



16-book L-SA1 Library Stack Antenna

Reference Guide
Version 1.0

TAGSYS
February 2003

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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 instructions for the installation and the use of the 16-book L-SA1 Library Stack Antenna specifically designed for the library application.

Audience

This document requires familiarity with RFID technology.

Please also refer to regulatory and warranty notices in chapter 4.

Conventions

Symbol	Meaning
•	One of a list of items.
	A warning about safety or hazards, or about actions that could lead to equipment failures or breakdown.
	A note or additional information to which your attention is drawn and which should facilitate your use of the Product or allow you to get the best performances out of the Product.

If you need assistance

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

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Fax +33 (0)4 91 27 57 01
E-Mail info@tagsys.net

Contact for Comments

We welcome your feedback to help us provide high quality documentation.
For technical comments, contact our welcome desk:

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E-Mail	info@tagsys.net

Please remember to quote the document reference on page 2, your job title and your company.

Quality

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

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1. *Introduction*

General

This document provides information about the 16-book L-SA1 Library Stack Antenna. It describes the product and how to install it.

Product Description

This antenna is composed of two PCBs located on a single ferrite support, 30 mm from each other, providing a large area of detection (Cf Figure 1). This antenna is optimized for use with the TAGSYS L-L100 Library reader for multiple check in/out operations.

Due to its specific design, the 16-book L-SA1 Library Stack Antenna can be safely used in proximity with other TAGSYS RFID products. It will work also, if properly installed, in metallic type environments (see chapter installation for further details). In this case, performance may be reduced.

The antenna is provided with rubber base pads for installation in a standard desktop configuration.

Although this antenna has been specifically designed for library applications, it can also be used for any application requiring a desktop station which has a good immunity to its environment.

The antenna has been factory calibrated to an impedance of 50 Ω which offers optimal performances when the antenna is installed on the surface of the desk or table.

It may be necessary to retune the antenna once installed if the environment is highly metallic or if the antenna is installed underneath the table or desk. Please refer to the Chapter Installation of this reference guide for more information.

Optimal performance is achieved when the smart labels to be read are placed parallel to the antenna surface and centered on the antenna surface.

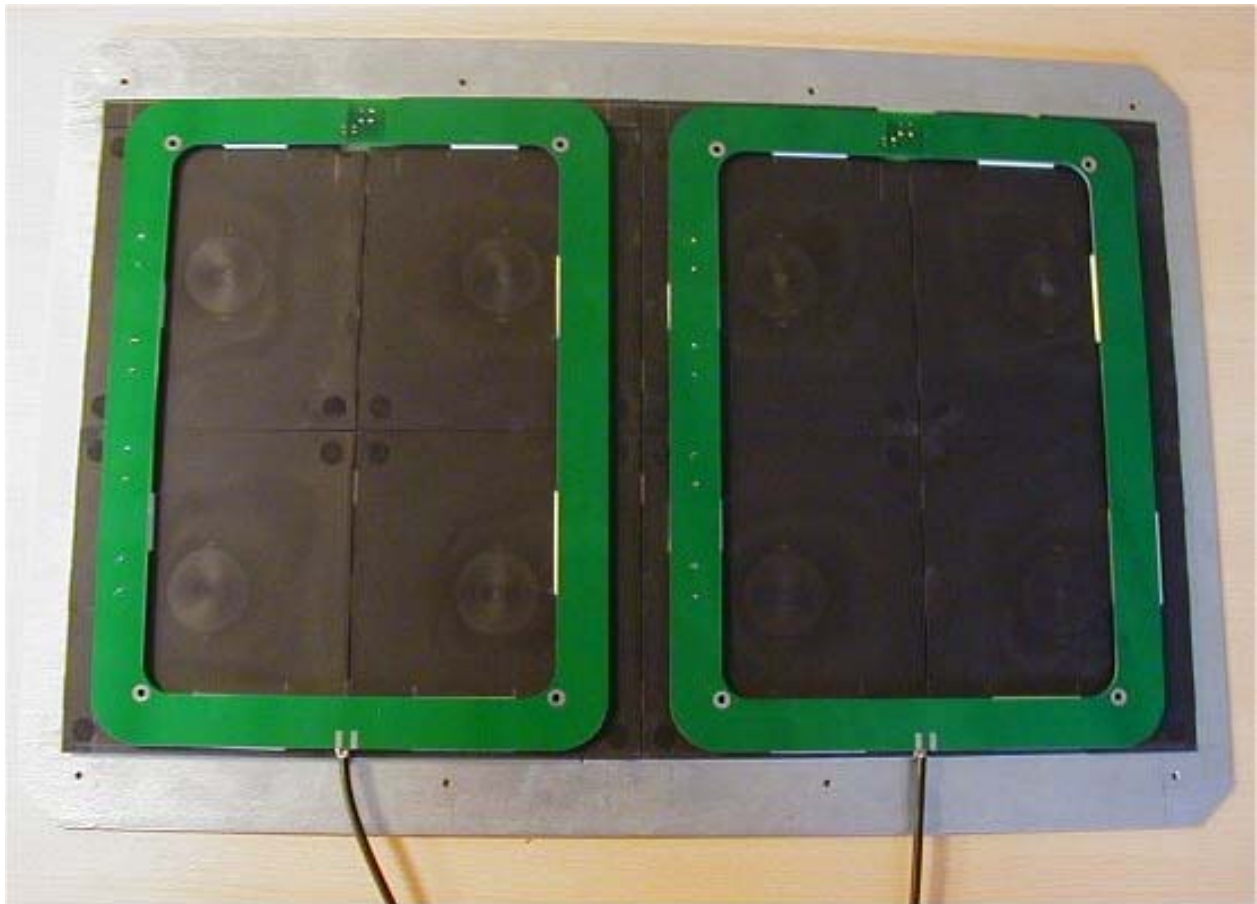


Figure 1: 16-book L-SA1 Library Stack Antenna (without top cover)

Delivery

When shipped, the 16-book L-SA1 Library Stack Antenna contains the following items:

Quantity	Item
1	Antenna with two coaxial cables (cover optional)
1	CD-ROM
1	Welcome Letter / Product Return Form
1	Mounting Kit including 6 brackets and associated screws

Table 1: Package contents

2. Installation

Standard Installation

The recommended installation for the 16-book L-SA1 Library Stack Antenna is the desktop configuration. Its thin shape is ergonomically designed for discreet use at the circulation desk for multiple check in/out operations.

The antenna is designed for indoor use.

Desktop Configuration

The antenna is specially designed to operate:

- On wooden, synthetic or metallic desks (or including metallic parts)
- In close proximity to other antennas

Place the antenna on the desk and connect the two BNC connectors to channels CH1 and CH2 of the L-L100 Library reader.

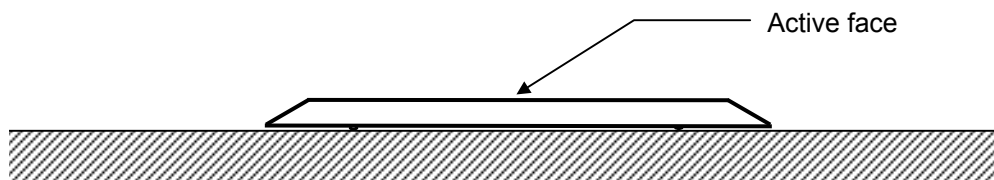


Figure 2: Standard installation



Always ensure that the reader is switched off before connecting or disconnecting the antenna.



1. *For optimum performance, always ensure that all metallic or conductive parts are located under the antenna.*
2. *Do not shorten or extend the supplied cable as this may affect performance.*
3. *Do not place the antenna cable close to other cables, especially power cables.*

Specific Installation

The 16-book L-SA1 Library Stack Antenna is provided with a mounting kit for specific installations. This mounting kit can be used to orient the active face of the antenna depending your application.



- Notes:**
1. ***Metallic or conductive parts must not be present in front of the active face of the antenna.***
 2. ***For best performance, always request an installation compliance agreement from Tagsys Custom Services regarding your specific installation.***
 3. ***The Tagsys Antenna Tuning Kit Device may be required to verify the tuning of antennas for a specific installation.***

Using the Mounting Kit

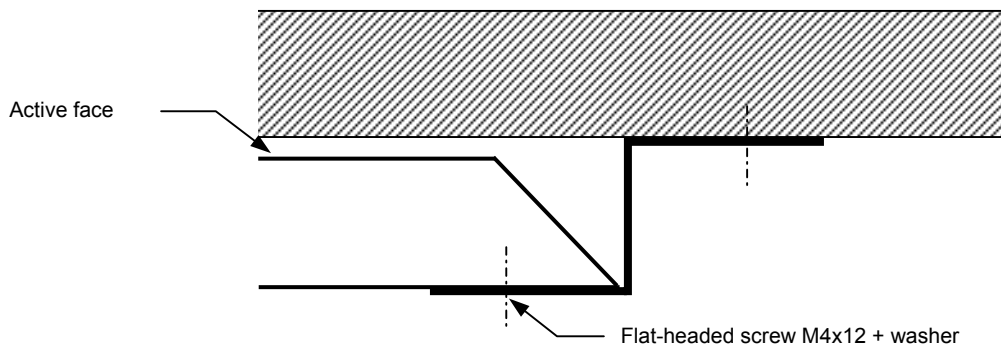


Figure 3: Using the Mounting Kit



Figure 4: Example of specific installation



- Notes:**
1. ***This configuration reduces reading or writing performance (distance). For optimum performance, the antenna must placed above the desk and not underneath.***
 2. ***Always ensure that metallic or conductive parts are located under the antenna.***

3. Technical Data

Mechanical Data

Cover dimensions

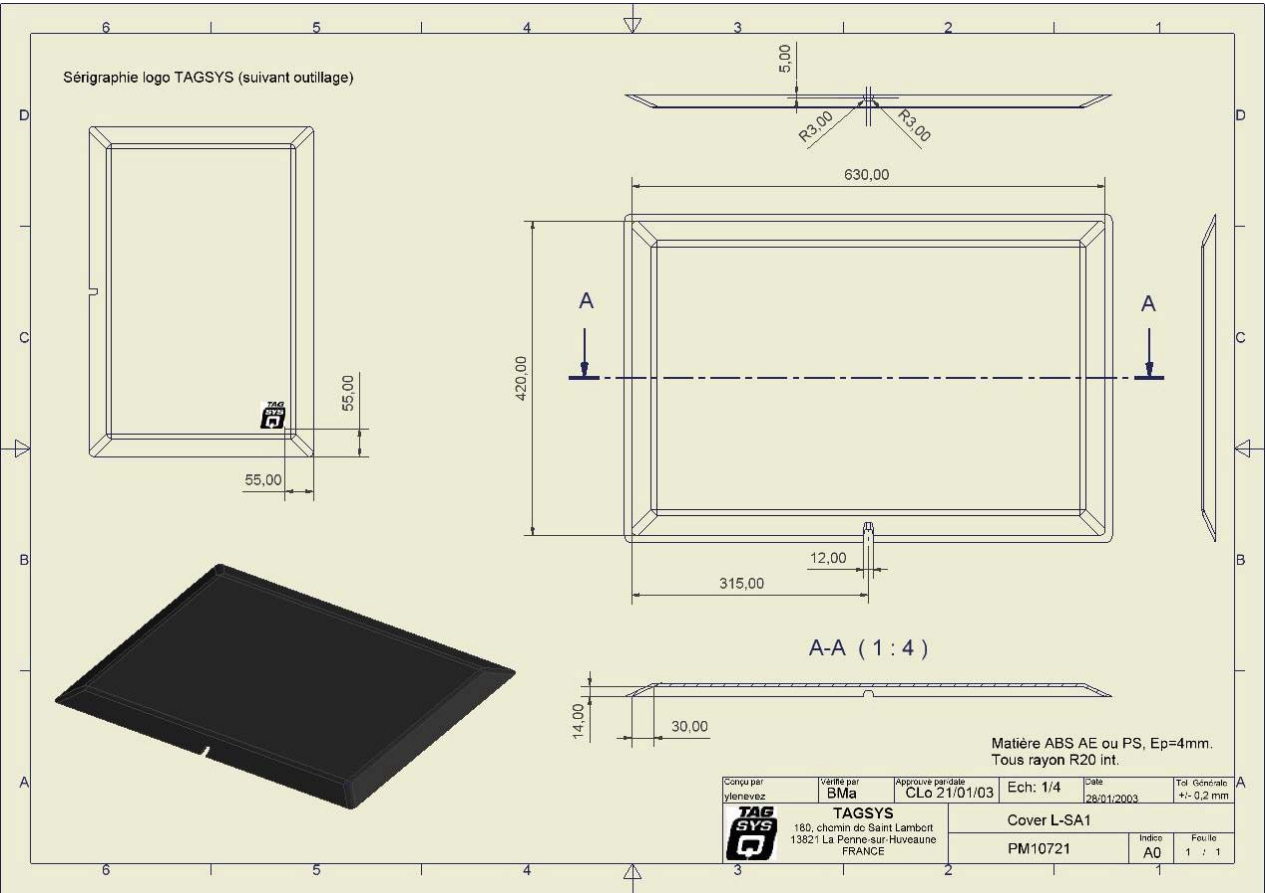


Figure 5: Cover mechanical dimensions

Bare antenna (without cover, for integratation in a dedicated casing)

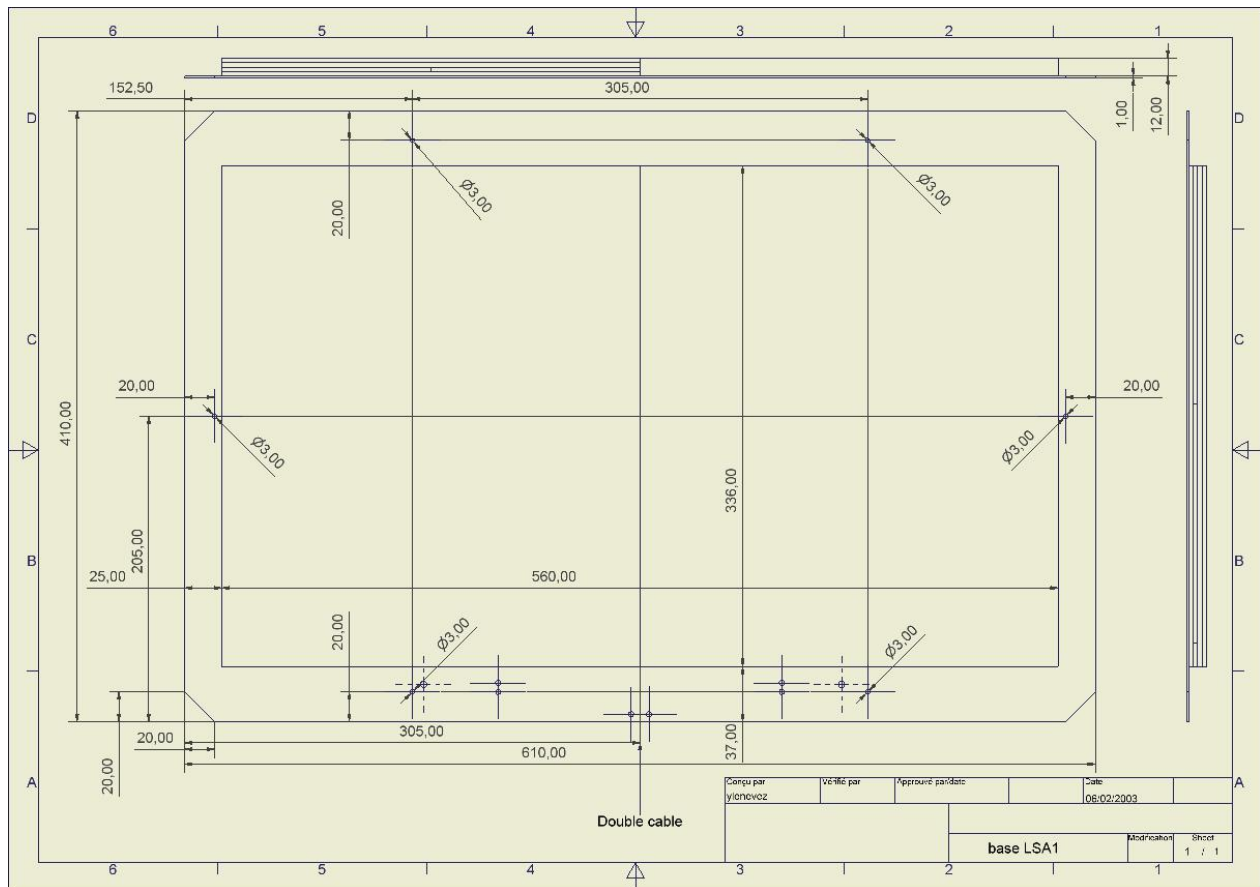


Figure 6: Bare antenna mechanical dimensions

Specification Summary

Housing	Black Polystyrene or Blue Plastic ABS UL 94-V0
Dimensions	650 x 440 x 18 mm (with cover)
Weight	5 kg
Color	Pantone P536 blue or Black
Protection class	IP 21

Table 2: Mechanical Data

Operating Temperature	0°C to 55°C
Storage Temperature	-25°C to +60°C

Table 3: Temperature range

Maximum Input Power	1 W
Operating Frequency	13.56 MHz
Impedance	$50\ \Omega \pm 5\ \Omega$ and $0^\circ \pm 5^\circ$
Antenna Connection	BNC $50\ \Omega$
Antenna Connection cable	RG 58 $50\ \Omega$, 3m Length
Typical Performances (*)	Reading: 18 cm Writing : 14 cm

Table 4: Electrical Data

(*) Tests results in laboratory with L-L100 Library reader and Folio 20 in standard desktop configuration.

4. *Regulation and Warranty Conditions*

Regulatory Notices

An RFID system including a 16-book L-SA1 Library Stack Antenna connected to a reader contains RF emission devices and thus is subject to national regulations that may differ by country.

For antennas, one important item to consider is the maximum permissible magnetic field intensity at 10 m from the antenna and which shall not exceed 42 dB μ A/m in Europe and 38 dB μ A/m in US.

When using a 16-book L-SA1 Library Stack Antenna with a L-L100 Library reader set at conditions as defined in this Reference Guide and for the Library application, these limits are met.



When used in the library application, It is the responsibility of the TAGSYS Reseller to install the 16-book L-SA1 Library Stack Antenna as described in this Reference Guide or in TAGSYS Documentation.



When using a 16-book L-SA1 Library Stack Antenna in a different configuration (different power settings for the reader, different smart labels being used), it is your responsibility to check that the above-mentioned limits are not exceeded. You will have to test your configuration in a listed laboratory and then obtain approval by the local authorities before installing and selling it.

In Canada

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

In USA (FCC Directive)

Systems using a L-L100 Library reader connected to a 16-book L-SA1 Library Stack Antenna are designed to comply (FCC ID Number pending) with Part 15 of FCC Specifications.

L-L100 Library Reader with 16-book L-SA1 Library Stack Antenna FCC EQUIPMENT STATEMENT

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 UNAUTHORISED 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. Unauthorised modification may void the equipment authorisation 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 authorisation from the FCC and will void the TAGSYS warranty.

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

In Europe (CE and RTTE Directives)

The 16-book L-SA1 Library Stack Antenna complies (CE Declaration of Conformity granted) with the European EMC directive.

16-book L-SA1 Library Stack Antenna 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 16-book L-SA1 Library Stack Antenna as described in this Reference guide or TAGSYS Documentation.

Modification of any 16-book L-SA1 Library Stack Antenna 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.



WARNING:

If a 16-book L-SA1 Library Stack Antenna (plus a L-L100 Library reader) 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.

Occupational Health and Safety Notices

TAGSYS Library System components (including Library Stack Antenna 16 books L-SA1) have been designed not to exceed the limits given in 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.

It is the responsibility of the TAGSYS Reseller to install the TAGSYS Library System components as described in TAGSYS Product Manuals or TAGSYS Documentation. Modification of any TAGSYS Library System is prohibited without the written consent of TAGSYS. Unauthorized modifications may void the conformity of the equipment to safety norm and will void the TAGSYS warranty.

An RF fields survey has been carried out on all the Library System components (including Library Stack Antenna 16 books L-SA1), in accordance with AS/NZS 2771.1: Radio Frequency Radiation, Part 1. According to this standard the maximum allowable RF exposure levels (non-occupational) at 3 kHz to 300 GHz are 200 $\mu\text{W}/\text{cm}^2$. The maximum found was 1.09 $\mu\text{W}/\text{cm}^2$ at 13.56 MHz. For all locations maximum power density was well below the maximum allowable levels. The highest level found was only 0.55% of the maximum.

Warranty

TAGSYS warrants that its 16-book L-SA1 Library Stack Antenna shall comply with the functional specifications set forth herein for a period of one year from the date of acceptance by the Buyer (as defined in TAGSYS General Terms of Sale).

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.

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 which prevent TAGSYS to perform 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.

How to Return Defective Products

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 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 4 91 27 57 57 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.

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.

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