tag will be activated when movement is detected. P-Tag will not enter the dormant status when it is within the detected range.

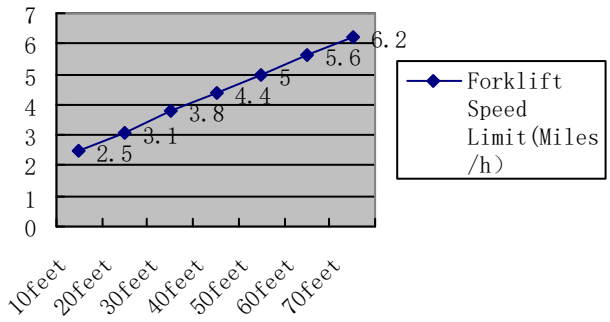
4. Alarm Audio Speaker

The user may adjust the volume by turning the knob on the back of the horn. The volume will increase/decrease when you turn right/turn left.

5. Alarming distance at various forklift speeds

We suggest forklifts run within the following speed limit at the different Alarming Distances shown in the table below. This will assist the driver to have a reasonable time to react to the alarming, stop, and identify where a pedestrian is located.

Alarming distance at various forklift speeds							
Alarming Distance (feet)	10	20	30	40	50	60	70
Forklift Speed Limit (miles/hour）	≤2.50	≤3.10	≤3.80	≤4.40	≤5.00	≤5.60	≤6.20



6. Troubleshooting

Notes: This reference is only for professional technicians

Unusual Cases	Possible Reasons	Solution Steps
After installation, the P-Tag is within detected range, but alarm doesn't work.	1. Lamp/speak cable not connected well	1. Tighten all the cables
	2. Power cable not connected well	2. Re-connect the power cable and make sure it works well
	3. Cable failure	3. Try another cable
	4. Host failure	4. Try another host
	5. P-tag low battery	5. Recharge the P-tag
	6. P-tag failure	6. Try another P-tag
	7. Host crash	7. Turn off the Host power cable switch for 20 seconds before restarting the power
	8. P-tag cannot enter into dormant status	8. Turn off the P-tag, wait for 3 seconds and then turn it on again.
After installation, the alarm Flashing light (or speaker) works but audio speaker (or Flashing light) doesn't work	1. Speaker (or Flashing light) cable not connect well	1. Connect speaker (or Flash light) cable
	2. Cable failure	2. Try another cable
	3. Speaker (or Flashing light) failure	3. Try another speaker (or Flashing light)
	4. Host failure	4. Try another host