



PROXIPI user manual

PROXIPI Equipment

Technique

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The information in this manual is, to our knowledge, accurate.

As a result of continual improvements through research and development, this manual may be modified without notice and without *PROXIPI* S.A.S. being obliged to update this version of the manual.

PROXIPI S.A.S. has produced this manual with the single aim of providing the user with simple and accurate information. *PROXIPI* S.A.S. cannot be held accountable for any incorrect interpretation made while reading this manual. In spite of our efforts to produce a manual which is error-free, it may nevertheless contain a few unintentional technical inaccuracies. If in doubt, please contact *PROXIPI* S.A.S. for additional information.

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Table of contents

TABLE OF CONTENTS	3
WARNINGS	4
Aim of the manual	4
Warranty, limits of liability	4
Recommendations	5
General safety	5
Usage limits.....	7
Destruction of the equipment.....	7
Improvements and modifications.....	7
Reception-Storage	7
Spare parts.....	7
Rating plate	7
Declarations of conformity	8
DESCRIPTION OF THE PROXIPI SYSTEM	9
Aim of the Proxipi® system	9
Components	9
Features	10
Usage principle.....	10
PROXIPI in action	11
The advantages of PROXIPI®.....	11
PROXIPI EQUIPMENT	12
Standard truck equipment	12
Pedestrian Badge.....	13
The Fixed Zone Badge	16
Machine Badge	16
TECHNICAL SPECIFICATIONS	18
Standard truck equipment	18
Pedestrian Badge.....	19
The Fixed Zone Badge	20
Machine Badge	21

Warnings

AIM OF THE MANUAL

This manual is aimed at any person wishing to use the *Machine-pedestrian collision prevention system* referred to as *PROXIPI* in this document.

This manual provides information on:

- The safety rules associated with PROXIPI.
- The use of PROXIPI.
- The technical specifications of PROXIPI.

Recommendations relating to the declaration of conformity of the European Community, to the warranty and application of the system are also included in this manual.

PROXIPI S.A.S. has produced this manual with the aim of providing simple information as accurately as possible. As such *PROXIPI S.A.S.* cannot assume any responsibility for any incorrect interpretation.

The owner of the manual is responsible for keeping this manual throughout the life of the *PROXIPI* system and must pass it on any purchaser to whom it is sold.

Any information or change relating to this manual must be sent to the local representative of *PROXIPI S.A.S.*

WARRANTY, LIMITS OF LIABILITY

Warranty

The *PROXIPI* system must be used in accordance with its approved purpose and under normal conditions; PROXIPI SAS accepts no responsibility for any usage not compliant with its approved purpose and for the consequences of this incorrect usage.

Delivery of goods is at the responsibility of the seller when this is carried out by a transport company duly authorized by *PROXIPI S.A.S.* Otherwise, it is at the buyer's responsibility.

The seller guarantees the supply against any defect in design, material, manufacture or construction affecting the *PROXIPI* system.

To enact the warranty, contact the seller to show them the proof of purchase sent. In the event of a failure, the seller will advise you.

New equipment (excluding consumables), including new accessories sold in the box with the equipment, are guaranteed by PROXIPI SAS, parts and labour (excluding travel), against any manufacturing fault for a period of twelve (12) months from the date the equipment was sold to the customer after presentation of proof showing the purchase date of the equipment.

Equipment subject to repair or standard replacement during the warranty period mentioned above are guaranteed (parts and labour) until the latest of these two dates: expiry of the twelve (12) month warranty period mentioned above or three (3) months from the date work was carried out by PROXIPI SAS.

Any defective equipment under warranty will be replaced or repaired free of charge at the discretion of PROXIPI SAS,

excluding the repair of any other loss, it being specified however that the works required to implement the warranty shall take place in the workshop; return expenses (transport and insurance) of the equipment to the address which will be given to them by PROXIPI SAS after-sales service whose telephone number is shown on the delivery note to be borne by the customer. Subject to mandatory legal provisions, PROXIPI SAS takes on no warranty, explicit or implicit, other than that expressly provided for in the present text and, in no case whatsoever shall PROXIPI SAS meet any intangible and/or indirect damages (such as, in particular, loss of orders, loss of profits) or any other financial or commercial loss whether under the warranty or otherwise.

Accepting an item of equipment under the warranty requires on the one hand a legible and unmodified proof of purchase showing the name and address of the seller, the date and location of the purchase and the type of equipment and serial number being affixed to the equipment and on the other hand that the information appearing on the identification label of the equipment is legible and that this label or any other seal has not been altered.

The warranty applies under normal conditions of use.

PROXIPI S.A.S. may, at its discretion, repair the equipment using new or reconditioned parts or replace the equipment with new. The system will, in any event, be returned in good working order. During this work, PROXIPI SAS reserves the right to apply, if need be, any technical modifications to the equipment they think fit insofar as these changes do not prejudice its original purpose.

The defective items, subject to replacement during a repair operation under warranty become the property of PROXIPI SAS.

The period for which the equipment is under repair and immobilised during the warranty period cannot result in an extension of the warranty period unless mandatory legal provisions to the contrary apply.

The application of the warranty is dependant on all sums due on the equipment at the time work is requested being paid in full.

Excluded in particular are defects, failures or malfunctions due in particular, but not limited to, non-compliance with installation and usage recommendations, to a cause external to the equipment (shock, lightning, fire, vandalism, malevolence, water damage of any kind, contacts with various liquids or any harmful agent, unsuitable electric voltage, etc.), to modifications to the equipment carried out without the written consent of PROXIPI SAS, to a defect further to damage (negligence, breakage, sabotage), to poor environmental conditions around the equipment (particularly those related to temperature and hygrometric conditions, effects of variations in electric voltages, noise spikes from the power network or from earth) or to a repair or work (opening or attempt to open the equipment) or maintenance carried out by individuals not approved by PROXIPI SAS, damage following failures in packaging and/or unsatisfactory packaging of equipment returned to PROXIPI SAS, normal wear of the equipment along with wear of the accessories, problems of communication associated with an unfavourable environment, a transmission fault as well as the provision of new software versions. PROXIPI SAS cannot be held accountable for system malfunctions

associated with electromagnetic interference on the operating site

This warranty is applied in accordance with the seller's general terms and condition of sale.

Limits of liability

As required by the applicable laws, it is expressly agreed that the warranty stipulated for this equipment is the only express, implied or legal warranty that the seller grants on the equipment sold and, unless provided for otherwise in writing, the buyer shall desist from any action that the buyer (or their employees, affiliated companies, successors or dealers) could take against the seller, their employees, affiliated companies, successors or dealers arising from the equipment sold; these include, but are not limited to, actions with regard to personal accidents, damages to assets other than those covered by the contract, losses or indirect or intangible damages in particular loss of use or profit etc. Likewise, and still as required by the applicable laws, the buyer undertakes to indemnify the seller their employees, affiliated companies, successors or dealers against any claim, complaint, request, legal decision, litigation and responsibilities of all kinds as well as all costs or expenses, sustained or declared against the seller regarding the equipment sold.

RECOMMENDATIONS

This manual contains information and warnings which the user must heed in order to ensure their safety and to keep the product operating safely. The recommendations are described in the following sections.

GENERAL SAFETY

Symbols used



Meaning:

The reader's attention is drawn to this information regarding the use of the product. There is no risk to the user if this point is not heeded; it generally provides additional information.



Meaning:

Danger in general: beware of various possible risks. This symbol appears in various sections of this manual.

This device meets the requirements of the standards mentioned in section EC declaration of conformity on page 8. Manufactured and tested in compliance with EC and FCC standards relating to electrical equipment, the modules installed on the machines jointly with the machine manufacturers and modules designed for pedestrians, once installed, are perfectly safe from a technical point of view. To maintain these conditions and guarantee safe use, the user must comply with the indications and symbols contained in this manual.

When it is no longer safe to use them, the modules installed on the machines and pedestrian modules must be taken out of service and steps taken to ensure they are not used accidentally. Safe use is no longer guaranteed in the following cases:

- The assembly (magnetic frame, operator dashboard, electronic unit) installed on a machine is visibly

damaged. This machine may no longer be used in a zone protected by pedestrian modules.

- The module designed for use by pedestrians is visibly damaged. This module may no longer be used by a pedestrian and must be returned to the local retailer or to PROXIPI SAS for repair.
- After prolonged storage under unfavourable conditions.
- After serious damage sustained during transportation or after damage has occurred on the modules installed on machines and/or those intended for use by pedestrians.

General safety guidelines

General safety with regard to vulnerable adults, children and electricity

The badge must never be left within reach of persons with intellectual disabilities and/or young children; certain removable parts may be accidentally ingested.

General safety with regard to electricity

Once connected, the power supply to *PROXIPI* equipment installed on a machine must never be modified. Access to this equipment is reserved to qualified personnel only, particularly with regard to maintenance. In addition, all possible precautions must be taken to avoid any incident associated with electrical hazards.

The modules designed for use by pedestrians must only be connected to the chargers specified in the manufacturer's catalogue. The use of any other charger may be dangerous and would invalidate the warranty. The mains voltage must comply with that shown on the rating plate of the charger.

Call an agent who has been duly authorised/approved by *PROXIPI SAS* for any problems commissioning the system (magnetic frame, operator's dashboard, etc.) installed on a machine. Do not try to dismantle the *PROXIPI* badge. You alone are responsible for the use of the badge and the consequences arising from this. The badge must under no circumstances be charged in an area which is damp or potentially damp. The badge must not be used in damp areas and must be protected against spray from water or other liquids. If sprayed by water, contact the local agent for advice and/or repair.

Safety with regard to radio waves

To comply with ISED SPR-002 – Supplementary Procedure for Assessing Compliance with RSS-102 Nerve Stimulation Exposure Limits) – for general population / uncontrolled exposure, the frame antenna of the Kit FLEX Magnetic Frame must be installed to provide a separation distance of at least 20 cm from all persons during normal operation.

The badges comply with international requirements regarding exposure to radio waves.

Each badge is a transmitter/receiver designed to comply with the radio wave exposure limits agreed internationally. These limits have been determined by the independent scientific organisation ICNIRP and include a safety margin intended to provide protection for all, whatever their age or state of health.

As *PROXIPI* badges offer a whole range of functions, they may be used in other positions, i.e. worn on the body as described in this manual.

The maximum transmission power of a *PROXIPI* device is less than 2A/m at 50 cm at LF and less than 10mW at UHF; the transmission power of the badge when used is typically

lower. This is due to the automatic changes of power undertaken by the badge in order to only use the minimum level required to communicate with the overall system.

Additional information may be obtained on the sites of the Institut National de Recherche et de Sécurité (*French National Research and Safety Institute*) and the International Commission on Non-Ionizing Radiation Protection in the following documents:

- Electrical fields. Magnetic fields. Electromagnetic waves (FR)¹
- Lignes directrices pour l'établissement de limites d'exposition aux champs électriques et magnétiques variables dans le temps (FR)²
- ICNIRP Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (EN)³

This model has thus been tested in compliance with requirements regarding exposure to radio frequencies when worn on the body. When in use, the *PROXIPI* badge must be kept in a carrying accessory on the body which does not contain metal (e.g. safety jacket) and which keeps it a minimum of 1,5 cm from the body. The use of other accessories does not guarantee compliance with the requirements regarding exposure to radio frequencies.

Safety with regard to magnetic fields

With a view to limiting exposure to electromagnetic fields (radio frequencies, RF) for individuals who wish to limit their exposure to these fields, the World Health Organisation (WHO) proposes the following precautions. If individuals are worried, they can choose to limit their own RF exposure by moving the badge away from their head or body.

General user safety

As with any device, this equipment may suffer an electrical, electronic or mechanical failure. The manufacturer cannot be held accountable for any accidents or risks following such a failure even during the warranty period.

The configuration, dismantling, maintenance and troubleshooting procedures are exclusively reserved to individuals who have been previously trained and duly authorised by *PROXIPI SAS*.

General safety regarding hazardous areas

It is essential not to bring a badge near ATEX-classified areas in compliance with the warning signs in place. Usage restrictions on radio devices must be observed in chemical plants, fuel depots and any location where operations involving explosives are in progress.

General mechanical safety

The *PROXIPI* assembly has been installed on the machine in compliance with the recommendations specified in the *Installation manual*. It should be remembered that any modification to the structure of a machine receiving the equipment is subject to certain rules, directives and standards. Thus it is strictly forbidden to drill the operator safety cage or cab receiving the magnetic frame. It is strongly recommended to obtain authorisation to modify the equipment from the manufacturer or their representative.

Safety regarding general electronic equipment

To prevent any risk of demagnetisation, it is recommended not to leave electronic equipment near the *PROXIPI* system installed on the machine for extended periods of time.

Safety regarding electronic medical equipment

The *PROXIPI* system has been designed in compliance with French and European standards. The transmission levels measured during tests make it compatible with wearing a **pacemaker or insulin pump**. Nevertheless, as it is not possible to check all electronic medical products worn by users, we do not recommend the product be used by individuals fitted with these. It is generally recommended to those fitted with implants to keep the badge at least 30 cm away. If need be, a doctor or the manufacturers of these devices will provide the necessary information.

General conditions for use in total safety

- Before being used for the first time, the *PROXIPI* system must have been inspected by a qualified individual and the badges put on charge. After the initial charge, carry out an operation test as defined in the section on charging the badge.
- Carefully read the instructions set out in this manual.
- Follow the safety instructions provided in the workplace, the general standards for the prevention of accidents as well as local safety standards.
- Maintain all safety devices in their original condition.
- Do not modify parts of the machine such as attachment systems, drilled holes, etc. to adapt it other devices.

PROXIPI S.A.S. is not liable for the consequences if warnings are ignored. It is recommended to contact *PROXIPI SAS* or approved distributors directly regarding any modifications.

Prohibitions and obligations regarding predictable behaviour

The instructions detailed in this manual, if strictly adhered to by users, will enable the *PROXIPI* system to be put into service effectively and safely. This is defined as: "Correct usage".

Any operation carried out at the user's initiative which departs from the instructions given is defined as: "Incorrect usage".

Precautions in the event of failure

When it is suspected that the assembly installed on a machine and/or a pedestrian badge is no longer safe (for example due to damage sustained during transport or use), it must be taken out of service and tagged out. Steps must be taken to ensure it cannot be used accidentally.

¹ <http://www.inrs.fr/accueil/produits/mediatheque/doc/publications.html?reflNRS=ED%20785>

² <http://www.inrs.fr/accueil/produits/mediatheque/doc/publications.html?refl>

NRS=PR%2047

³ <http://www.icnirp.de/documents/emfgdl.pdf>

USAGE LIMITS

The equipment has been designed for use under industrial conditions both under cover and out in the open. It is designed exclusively for the safety of pedestrians in an industrial environment. Furthermore, depending on the configuration ordered, some functions or options may not be enabled.

The products sold comply with EC standards. As such, they comply with EMC standards and are designed to operate in an environment which complies with the standards described in the user manual. Where there is magnetic/electromagnetic contamination on the site, whether permanent or occasional, the quality of the signals from the products may be disturbed. PROXIPI SAS cannot under any circumstances be held accountable for these disturbances and the consequences of the reduction in efficiency of the signals.

DESTRUCTION OF THE EQUIPMENT

When the equipment becomes obsolete, the assembly installed on the machine and/or pedestrian badges must be destroyed through specialist channels. Local legal regulations take precedence over this text and must be scrupulously complied with.

To facilitate recycling of the packaging, it is essential to comply with the sorting rules put in place locally for this type of waste. The equipment on the other hand may be returned directly to the following address:

PROXIPI SAS
Innovapôle 76
50 rue Ettore Bugatti
F - 76800 Saint Etienne du Rouvray

Removal of the equipment from machines is at the exclusive costs of the end customer or their representative. The manufacturer will take responsibility for decontaminating and recycling all components, the products being designed in accordance with an ecological approach and as such fully recyclable.



In compliance with directive WEEE 2002/96/EC, the *PROXIPI* system may be constructed from electronic components which are harmful to the environment. All owners are asked to contact the producer or distributor in order to ascertain the procedure to be followed for recycling the equipment. The producer shall not under any circumstances be responsible for recycling a *PROXIPI* system which has not followed the defined procedure.



The *Pedestrian* and *Intra* badges contain one or more Li-ion type batteries needed to power the electronic circuit of the badge. The battery(ies) must be removed prior to the badge being destroyed and disposed of in a used battery collection centre.

RECEPTION-STORAGE

Reception

When the package is received, check for any external damage and, if necessary, report any damages or shortages to the carrier in the usual way by registered letter, fax or e-mail within 24 hours after delivery.

Temporary storage

If any or all of the *PROXIPI* components need to be stored before use, they must be kept in their original packaging which has been carefully closed if opened. Storage must be in a clean and dry location at a moderate temperature (-20°C to +40°C), so as to avoid the electronic components deteriorating. The storage area must be away machine movement areas; otherwise the badge will be activated each time a machine is detected.

Prolonged storage

The same instructions apply as for temporary storage.

SPARE PARTS

Spare parts may only be used by a representative who has been duly authorised/approved by *PROXIPI* SAS. As such, this manual does not contain a spare parts list.

RATING PLATE

Each component of the *PROXIPI* system (badge, magnetic frame, dashboard, electronic unit) has its own rating plate with an identifiable serial number.

IMPROVEMENTS AND MODIFICATIONS

Improvements and modifications may be made at any time and without prior notice to the product described in this publication without *PROXIPI* SAS being in any case obliged to update the content of this manual and/or the corresponding equipment.

DECLARATIONS OF CONFORMITY

This product is available in 2 versions: one compliant with the EC standard (Europe) and one compliant with the FCC and IC standards (North America).

Before using the products, ensure you have the product which can be used in your region. Otherwise, do not use the products and contact us for an exchange.

Some countries may have different legislation, ensure that one or other of the frequencies is authorised in the country of use.

EC declaration of conformity

The company *PROXIPI S.A.S.* declares that the product covered by this declaration complies with European directives 2004/108/EC (EMC), 2006/95/EC (LVD), 1999/5/EC (R&TTE) relating to the harmonisation of the laws of countries with the European Union regarding electromagnetic compatibility, low voltage and radio and telecommunications equipment.



FCC declaration of conformity

This device complies with Part 15 of the FCC rules. Its use is authorised under the following two conditions:

- (1) the device must not cause interference, and
- (2) the user of the device must accept any radio interference sustained, even if the interference is liable to compromise operation.

Any change or modification to this product not approved by the manufacturer will cancel the user's authorisation to use the equipment.

IC declaration of conformity

This device complies with the CNRs of Industrie Canada applicable to radio devices exempt from a licence. Its use is authorised under the following two conditions:

- (1) the device must not cause interference, and
- (2) the user of the device must accept any radio interference sustained, even if the interference is liable to compromise operation.

Description of the PROXIPI system

AIM OF THE PROXIPI® SYSTEM

PROXIPI SAS designs and manufactures the PROXIPI system. This system is designed, but not limited to, preventing collisions between pedestrians and machines by two-directional warning.



However, this system is not a substitute for the safety studies allowing moving machinery and pedestrians to work alongside one another in total safety, such as, in particular, the installation of the fork lift truck organisation system known as VSM (*value stream mapping*), one-way traffic systems, the presence of pedestrian-only areas, or the definitions of zones at risk (inside and outside), zones reserved for fork-lift trucks, zones for pallet trucks and trains, etc.

Designed and manufactured in France using current technologies by qualified personnel, this equipment is designed for long-term service with regular maintenance reduced to the simple electrical recharging of pedestrian badges. In addition, we recommend annual maintenance should be carried out on the system.

So as to meet the varied requirements of users, all components of the PROXIPI system may be customised. Moreover, components installed on the machines may be easily removed and refitted to machines of different types and makes.

- A magnetic frame (A) installed as appropriate to the mechanical structure of the machine.
- A dashboard (B) fixed in the field of view and within the audible range of the operator.
- A central unit containing the management electronics, connected to the machine battery, the magnetic frame and the dashboard, and installed under the engine cover.

Pedestrian badge

Every pedestrian needing to be protected and warned by the PROXIPI system will be provided with a Pedestrian badge. This badge may be worn around the neck, held in a pocket or affixed to the belt according to seasonal factors or rules laid down by the company.



Figure 2 Pedestrian badge.

COMPONENTS

The PROXIPI system has been designed to work mainly in the following situations:

- Machine/pedestrian detection (use of Pedestrian badges)
- Machine/machine detection (use of Machine badges)
- Machine/zone detection (use of Zone badges)

These components are all designed to work together. Their use is described below.

Minimal equipment on the machine

The mobile machine receives an assembly comprising:

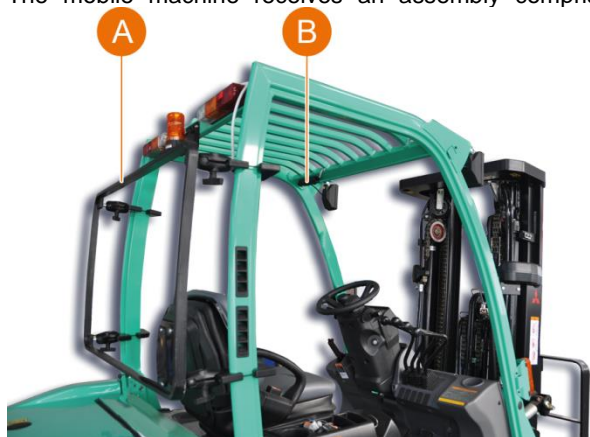


Figure 1 General view of some of the devices installed on the machine.

Machine Badge

Every machine needing to be detected to avoid a collision between machines will be fitted with a Machine badge installed on the roof.



Figure 3 Machine badge

FIXED Zone Badge

The Fixed Zone badge is used to define a zone to be protected for the safety of personnel and/or machines.



Figure 4 FIXED Zone badge

FEATURES

These differ according to the carrier as follows.

For the operator

The operator of a machine fitted with a PROXIPI system is provided with, depending on the specifications:

- A hazard proximity alert which activates as soon as one of the following is detected:
 - Either a pedestrian equipped with a Pedestrian badge
 - Or a truck equipped with a Truck badge
 - Or a zone fitted with a Fixed Zone badge
- Access control to certain zones (RFID option)
- Automatic speed reduction in the presence of danger through activation of the speed limiter on machines with this feature
- Options such as customised audible messages, door opening, etc.



Figure 5 The PROXIPI system installed on a machine detects pedestrians and other machines. When a badge enters the detection area of the machine then, depending on the sensitivity defined on the badge, the alert is triggered.

For the pedestrian

The pedestrian equipped with a PROXIPI badge is provided with, depending on the specifications:

- A hazard proximity alert when they enter the detection zone of a truck.
- Access control to certain zones.



Figure 6 The pedestrian badge detects machines within specified radii. When the badge enters the detection area of the machine then, depending on the sensitivity defined on the badge, the alert is triggered.

USAGE PRINCIPLE

PROXIPI is a system which is designed to warn, but not prevent, collisions between moving machinery and pedestrians or between the moving machines themselves.

PROXIPI is a safety tool operating on the basis of the deployment of a communicating system. This system is made up of magnetic frames, terminals and badges which operate as outlined below:

- The detection distance is calculated as being the distance between the magnetic frame of the machine and the badge to be detected.
- For a Pedestrian badge, the distance may vary from 0 to 15 metres depending on the specification and the environment.
- For a Machine badge, the distance may vary from 0 to 15 metres depending on the specification and the environment
- For a Zone badge, the distance may vary from 0 to 15 metres depending on the specification and the environment.

PROXIPI IN ACTION



Note: the characteristics of the Pedestrian badge differ according to the model of badge chosen. In this section, the action described relates to the Premium badge.

When a pedestrian equipped with a badge enters the detection zone of a machine, the pedestrian badge emits an audible and vibratory alarm.

The machine operator is alerted at the same time by the audible and visual alarm emitted by the dashboard installed in their field of view, or by any other alert specifically developed for a particular application.

The pedestrian may then, depending on the specifications:

- Either exit the detection zone;
- Or acknowledge the alert by pressing the acknowledgement button on their badge (if this function is enabled)

If several machines are in the pedestrian's detection area, the pedestrian will need to acknowledge the alert from each machine detected.

In areas with high levels of concurrent working, an

inhibition terminal may be installed. In this case, warning signs must be installed.

THE ADVANTAGES OF PROXIPI®

PROXIPI technology is based on the use of a coded magnetic field. This technology, tested by scientific inspection laboratories, does not interfere with Wi-Fi, GPS, GSM, Bluetooth, 3G or 4G networks.

The waves emitted by the *PROXIPI* system **are below those specified in the electromagnetic field standards** according to Directive 2004/40/EC. So, the emissivity and intensities are less than the action values and do not interfere with heart pacemakers and other medical devices.



Figure 7 *PROXIPI* is compatible with Wi-Fi, GPS, GSM, Bluetooth, 3G and 4G networks.

PROXIPI Equipment

STANDARD TRUCK EQUIPMENT

This section describes the standard equipment of a PROXIPI system installed on a moving machine.



The PROXIPI system is powered on when the machine is started. The antenna is powered by the electronic unit. The dashboard is operational at all times and does not have an on-off switch.

Thus with safety in mind, it is not possible to stop the PROXIPI system operating without carrying out work at a technical level. In the event of a malfunction requiring the PROXIPI system to be stopped, contact PROXIPI technical support or the PROXIPI approved distributor who will provide the procedure for stopping the PROXIPI system.

Modules installed on the machine

General view

The main components installed on the machine are shown below:



Figure 8 The main components of the PROXIPI system installed on the machine.

- A. Antenna.
- B. Dashboard (MMI)
Electronic unit (not shown).

As the antenna and the electronic unit are not used by the truck operator, they are described in the *Installation manual*. The dashboard, however, is described below.

Dashboard (MMI)

Installed in the operator's field of view, the dashboard contains the alarm components which activate when a pedestrian equipped with a Pedestrian badge, another machine fitted with a Machine badge or entry into a zone covered by a Zone badge is detected.

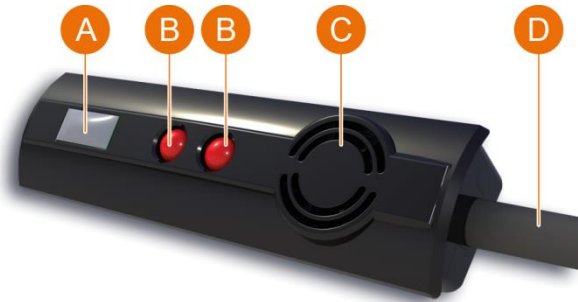


Figure 9 Dashboard components.

- A. Frost logo
- B. Alarm indicators operating alternately to improve visualisation of the alarm.
- C. Audible alarm.
- D. Cable from the electronic unit.

Visual and audible alarms

The visual and audible intensity may be adjusted.

Visual and audible alarms are emitted by the dashboard when the machine is in the safety area:

- Of a Pedestrian badge;
- Or another machine. This option is only available if a machine-machine badge is installed on each of the machines to be detected.

The dashboard alarms are activated as follows:

Visual alarm*	Meaning
Flashing green	No badge in the zone covered by the PROXIPI system (distance defined according to the specifications) or Pedestrian badge alerts have been acknowledged.
Flashing red	Badge in the detection area of the machine (distance defined according to the specifications).

(*) According to configuration.

Audible alarm*	Meaning
Inactive	No badge in the zone covered by the PROXIPI system (distance defined according to the specifications) or Pedestrian badge alerts have been acknowledged.
Active	Badge in the detection area of the machine (distance defined according to the specifications).

(*) According to configuration.

Operator without badge



Use this procedure only if the machine operator does not wear the pedestrian badge.

Activating the PROXIPI system

When the machine starts, the two red indicator lights (Figure 10, A) of the dashboard flash quickly for 2 seconds and then turn off. An audible signal (Figure 10, B) is emitted.

The PROXIPI system on the machine is then operational.

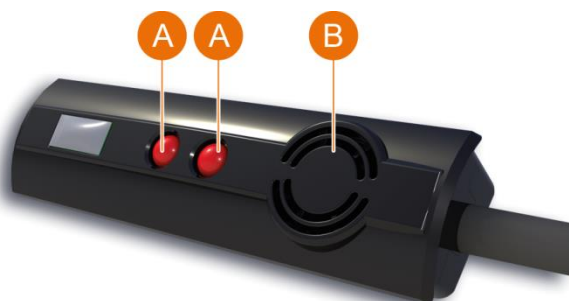


Figure 10 When the machine is started, the indicator lights (A) flash for two seconds and an audible signal (B) is emitted.

Detection of a pedestrian

The detection of a pedestrian depends on the distance between the pedestrian and the machine. This value, defined by configuration from the data in the specifications (see the *Installation manual*), may be changed by the manufacturer.

1. When a pedestrian is detected, the dashboard on the machine emits an audible (Figure 10, B) and visual (the two indicator lights flashing red alternately) (Figure 10, A).

The operator may not acknowledge these audible and visual alarms.

2. The audible and visual alarms on the machine dashboard stop automatically when the pedestrian is outside the configured detection zone or has acknowledged the badge by pressing button A (see pedestrian badge settings).

Checking operation

Operator's responsibility

When taking over the machine, the operator must ensure by testing that their driving assistance device is in working order.

Operating anomalies

If at least one of the modules (antenna, dashboard, electronic unit) installed on the machine is defective, the entire machine must be tagged out and prohibited from use until the failure is repaired.

Servicing and maintenance

Servicing

No particular servicing is required. It is recommended to have your PROXIPI system checked each year by the initial installer.

Maintenance

No specific maintenance may be carried out by the user.

Annual maintenance of the equipment, which must be carried out by the equipment retailer, consists of calibrating the product.

PEDESTRIAN BADGE

This section describes the use of the Pedestrian badge.

Description of the pedestrian badge

This badge alerts the pedestrian through an audible and vibratory signal when it enters the detection field of a moving machine.

General view

The main external components of the pedestrian badge are:



Figure 11 Components of the pedestrian badge.

- A. Loudspeaker, vibrator and acknowledgement push-button
- B. Operating lamp
- C. Clip for fixing to the belt or pocket
- D. Charging socket

Removable wrist and neck strap (not shown).

Vibratory and audible alarms

The audible (Figure 11, A) and vibratory (Figure 11, A) alarms are activated when the person wearing the pedestrian badge is in the detection zone of a machine.

Audible alarm*	Meaning
Inactive	Wearer outside the detection zone of a machine or in the detection zone after acknowledgement.
Active	Wearer in the detection area of a machine before manual acknowledgement.

Active every
5 seconds

Battery low
Requires charging
immediately.

(*) According to configuration.

Vibrator*	Meaning
Inactive	Wearer outside the detection zone of a machine or in the detection zone after acknowledgement (distance defined in the specifications).
Active	Wearer in the detection area of a machine before manual acknowledgement. (Distance defined in the specifications).

(*) According to configuration.

In addition, an indicator light provides information on the state of the badge.

Visual alarm	Meaning
Green	Tests the battery if the button is pressed
Short bright red flashes	Badge self-testing or badge in the detection zone of a machine before acknowledgement
Short dim red flashes	Wearer in the detection area of a machine after acknowledgement using the button.
Orange	Badge charging.
Off	Badge off-charge or charging finished. Wearer outside the detection area.

Installing the badge

Proceed as follows.

- Position the badge around the neck using the strap, or in a pocket or on a belt using the clip (Figure 12).



Do not position the badge in the same pocket as another electromagnetic device (walkie-talkie, mobile phone, lone worker protection device, etc.).

- The individual wearing the badge may now be detected by any machine fitted with a PROXIPI.



Figure 12 Positioning of the badge around the neck or in a pocket.

Using the pedestrian badge



Use of the PROXIPI badge is subject to rules intended to ensure your safety and the safety of those around you.

The detection of a machine fitted with an active PROXIPI depends on the distance between this badge and the

antenna on the machine. This value is defined by configuration from the data in the specifications given by the customer (see the *Installation manual*) and may be changed by the manufacturer or their distributor via the badge configurator.

- When a machine fitted with a PROXIPI is detected, the badge emits an audible (Figure 13, B) and vibratory (Figure 13, B) alarm.



The wearer is then responsible for taking action by making themselves safe. No stoppage action is enabled on the moving machine.

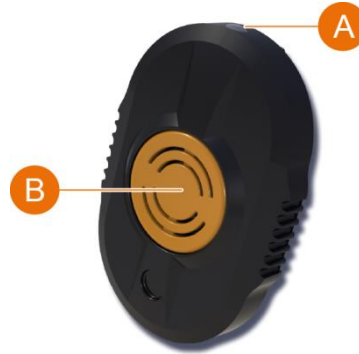


Figure 13 The operating indicator (A) and the badge acknowledgement button (B).

- If necessary, acknowledge the audible alarm on the badge by pressing the acknowledgement button (Figure 13, B).
- Acknowledgement must be carried out for every machine present in the badge area
- The audible and vibratory alarms stop automatically when the machine is outside the detection area configured or after the badge wearer acknowledges the alarm.



The programming of the option whether or not to allow acknowledgement by the badge is entirely up to the customer/end user site after a risk analysis.

Use of the Pedestrian badge by a machine operator

Identification of the operator badge

- When the machine is powered on through the ignition key, the operator's badge is detected and an audible and visual warning emitted.
- Press the acknowledgement button of the badge (Figure 14, B).
Doing this stops the audible (Figure 14, B) and vibratory alarm on the badge; the indicator (Figure 14, A) flashes red.



Figure 14 Pressing the acknowledgement button (B) stops the audible alarm (B) and the vibrator. The visual alarm (A) continues to flash.

An **INHIBIT WARNING LIGHT** option on the pedestrian badge when operating a machine is available. Contact your distributor. This allows the badge wearer to neutralise the warning light when the operator is in the driving seat.

Charging the badge



Recap: connecting the badge charger inhibits detection when passing near a machine fitted with a *PROXIPI* system.

Recharge the badge as follows:



Figure 15 Charging the badge and location of the charging indicator.

- Connect the micro USB plug of the charger (C) to the badge connector (A) or place the badge on its charging base (not shown).



The charging system must be placed in vertical position so as to improve heat dissipation of the active components.

- Insert the charger (C) into the mains socket. While charging, the badge indicator light (B) shows solid orange.
- Charging stops by itself. Once charging has finished, the indicator light on the badge (B) turns off (B). The badge may then be used.
- The charging time is about 2 hours via the lead (Figure 15). A charged badge may remain connected indefinitely.
- Disconnect the charged badge only if it is to be used straight away.

Checking the operation of the pedestrian badge with the inspection terminal

Pedestrian's responsibility

When a pedestrian badge is taken, the pedestrian must ensure it is operational.

To this end, every time the badge is disconnected from the charger, the badge sounds and vibrates to indicate it is operational.

If in doubt, press the badge on the button for 30 seconds until LED A goes out (figure 11) and release the button. The



There is a risk the battery will explode if it is not charged with the charger designed for it or if it is exposed to fire.

Use only the chargers shown in the *PROXIPI* catalogue. Use of any other type of charger may be dangerous and invalidate the warranty. As the charger is a voltage-lowering safety device, it must under no circumstances be modified, altered or replaced by any other item (simple mains plug etc.). Do not short-circuit the charging terminals of the battery or the charger.

The battery does not contain any replaceable components.

Never try to open the badge, charger or battery.

Do not expose the *PROXIPI* badge to extreme temperatures lower than -10°C or greater than $+55^{\circ}\text{C}$. The physico-chemical processes used in the batteries set temperature limits during quick charges. The *PROXIPI* badge however automatically protects the batteries in case of extreme temperatures.

badge sounds and vibrates to indicate it is operational. If not, contact your supervisor.

SOUND LEVEL OF CRITICAL CHARGE/ALERT

An audible alert generates a particular SOUND every 5 to 7 seconds emitted when the battery reaches a critical discharge level of 80%

Stop using the badge straight away and place the badge on charge.

TEST TERMINAL

Test terminals are available which allow the badge to be run past the inspection terminal (badge reader). This enables the functions of the badge to be tested.

- If the badge is operational (battery charged and electronics operational), the green indicator on the terminal lights up.
- If the badge is not operational (battery discharged and/or electronics not operational), the red indicator on the terminal lights up.



Figure 16 Green and red indicators on the inspection terminal.

Operating anomalies

If the badge does not operate correctly, it must be prohibited from use and returned to the local retailer for assessment.

Servicing and maintenance

Servicing

Apart from being regularly charged, the badge does not require any special maintenance. It may be cleaned, if necessary, using electronic wipes. The strap may be washed using hand soap for example once disconnected.

Maintenance

No specific maintenance may be carried out by the user. An annual inspection of the badge is recommended. This must be carried out by the equipment retailer. It consists of checking the uniformity of magnetic detection and that the audible and vibratory alarms operate correctly. No particular servicing is required. It is recommended to have your PROXIPI system checked each year by the initial installer.

It is recommended to replace the battery every 24 MONTHS. After-sales kits are available from PROXIPI.

visual alarms.

- The audible and visual alarms stop automatically when the other machine is outside the detection area configured.



Figure 17 Zone badge.

Checking operation

Operator's responsibility

When operators pass near a Zone badge, an interaction with the truck takes place: either alerts are triggered or the speed limiter is actuated. If this does not happen, the Zone badge and the equipment on the truck must be checked.

Operating anomalies

The LEDs visible on the badge ensure it is working correctly. If in doubt, contact your retailer and describe the state of the LEDs.

Servicing and maintenance

Servicing

The badge does not require any particular maintenance. It may be cleaned, if necessary, using a slightly moist wipe.

Maintenance

No specific maintenance may be carried out by the user. Annual maintenance of the badge, which must be carried out by the equipment retailer, consists of calibrating the product.

THE FIXED ZONE BADGE (BADGEFIX)

This section describes the operation of the zone detection badge.

Zone detection

In the same way as when detecting a pedestrian, detecting a zone fitted with a Zone badge also depends on the distance between the antenna and the badge. This value, defined by configuration from the data in the specifications (see the *Installation manual*), may be changed by the manufacturer.

- When a Zone badge is detected, the dashboard emits an audible and visual alarm.
It is not possible to acknowledge these audible and

MACHINE BADGE

This section describes the operation of the machine to machine detection badge.

Detection of another machine



Use this procedure only if each of the machines is fitted with a specific machine to machine detection badge.

In the same way as when detecting a pedestrian, detecting a machine fitted with a Machine badge also depends on the distance between the antenna and the badge. This value, defined by configuration from the data in the specifications (see the *Installation manual*), may be changed by the manufacturer.

- When another machine fitted with a Machine badge is detected, the dashboard emits an audible and visual

alarm.

Note: the same process is activated on the other machine.

It is not possible to acknowledge these audible and visual alarms. However, an acknowledgement button may optionally be installed.

- The audible and visual alarms stop automatically when the other machine is outside the detection area configured.



Figure 18 Machine badge.

Checking operation

Operator's responsibility

When taking over the machine, the operator must ensure by testing that their PROXIPI Machine badge is in working order.

Operating anomalies

If at least one of the modules (antenna, warning module, electronic unit, Machine badge) installed on the machine is defective, the entire machine must be tagged out and prohibited from use until the failure is repaired.

Servicing and maintenance

Servicing

The badge does not require any particular maintenance. It may be cleaned, if necessary, using a slightly moist wipe.

Maintenance

No specific maintenance may be carried out by the user. Annual maintenance of the badge, which must be carried out by the equipment retailer, consists of calibrating the product.

Technical specifications

STANDARD TRUCK EQUIPMENT

Magnetic frame

Function:	Emits an encoded magnetic field showing the presence of a machine.
Transmission type:	Continuous.
Radius covered:	From 0 to 15 metres.
Transmission power	1W at 125 kHz and 10mW at 868Mhz or 915 Mhz for US & Canada
Connections:	Wired to electronics module.
Attachment:	May be adapted to the machine.
Protection rating:	IP 66.
Dimensions:	May be adapted to the machine.
Weight:	2.5kg

Electronic unit

Function:	Electrical distribution of energies and interconnection of components.
Connections:	5 wired outputs to the other modules via a PROXIPI BUS 1 NO/NC dry contact. 24V DC, 2 A. 2 contact activation and antenna 24 V DC on/off inputs, 2A max
Alarm:	Remote fault <i>audible alert</i> .
Power supply:	From 12 to 48 V DC.
Electric current:	0.5 A at 12 V.
External protection:	1 x 3 A slow-blow fuse to be installed by the user
Protection rating:	IP 66.
Dimensions:	122 x 175 x 55 (H x L x D).
Weight:	550 g.

Dashboard

General specifications

Function:	Operator audible and visual alarm module.
Attachment:	Fixed in the field of view and within the audible range of the operator.

Electrical specifications

Visual alarm device:	2 red alternating LEDS showing detection of machines and pedestrians. Loudspeaker emitting either a special modulated signal audible
Audible alarm device:	through the usual audible protection systems or optionally a voice message.

Acknowledgement:	None.
Connections:	Wired to the electronic module by a single cable

Mechanical specifications

Dimensions (mm):	142 x 40 x 30 (L x H x D).
Weight (g):	110 g
Material:	Black PC/ABS.

Environmental specifications

Usage temperature:	From -10 °C to + 65 °C.
Hygrometry:	From 15 to 90% non-condensed relative humidity (continuous operation)
Protection rating:	IP 54.

PEDESTRIAN BADGE

General specifications

Function:	Receiver badge intended to prevent collisions between machines and pedestrians.
Detection principle:	Magnetic field.
Badge type:	Pedestrian or machine operator
Carrying:	Around the neck, on the belt or in the pocket.
Radius covered:	0 to 15 metres depending on configuration.
On/Off button:	None, operates continually when not being charged.
Start-up time:	Immediate (no presence of stop system).
Response time:	Immediate as soon as entering the magnetic field of a machine.

Electrical specifications

Visual alarm device:	3-colour LED (red, orange, green) depending on the type of information (module active, battery on charge/charged/discharged, machine detection).
Audible alarm device:	Loudspeaker emitting a special modulated signal audible through the standard audible protection systems. Configuration of the signal depending on the type of detection (machine or pedestrian)
Acknowledgement:	Pushbutton integrated into the loudspeaker. Acknowledgement of the audible alarm only.
Safety index:	According to the analysis of your case
Intrinsic safety:	No.
Recharge:	By individual charger through micro USB.
Battery	Li-ion, 240 mAh (not accessible).
Operating time:	2 hours on alarm. 5 days on standby.

Mechanical specifications

Dimensions:	96 x 65 x 25 mm (H x L x D).
Weight:	60 grams.
Material:	Black PC/ABS.
Protection rating:	IP 54.

Environmental specifications

Usage temperature:	From - 10°C to + 55°C.
Hygrometry:	From 15 to 90% non-condensed relative humidity (IP54 model) From 0 to 99% RH non-condensed relative humidity (IP67 model).

Accessories provided

Individual charger:	110-240 V AC 50/60 Hz, 0,1 A. Output 5 V DC, 1 A. Connection by USB type connector. Weight: 80 g.
Wrist and neck strap	

Optional accessories

Badge tester terminal	Dimensions: 180 x 130 x 60 mm Power supply: 110/220V Power consumption: 12V, 100mA Meaning of LEDs: flashing red: equipment operational, no badge detected green: valid badge detected
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THE FIXED ZONE BADGE

General specifications

Function:	Receiver badge intended for the detection of a machine in a zone.
Radius covered:	From 0 to 15 m (depends on the environment and the configuration)
Standard inputs/outputs:	1 NO/NC dry contact. 277 VAC max – 2770 VA. 30 V DC max – 210 Watts.
Alarm:	1 x flashing green LED showing the badge is in working order. 1 x red LED showing detection

Electrical specifications

Visual alarm device:	None
Audible alarm device:	None
Acknowledgement:	None
Safety index:	According to the analysis of your case
Intrinsic safety:	No
Power supply:	110-240 V AC 50/60 Hz
Power consumption	100mA

Mechanical specifications

Dimensions:	130 x 130 x 130 mm (H x L x D).
Weight:	850 grams.
Material:	Black PC/ABS.
Protection rating:	IP 54 / IP67

Environmental specifications

Usage temperature:	From - 10°C to + 65 °C.
Hygrometry:	From 15 to 90% non-condensed relative humidity (IP54 model) From 0 to 99% RH non-condensed relative humidity (IP67 model).

MACHINE BADGE

General specifications

Function:	Receiver badge fitted on a truck and designed to prevent collisions between machines.		with time stamp.
Detection principle:	Magnetic field.	Safety index:	According to the analysis of your case
Badge type:	Machine-machine.	Intrinsic safety:	No
Carrying:	Fitted on the machine.	Power supply:	Via the ECU (communication by CAN bus) which is connected to the truck battery
Radius covered:	0 to 15 metres depending on configuration.	Power consumption	100mA
On/Off button:	None, continual operation.		
Start-up time:	Immediate (no presence of stop system).		
Response time:	Immediate as soon as entering the magnetic field of a machine.		

Electrical specifications

Visual alarm device:	None
Audible alarm device:	None
Acknowledgement:	None
Internal memory:	Keeps the last 100 detection identifiers

Mechanical specifications

Dimensions:	130 x 130 x 130 mm (H x L x D).
Weight:	850 grams.
Material:	Black PC/ABS.
Protection rating:	IP 54.

Environmental specifications

Usage temperature:	From - 10°C to + 65 °C.
Hygrometry:	From 15 to 90% non-condensed relative humidity (IP54 model) From 0 to 99% RH non-condensed relative humidity (IP67 model).