

Medio P200u Reader

User's Guide

Revision 1.0



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Read This First

Welcome to the TAGSYS range of products operating at the 13.56 MHz frequency. This range of products is used to implement high-quality RFID systems for demanding applications.

This document provides information about how to install and use Medium Range Medio P200u Tag Readers.

Audience

This document requires familiarity with RFID technology. It is intended for people in charge of installing and using the product.

Conventions

Symbol	Meaning
	CAUTION: A note that advises users that a specific action could result in the loss of data or damage the hardware. WARNING: A note that advises users that a specific action may result in physical harm.
	A note that provides additional information that helps the user perform a task or obtain the best performance from the product.

If you need assistance

Please contact your nearest TAGSYS sales representative or the TAGSYS welcome desk at:

Telephone: +33 (0) 4 42 18 89 00

Fax: +33 (0) 4 42 18 89 01

E-Mail: info@tagsysrfid.com

Website: <http://www.tagsysrfid.com>

Contact for Comments

We welcome your feedback to help us provide high quality documentation.

For technical comments, please contact our welcome desk:

Telephone: +33 (0) 4 42 18 89 00

Fax: +33 (0) 4 42 18 89 01

E-Mail: info@tagsysrfid.com

Please remember to quote the Document Reference Number DOC14196A0, your job title and your company.

Quality Issues

TAGSYS implements stringent quality controls at all stages of its manufacturing process. However, should you find a defect with this product, please notify your TAGSYS Quality Service representative using the dedicated Product Return Form.

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1 For Your Safety

1.1 General Use

The Medio P200u is designed to be reliable and to provide years of trouble-free service. Please observe the following general tips:

- Take care not to scratch the device. Keep the device clean. When working with the device, use only TAGSYS-approved accessories.
- This device is not waterproof and should not be exposed to rain or moisture. Under extreme conditions, water may enter the circuitry.
- Protect the device from extreme temperatures. For example, do not place the device in a windowed area where the sun may cause extreme temperatures, and keep it away from heaters and other heat sources.
- Do not store or use the device in any location that is extremely dusty, damp, or wet.
- Use a soft, damp cloth to clean the device. If the surface of the device becomes soiled, clean it with a soft cloth moistened with a diluted window-cleaning solution.

1.2 Care and Maintenance

This device is a product of superior design and should be handled with care. The suggestions below will further increase the lifetime of this device.

- Keep the device and all parts and accessories out of the reach of small children.
- Keep the device dry. Precipitation, humidity and liquids contain minerals that will corrode electronic circuits.
- Do not use or store the device in dusty, dirty areas. Its moving parts can be damaged.
- Do not store in hot areas. High temperatures can shorten the life of electronic devices, damage batteries and warp or melt certain plastics.
- Do not store in cold areas. When the device warms up (to its normal temperature), moisture can form inside the device, which may damage electronic circuit boards.
- Do not attempt to open the device. Non-professional handling of the device may damage it.
- Handle the device with care. Shocks may break internal circuit boards.
- Do not clean the device with harsh chemicals, cleaning solvents or strong detergents. Gently wipe the device with a soft cloth slightly dampened in a mild soap-and-water solution.
- Do not paint the device. Paint may clog the device's moving parts and prevent proper operation. Paint with metallic contents may limit device performances.
- If the device or any accessory are not working properly, take it to your nearest qualified TAGSYS representative.

1.3 Important Safety Information

1.3.1 Operating Environment

When connecting the device or any accessory to another device, read its user's guide for detailed safety instructions. Do not connect incompatible products.

As with all RF equipment, users are advised that the equipment should only be used in its normal operating position.

2 Certification

2.1 Occupational Health

TAGSYS Medio P200u Reader has been designed and tested to be in conformity with the European Standard EN 50364 "Limitation of human exposure to electromagnetic fields from devices used in Electronic Article Surveillance (EAS), Radio Frequency Identification (RFID) and similar applications" in conjunction with the European Standard EN 50357 describing how to evaluate the exposure level.

2.2 Regulatory Notices

An RFID system typically composed of an RF emission device such as the Medio P200u connected to an antenna is subject to national regulations that may differ by country.

One important item to consider is the maximum permissible magnetic field intensity at a distance of 10 meters from the antenna that must not exceed 42 dBμA/m in Europe and 38 dBμA/m in US.

The Medio P200u meets these limits.

2.2.1 In Europe (CE and RTTE Directives)

The Medio P200u complies (CE Declaration of Conformity granted) with the European EMC directive.

The Medio P200u complies with the requirements of the Telecommunication Terminal Equipment Act (FTEG) and the RTTE Directive 1995/5/EC.

It is the responsibility of the TAGSYS Reseller to install the Medio P200u as described in this User's Guide or TAGSYS Documentation.

Any modification of the Medio P200u is prohibited without the written consent of TAGSYS. Unauthorized modifications may void the conformity of the equipment to CE and RTTE Directives and will void the TAGSYS warranty.



CAUTION:

It is the responsibility of the CIT (Certified Integrators by TAGSYS) to install the Medio P200u as described in this Reference Guide or in TAGSYS Documentation.

If a Medio P200u is further integrated in a different product, it is the responsibility of the manufacturer of this complementary product to obtain the required approvals for this product.

2.2.2 In USA (FCC Directive)

The Medio P200u has been designed to comply with FCC 47 CFR Part 15 Rules to apply with the Aero-LI, LSA-3, LSA-4, LSA-4 SHD and LW-1 antennas.

Medio P200u

WARNING TO USERS IN THE UNITED STATES

FEDERAL COMMUNICATIONS COMMISSION (FCC) RADIO

INTERFERENCE STATEMENT 47 CFR Section 15.105(b)

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. 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 receiver.
- Connect the equipment into an outlet on a circuit different to that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NO UNAUTHORIZED MODIFICATIONS

47 CFR Section 15.21

CAUTION: This equipment may not be modified, altered, or changed in any way without signed written permission from TAGSYS SA. Unauthorized modification may void the equipment authorization from the FCC and will void the TAGSYS warranty.

ANTENNA REQUIREMENT

47 CFR Section 15.203

CAUTION: This equipment must be professionally installed. The installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded. Non-professional installation or installation of the equipment with an improper antenna may void the equipment authorization from the FCC and will void the TAGSYS warranty.

QHKLIBREADERLP101

Operation is subject to the following two conditions: (1) The system devices may not cause harmful interference, and (2) The system devices must accept any interference received, including interference that may cause undesired operation.

2.2.3 FCC ID Cross Reference Table

It is the responsibility of the TAGSYS Partner to install the Medio P200u Reader as described in the table below, taking care of only installing the right antenna configuration with the right power settings.

Antenna Configuration	Outside Dimension	Channel Setting	Max. Output Power	FCC ID
L-W1 Antenna	Ø 100mm	Single Channel	1W	QHKLIBREADERLP101
Aero LI	230X262mm	Single Channel	1W	QHKLIBREADERLP101
LSA 3	446X366mm	Single Channel	1W	QHKLIBREADERLP101
LSA 4	230X262mm	Single Channel	1W	QHKLIBREADERLP101
LSA 4 SHD	230X262mm	Single Channel	1W	QHKLIBREADERLP101

CAUTION: When using Medio P200u with LSA-4 SHD antenna, one must be sure a ferrite is placed close to power supply jack connector (2 turns as shown below). The ferrite is provided with LSA-4 SHD antenna.



2.2.4 In Canada

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p) is no more than that permitted for successful communication.

This device has been designed to operate with the antennas listed below, and having a maximum gain of -35 dBi. Antenna not included in this list or having a gain greater than -35 dBi are strictly prohibited for use with this device. The require antenna impedance is 50 ohms.

LW-1, Aero LI, LSA-3, LSA-4 and LSA-4 SHD antennas meet this requirement with a gain less than -35dBi.

2.3 RoHS and WEEE Directives

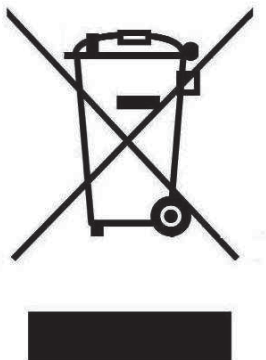
2.3.1 RoHS (Restriction of the uses of certain Hazardous Substances)

TAGSYS certifies that this product is compliant with the European Directive 2002/95/EC for the restriction in Electric and Electronic Equipments (RoHS) of the use of the following hazardous substances:

- Lead
- Mercury
- Cadmium
- Hexavalent Chromium
- Polybrominated biphenyl flame retardants
- Polybrominated diphenyl ether flame retardants

This declaration is based on information provided by our suppliers and subcontractors.

2.3.2 WEEE (Waste Electrical and Electronic Equipment)



This product bears the selective sorting symbol for waste electrical and electronic equipment (WEEE)

This means that this product must be handled pursuant to European Directive 2002/96/EC in order to be recycled or dismantled to minimize its impact on the environment.

For further information, please contact your local or regional authorities.

3 Introduction

3.1 Product Description

The Medio P200u has been designed to be used in combination with Aero LI, LSA-3, LSA-4, LSA-4 SHD and LW-1 antennas. The Medio P200u can decode C210, C240, C270, C370, C370L, C370S and ISO15693 tags.

Due to its small size, the Medio P200u can be used either in desktop configuration or easily integrated in self check stations.

The Medio P200u Tag readers are easy to integrate because of its:

- small size
- USB 1.1 communication link

3.2 Key Features

Table 1: Medio P200u Key Features

Description	Medio P200u
Operating Frequency	13.56 MHz
Compatibility	C210, C240, C270, C370, C370L, C370S and ISO-15693 chips
Serial Link	USB 1.1
Network Operating	Yes
Firmware upgradeable	Yes

3.3 Delivery

The Medio P200u Tag Reader kit contains the following items:

Table 2: Package Contents

Quantity	Item
1	Medio P200u Tag Reader
1	SMA/BNC adaptor
1	Set of rubber feet
1	USB cable
1	12 V power supply

1	<i>CD-ROM including:</i> • Medio P200u User's Guide • Medio P200u/s, P213, P232/3 Command Set • USB drivers for Windows XP, 200x, Vista, Seven • User-friendly Px Explorer software provided for test and debug operations on Windows XP, 200x, Vista and Seven platforms • Tagsys Legacy Software Development Kit including ◦ DLLs and ActiveX ◦ Library Software Development Kit Documentation ◦ One set of source code and executable samples • Tagsys Universal Software Development Kit including ◦ Native DLL ◦ .NET Component ◦ One set of source code and executable samples
1	Welcome Letter / Product Return Form

4 Installing the Reader

This section explains how best to install the Medio P200u Mid Range Reader.

4.1 Reader Connections

4.1.1 Front Panel

Figure 1 below shows the front panel, which is dedicated to the RF connection. Any of the following antennas can be connected to the standard SMA connector:

- LW-1
- Aero LI
- L-SA3
- L-SA4
- L-SA4 SHD

Figure 1: Front panel



The red LED turns on when the reader is supplied.

4.1.2 Rear Panel

The USB serial communication link and the power supply connector are located on the rear panel as shown below.

Figure 2: Rear panel



4.2 Installing the USB Drivers

At first connection to the PC USB port, Windows® will detect the TAGSYS Medio P200u reader and will ask to install a driver. The USB drivers are located into the USB Drivers folder on the product CD-ROM.

Two drivers will be installed:

- The USB device driver.
- The virtual COM port (VCP) driver. The VCP driver emulates a standard PC COM port.

After installation of the drivers, power up and connect your Medio P200u to a spare USB port on your PC to launch the Windows Found New hardware Wizard

- Select “No, not this time” and click next to proceed with the installation.
- Select “Install from a list or specific location (Advanced)” and then click “Next”.
- Select “Search for the best driver in these locations” and click the Browse button to select the TAGSYS USB Drivers folder on the Product CR-Rom. Then click “Next” to proceed.
- Windows should then display a message indicating that the installation was successful. Click Finish to complete the installation.

Repeat the procedure above when Windows® asks for drivers again (virtual com port).

To confirm that the installation has completed successfully, open the Device Manager and select “View > Devices by type”. The TAGSYS Medio P200u reader now appears as an additional COM port.



Drivers for Windows 98 are not provided. They are available upon request (please contact TAGSYS).

5 Px Explorer

The Medio P200u reader is delivered with the Px Explorer software tool intended to easily setup the reader, test it and perform reading and writing operations according to the antenna and type of tag to be used. In addition, Px Explorer can display additional information such as the Product Reference and Firmware version and revision. This section describes how to start with Px Explorer.

5.1 Installing Px Explorer

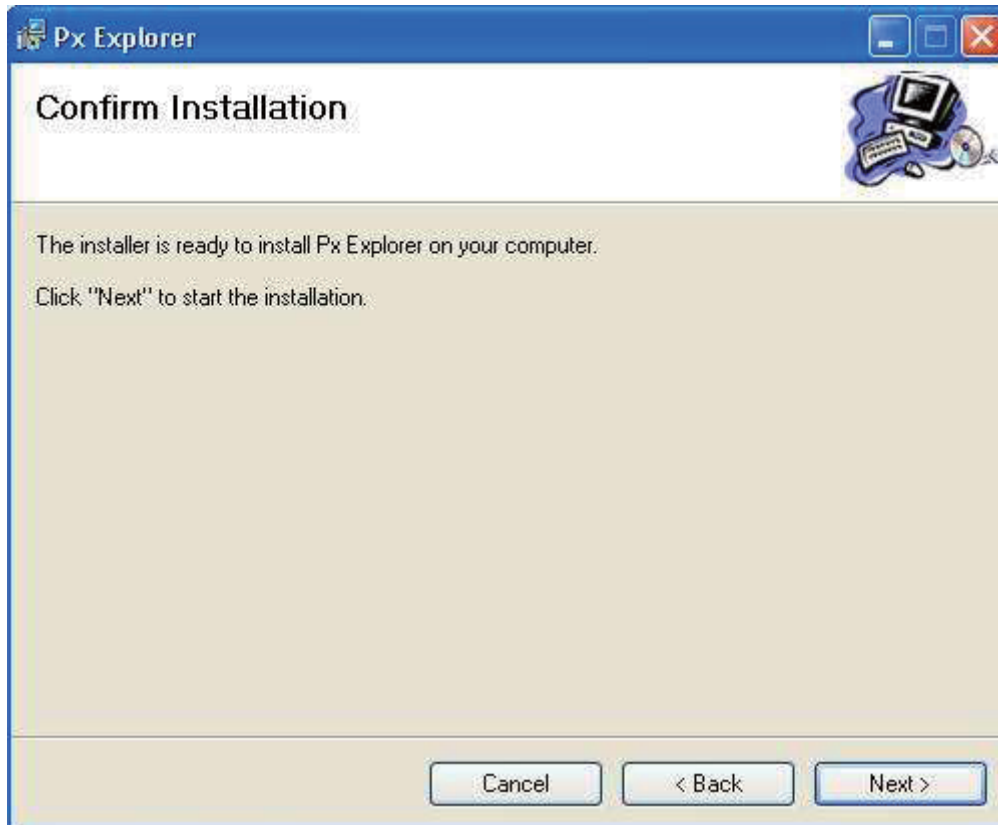
To install Px Explorer software, insert the product CD-ROM into the disk drive on your PC and run the Setup from the Software\Px Explorer folder and click “Next”



Click the “Browse” button if you want to choose a specific installation folder.



Once the correct folder is selected, click “Next”



Click “Next” to start the installation process. A shortcut will be created on your desktop and a program group will be created in the start menu.

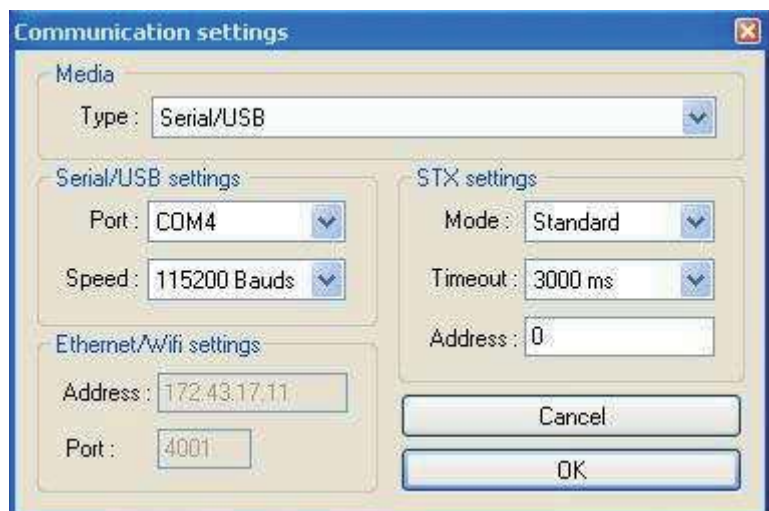
5.2 Running Px Explorer

Before launching Px Explorer be sure which COM port number is assigned to the TAGSYS Medio P200u reader. Open the Device Manager and select “View > Devices by type”.

Power up the Medio P200u and connect the USB cable to both your PC and the Medio P200u. Run Px Explorer. If the following window is displayed click yes.



Open the Communication Settings window (CTRL+C) and check the COM port number and the communication speed. The default communication speed for the Medio P200u is 115200 Bauds.

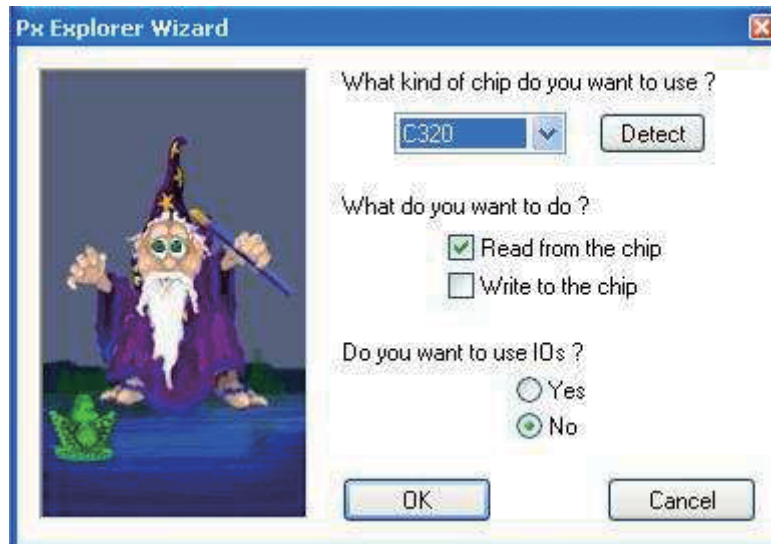


Click OK. Now Px Explorer is ready to communicate with your Medio P200u.

5.3 Reading and Writing a Tag

Px Explorer includes a Wizard function used to guide you each step of how to read or program a tag. We recommend using the Wizard function for users who are not familiar with all Px Explorer capabilities and features.

Click on the Wizard icon (magic wand) to open the Px Explorer Wizard dialog box.



Select the type of chip from the drop-down menu or place the tag on the antenna and click the "Detect " button to automatically detect the tag type.

Select the desired operation (Read or Write) and then click OK. All the necessary windows to perform the desired action will be automatically displayed on the screen.

For more details concerning Px Explorer select the info menu and click Help (CTRL+H) to display the Px Explorer User's Guide

6 Technical Specifications

Table 3: Medio P200u Technical Specifications

Reference	Medio P200u
Size (L x W x H)	123 x 68 x 30 mm 4.8 x 2.7 x 1.2 inches
Weight	150 g
DC power	12 VDC nominal
Chip compatibility	C210 / C240 C270 C370 C370L C370S ISO 15693
Communication interface	USB 1.1
RF Output Power	1W Typical
Power consumption	3,6 W
Operating temperature	0° to +55°C
Storage temperature	-20° to +70°C
Conformity	ETSI 300-330 European Radio compliance EN 50364 FCC part 15
Communication protocol	TAGSYS-specific STXE-2

7 Electrical Characteristics

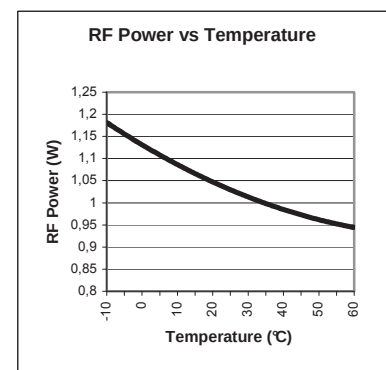
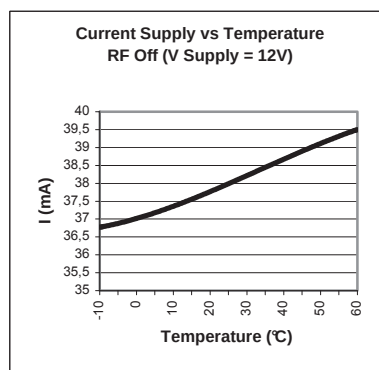
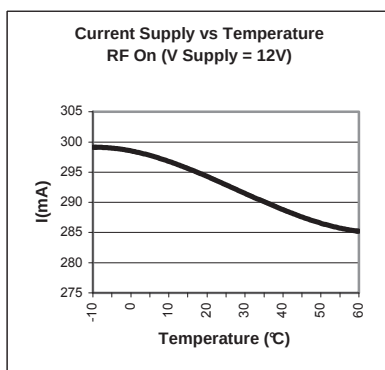
This chapter provides information about AC and DC characteristics for all pins. It also gives timing characteristics for the different interfaces.

7.1 Absolute Maximum Ratings

Parameter	Value
Ambient Operating Temperature	0°C to +55°C
Storage Temperature	-20°C to +70°C
Supply Voltage with respect to GND	25 V
Total Power Dissipation	3.6 W
Total Power Dissipation on Antenna	1 W

7.2 DC Characteristics

Value	Description	Max.	Typ.	Min.	Unit
V _{Supply}	Supply Voltage	13.2	12	10.8	V
I _{RFOff}	Supply Current – RFOff – USB Plugged (V _{Supply} = 12V)	44	39	35	mA
I _{RFOn}	Supply Current (RFOn, Dummy Load 50Ohm, V _{Supply} = 12V)	304	290	275	mA
I _{RFOn}	Supply Current (RFOn, V _{Supply} = 12V, Antenna connected)	AERO LI	271		mA
		LSA-2	290		mA
		LSA-3	276		mA
I _{Open}	Supply Current (RFOn, No connection on RF Connector)		202		MA
T _{Op}	Operating Temperature	0		55	°C
V _{USB}	Supply Voltage on USB cable	5.25	5	4.35	V
I _{usb}	Supply Current on USB cable	25	20	-	mA
U _{VOH}	D+/D- Static Output high	3.6		2.8	V
U _{VOL}	D+/D- Static Output low	0.3		0	V
U _{VSE}	Single Ended Rx Threshold	2.0		0.8	V
U _{VCOM}	Differential Common Mode	2.5		0.8	V
U _{VDIF}	Differential Input sensitivity			0.2	V
Z _{DRV}	Driver Output impedance	44		29	Ohm



8 Warranty Conditions

8.1 Warranty

TAGSYS warrants that this Product shall comply with the functional specifications set forth herein for a period of one year from the date of delivery to the Buyer.

This warranty is valid for the original Buyer of the Product and is not assignable or transferable to any other party.

TAGSYS cannot be responsible in any way for, and disclaims any liability in connection with the operation or performance of:

- any product in which the Product is incorporated;
- any equipment not supplied by TAGSYS which is attached to or used in connection with the Product; or
- the Product with any equipment

This warranty does only cover the Product to the exclusion of any such other equipment.

Optimal operation and performance of the Product are obtained by using TAGSYS' readers, by applying TAGSYS installation guidelines and by having your installation reviewed by a TAGSYS' technical consultant.

TAGSYS warranty does not cover the installation, maintenance or service of the Product and is strictly limited to the replacement of Products considered as defective by TAGSYS and returned according to the return procedure defined below; in such case, TAGSYS will, at TAGSYS' option, either replace every defective Product by one new Product or refund the purchase price paid by Buyer to TAGSYS for the defective Product.

8.2 Warranty Exclusions

- Defects or damages resulting from storage of the Product under conditions which do not comply with TAGSYS specifications or normal usage
- Defects or damages resulting from use of the Product in abnormal conditions (abnormal conditions being defined as any conditions exceeding the ones stated in the product specifications).
- Defects or damages from misuse, accident or neglect.
- Defects from improper testing, operation, maintenance or installation.
- Defects from alteration, modification except modifications or adjustments specifically described in this Product reference guide, adjustment or repair, or any attempt to do any of the foregoing, by anyone other than TAGSYS.
- Any action on Product that prevents TAGSYS from performing an inspection and test of the Product in case of a warranty claim.
- Tampering with or abuse of the Product.
- Any use or incorporation by the Buyer or a third party of TAGSYS' Product into life saving or life support devices or systems, or any related products, TAGSYS expressly excludes any liability for such use.

8.2.1 General Provisions

This warranty sets forth the full extent of TAGSYS responsibility regarding the Product.

In any event, TAGSYS warranty is strictly limited to (at TAGSYS' sole option) the replacement or refund of the Products purchase price to TAGSYS, of Products considered as defective by TAGSYS.

The remedy provided above is in lieu and to the exclusion of all other remedies, obligations or liabilities on the part of TAGSYS for damages, whether in contract, tort or otherwise, and including but not limited to, damages for any defects in the Products or for any injury, damage, or loss resulting from such defects or from any work done in connection therewith or for consequential loss, whether based upon lost goodwill, lost resale profits, impairment of other goods or arising from claims by third parties or otherwise.

TAGSYS disclaims any explicit warranty not provided herein and any implied warranty, guaranty or representation as to performance, quality and absence of hidden defects, and any remedy for breach of contract, which but for this provision, might arise by implication, operation of law, custom of trade or course of dealing, including implied warranties of merchantability and fitness for a particular purpose.

8.2.2 How to Return Defective Products

The Buyer shall notify TAGSYS of the defects within 15 working days after the defects are discovered.

Defective Products must be returned to TAGSYS after assignment by a TAGSYS Quality Department representative of an RMA (Return Material Authorization) number. No Products shall be returned without their proof of purchase and without the acceptance number relating to the return procedure.

All Products shall be returned with a report from the Buyer stating the complete details of the alleged defect.

Call +33 (0) 4 42 18 89 36 for return authorization and shipping address.

If returned Products prove to be non-defective, a charge will be applied to cover TAGSYS' analysis cost and shipping costs.

If the warranty does not apply for returned Products (due to age, or application of a warranty exclusion clause), a quote for replacement will be issued, and no replacement will be granted until a valid purchase order is received. If no purchase order is received within 30 days after the date of TAGSYS quote, TAGSYS will return the products and charge the analysis cost and shipping costs.

All replaced Products shall become the property of TAGSYS.

The Product Return Form is included on the following page. This form should accompany any product you need to return to TAGSYS for analysis in the event of a problem.

Product Return Form

Customer Profile:

Company:
Address:
.....
City & State:
Zip Code:
Country:

Contact Name:
Contact e-mail:
Contact Phone:
Contact Fax:

Order identification:

Product Name:
Order Number (OEF):

Invoice Number:
Return Quantity:

Reason for return:

.....
.....
.....
.....
.....

To inform TAGSYS of this return, please email it to

RMA@tagsysrfid.com

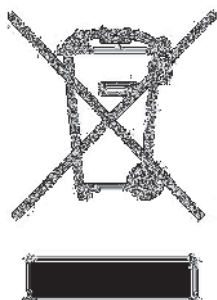
Address to ship the product with this document attached:

TAGSYS
QUALITY DEPARTMENT
TAGSYS – 785 Voie Antiope, Athélia III,
13600 La Ciotat, France

To inform TAGSYS of this return, please also fax it to your Customer Service Representative
+33 (0) 4 42 18 89 01

Return Procedure:

The product returned will go through stringent quality controls.
A final analysis report will be sent to you as soon as possible.
Please contact your Quality Service representative for further details.
+33 (0) 4 42 18 89 36



This product bears the selective sorting symbol for waste electrical and electronic equipment (WEEE)

This means that this product must be handled pursuant to European Directive 2002/96/EC in order to be recycled or dismantled to minimize its impact on the environment.

For further information, please contact your local or regional authorities.

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FCC WARNING

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.

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

NOTE: 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. 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 receiver.
- Connect the equipment into 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.