



# Conveyor Antenna

## Installation Guide

Revision 1.3

TAGSYS

July 2003

# Publishing Information

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# Read This First

Welcome to the TAGSYS RFID System. This Installation Guide is designed to help you get up and running quickly using this high-quality Radio Frequency Identification (RFID) system. It describes all you need to know about how to install and use the TAGSYS system and its associated applications.

It provides a step-by-step guide for the following procedures:

- Installation of the Conveyor Antenna
- Configuring the product for use within your library system
- Using the product with your computer system

This guide is designed for all TAGSYS partners and for TAGSYS Expert Network customers implementing a low-cost and high-performance RFID solution.

This document does not assume any previous knowledge of Radio Frequency Identification (RFID) technology.

## Conventions

Symbol	Meaning
	<b>CAUTION:</b> A note that advises users that a specific action could result in the loss of data or damage the hardware. <b>WARNING:</b> 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.

## Abbreviations and Acronyms

AFI	Application Family Identifier
AON	All Or None
API	Application Programming Interface

## Glossary

**Anti-Collision** Tag capability making it readable while other tags are present in the RF field.

**Antenna** An aerial that receives and/or transmits radio frequency signals. Aerials are manufactured in a variety of forms, shapes and sizes.

**BNC Connector** Cylindrical metal connector with a copper core that is located at the tip of a coaxial cable, and is used to connect cables together. It attaches by pushing and twisting the outer cylinder on to two locking pins.

**Coupler** See Reader.

**IEC Connector** Three-pin connector used on sockets that carry mains electricity to the computer. All PCs use a male IEC connector and mains lead with a female IEC connector.

**Multi-Read** See Anti-Collision

**Packaged Reader** A reader in its casing.

**Phase Shift** Difference of phase between the 13.56 MHz field emitted by two antennas. This feature is dedicated to rotating field applications and three-dimensional volume smart label detection.

**Protocol** A set of rules governing a particular function, such as the flow of data/information in a communication system (communication between a smart label and a reader or a reader and a PC or host computer).

**Radio Frequency Identification System (RFID)** An automatic identification and data capture system comprising one or more readers and one or more smart labels in which data transfer is achieved by means of suitable modulated inductive or radiating electromagnetic carriers.

**Reader** Electronic system for the communication between smart labels and host computers.

**Reader Talks First** Chip protocol for exchanges between the reader and the chip, whereby the chip waits for a command from the reader to which it responds.

**RS-232** Electronic Industries Association (EIA) standard for serial interfaces between computers and peripherals that defines the function, the electrical characteristics and the timing of signals.

**RS-485** Electronic Industries Association (EIA) standard for multipoint, differential data transmission. It allows multiple nodes to communicate bi-directionally over 1 or 2 twisted pairs.

**Smart Label** Small, flexible tag from the 13.56 MHz TAGSYS product line. A smart label is made of a chip connected to an etched antenna.

**Tag** See Smart Label.

**Tag Talks First** Chip protocol for exchanges between the reader and the chip, whereby the tag sends information continuously, without waiting for a specific command from the reader.

**Transceiver** A combined transmitter and receiver.

**Transponder** A combined receiver/transmitter that automatically transmits a signal when a 'trigger' is received by it. The trigger is often a pulse, called an interrogation pulse.

## If you need assistance

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

Telephone: +33 (0) 4 91 27 57 00  
Fax: +33 (0) 4 91 27 57 01  
E-Mail: [info@tagsys.net](mailto:info@tagsys.net)

## Contact for Comments

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Please remember to quote the Document Reference Number **10926A0**, 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 customer service representative using the dedicated Product Return Form.

Telephone: +33 (0) 4 91 27 57 36  
Fax: +33 (0) 4 91 27 57 02

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# 1 For Your Safety

## 1.1 General Use

The Conveyor Antenna is designed to be rugged and 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.
- Take care not to drop the device or subject it to any strong impact.
- Protect the device from extreme temperatures. For example, 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 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.

## 1.3 Important Safety Information

### 1.3.1 Operating Environment

Follow all special regulations that are applicable in any area and always switch off the device whenever its use is prohibited, or when it may cause interference or danger.

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.

### **1.3.2 Medical Devices**

Most modern electronic equipment is shielded from radio-frequency (RF) signals. However, other electronic equipment may not be shielded against the RF signals from your device.

Operation of radio transmitting equipment, including cellular mobile phones, may interfere with the functionality of inadequately protected medical devices. Consult a physician or the manufacturer of the medical device to determine if they are adequately shielded from external RF energy or if you have any questions.

## 2 Certification

### 2.1 Occupational Health and Safety Notices

TAGSYS Products 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 Partner to install the Conveyor Antenna as described in TAGSYS Product Manuals or TAGSYS Documentation and with the appropriate antennas.

Modification of any TAGSYS 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 System components, 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  $\mu$ W/cm<sup>2</sup>.

### 2.2 Regulatory Notices

An RFID system typically composed of an RF emission device such as the Conveyor 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 dB $\mu$ A/m in Europe and 38 dB $\mu$ A/m in the US.

In compliance with these regulations, only the following two configurations are authorized and will be installed by approved TAGSYS technical representatives:

- Config. 1: 200 x 200 and 140 x 140 mm. antenna coils with 1.5 Watts per Channel Output Power
- Config. 2: Dual 120 x 470 mm. antenna coils with 2 Watts per Channel Output Power

The Conveyor Antenna meets these limits.



It is the responsibility of the TAGSYS Partner to install the Conveyor Antenna as described in this Installation Guide or in TAGSYS Documentation.

The installation of the conveyor antenna configuration and output power settings by unauthorized technical personnel is prohibited.

#### 2.2.1 In Europe (CE and RTTE Directives)

The Conveyor Antenna complies (CE Declaration of Conformity granted) with the European EMC directive.

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

Any modification of the Conveyor 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.



If a Conveyor Antenna 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 Conveyor Antenna has been designed to comply with Part 15 of the FCC Rules. Furthermore typical configurations based on a Medio S002 have been successfully tested with Part 15 of the FCC rules (FCC ID Number pending).

### Conveyor Antenna with Medio L100 Reader

**Config. 1: 200 x 200 and 140 x 140 mm. antenna coils with 1.5 Watts per Channel Output Power**  
**Config. 2: Dual 120 x 470 mm. antenna coils with 2 Watts per Channel Output Power**

#### 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.

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.

## 2.2.3 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.

# 3 Overview

The Conveyor Antenna ([Figure 1](#)) has been optimized for use with the TAGSYS Medio L100 and Medio L200 readers for garment tracking applications.

For Textile Rental and Laundry applications, the Conveyor Antenna is recommended for:

- On-the-fly garment identification for automatic sorting
- Automatic reading at loading points

An optional signal box is available that indicates a correct tag reading with a buzzer or a flashing light.

Optimal performance is achieved when the tags to be read are presented in parallel to the conveyor antenna and centered on the active area antenna according to the internal antenna configuration.

Several antenna configurations are available inside the shape and have to be carefully linked to the tag positioning. To identify the best solution for your system, it is strongly recommended to read the TAGSYS Textile Tag Positioning Guide.

**Figure 1: Conveyor Antenna**

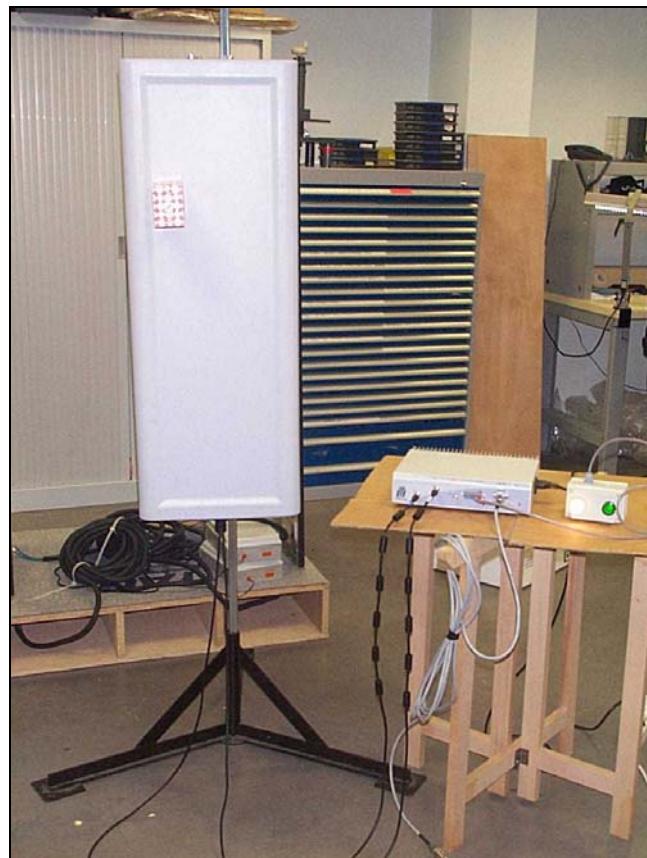


## 3.1 Delivery Kit

The items listed in [Table 1](#) are included in the delivery kit.

**Table 1: Contents of the Delivery Kit**

Quantity	Description
1	Conveyor Antenna with 2 coaxial cables with 6 ferrite beads each
1	TR-L100 Reader Unit
1	Signal Box, including 6-meter shielded UL cable (Optional)
1	Welcome Letter / Product Return Form
1	CD-ROM with: <ul style="list-style-type: none"><li>• Conveyor Antenna Installation Guide</li><li>• Textile Tag Positioning Guide</li></ul>

**Figure 2: Full Conveyor Antenna System with the TR-L100 Reader and Signal Box**

# 4 Installation

Before installing the Conveyor Antenna in your industrial laundry or textile rental conveyor system, it is strongly recommended to read the TAGSYS Textile Tag Positioning Guide that provides information on how to select the best antenna configuration for your conveyor system.

**Figure 3: Standard Upright Installation**



## 4.1 Antenna Location

The antenna is designed for an industrial indoor usage. The recommended position for the Conveyor Antenna is the upright conveyor configuration.

Using the guidelines provided in the TAGSYS Textile Tag Positioning Guide, identify the best location of the Conveyor Antenna in relation to the following considerations:

- The conveyor drive system
- The position of the tags attached to garments and the antenna active area
- Garment guide system (either an independent unit or the conveyor antenna panel itself)
- L100 Reader cannot be more than 3 meters distant
- Possible disturbances (power cables, motors, variable frequency drives, etc.)



1. For optimum performance, always ensure that any metallic or conductive parts are located behind the antenna.
2. Shortening or extending the supplied coaxial antenna cables may decrease performance.
3. Do not place antenna cables close to other cables, especially power cables

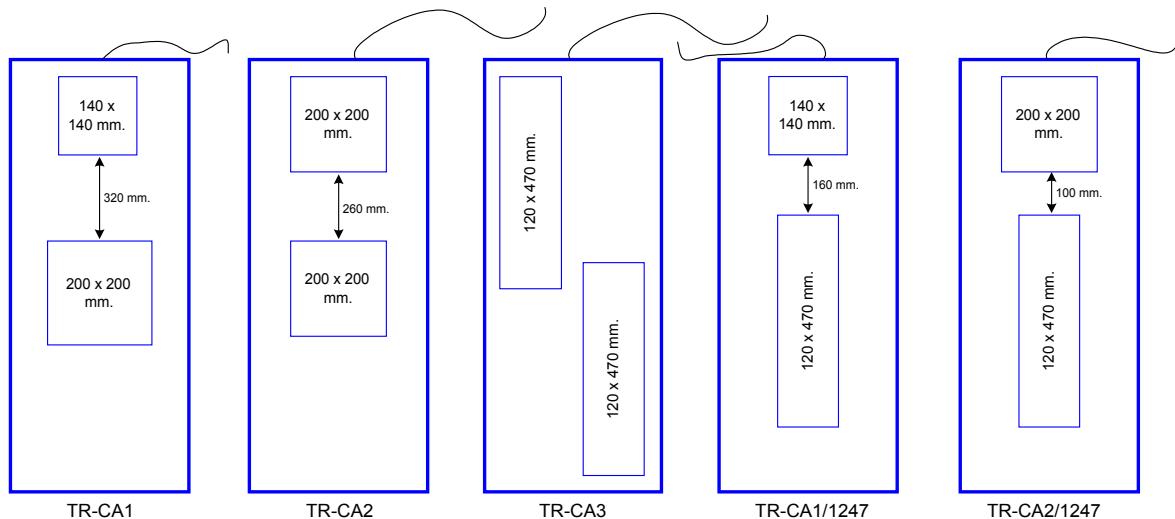
## 4.2 Antennas Active Area

The configuration is selected in relation to the tag position in the garments and the way the conveyor antenna is used. It is strongly recommended to read the Textile Tag Positioning Guide to decide which configuration is best adapted to your system.



**IMPORTANT:** Note that the dimensions of the antennas inside the conveyor antenna housing given in this document are based on the actual size of the radiating coil and not on the overall size of the individual antenna unit.

**Figure 4: Conveyor Antenna Configurations**



There are five different antenna configurations as shown in [Figure 4](#). The advantages and specific considerations for each configuration are given in [Table 2](#).

**Table 2: Conveyor Antenna Configuration Table**

Antenna Configuration		Advantages and Considerations
Extended	TR-CA3 (USA and Europe)	Tags are read over a contiguous zone of 850 mm. (1 yard). The garment must pass almost parallel to the antenna over the entire width. If 2 garments are separated by less than 400 mm. (15¾ in.) and if a trigger is used for reading, some problems may occur.
Square	TR-CA1 (USA and Europe) and TR-CA2 (Europe Only)	Tags are read over two separate square areas. The upper area is generally used for shirts, coats, coveralls, and upright pants. The lower area is for pants hung upside-down and coveralls with tags in a low position. Certain conveyor systems may create noise that may reduce antenna performance. In this case, the TR-CA1 configuration with the upper small antenna should be selected.
Centered Large	TR-CA1/1247 and TR-CA2/1247 (Europe Only)	The garment can either pass almost parallel to the antenna over the entire width or it can be simply presented in front of the station. The low reading area in TR-CA1/1247 and TR-CA2/1247 is extended to read tags in pants that often have their tags over a large area. Both antennas are located on the same axis, so a reading trigger can be used easily.



For additional customization, the antenna coils of the TR-CA, TR-CA2, TR-CA1/1247 and TR-CA2/1247 antennas can be adjusted horizontally to the left or right sides inside the conveyor antenna housing. These coils cannot be adjusted vertically.

For more information, contact your TAGSYS sales representative.

Table 3 lists the reading distances for the various antenna coils.

**Table 3: Antenna Reading Distances (at 3 W with Ario 20 tag)**

Radiating Antenna Coil Dimension	Average Reading Distance
140 x 140 mm.	150 mm.
200 x 200 mm.	145 mm.
120 x 470 mm.	155 mm.

## 4.3 Installing the Conveyor Antenna

The lightweight conveyor antenna can be mounted in any position using brackets. It is recommended to use brackets made of a non-metallic material. If metallic brackets are used, make sure that they do not form a loop that may create interference and reduce antenna performance.

Brackets are attached to the Conveyor Antenna at the points shown in Figure 8. M5x14 screws (metric threaded) are included in the delivery kit for attaching the brackets.

If mounted as shown in Figure 5, the position of the conveyor antenna can then be finely adjusted in order for the tag positioning area of the garments to coincide with the reading areas of the conveyor antenna.

**Figure 5: Mounting Brackets on Conveyor Antenna**



#### 4.3.1 Guides

Guides are often used along the conveyor to protect garments and to ensure that garments are correctly presented in front of the antenna for valid reading of their tags the hangers and to prevent them from swinging. In some cases, items can be correctly positioned by having the item brush against the conveyor antenna as shown in [Figure 6](#).

**Figure 6: Conveyor Antenna used as a Guide**



**CAUTION:** Metallic or conductive parts must not be located less than 300 mm. around the active areas of the Conveyor Antenna.

#### 4.4 Installing the TR-L100 Reader Unit

Once fixed on the conveyor, the 2 BNC cables of the Conveyor Antenna must be connected (randomly) to Channels 1 and 2 of the Medio L100 reader.



**CAUTION:** The reader unit **MUST** be switched OFF before connecting or disconnecting the antenna.

#### 4.5 Installing the Signal/Buzzer Box

A Signal box (optional) is also available for textile rental and laundry applications.

This box is equipped with two signal lamps (green and white) and a buzzer. Delivered with a 6-meter long cable, this Signal Box is easily connected to the I/O ports of the TR-L100 Reader. The L200 Explorer software provides a user-friendly configuration system.

**Figure 7: Signal Box**

In general, the buzzer and green lamp are used to signal that a tag has been correctly read. The white lamp generally means that the reader unit is switched on or that the tag-reading timeslot is open.

**Table 4: Signal Box Connections**

Signal Box Wire	TR-L100 Connection	Description
White (White Lamp)	I/O Port 2	Trigger On
Green (Green Lamp)	I/O Port 3	Tag Read OK
Red (Buzzer)	I/O Port 3	Tag Read OK
	I/O Port 4	Tag Read Not OK
Black (Power)	$V_{IN}$	Power Supply

The I/O ports are easily configured using the L200 Explorer software. For more information, refer to the TR-L100 Reader or L200 Explorer User's Guides.

## 4.6 Cabling Requirements

All Conveyor Antenna cables must be correctly shielded. The shielding effectiveness of the material used should be of good performance (60dB min.), especially in the frequency range of 10 to 60 MHz. The addition of ferrite clamps near the reader unit will increase common mode rejection. TAGSYS antenna products are delivered with good performance shielded coaxial cables with 6 ferrite beads already mounted to increase shielding effectiveness at low frequencies ([Figure 9](#)).

## 4.7 Installation Test

After setup, an installation test has to be done to ensure proper functioning:

1. Place 10 pieces of each of the different garment types on the conveyor. Check that the tags are attached to each garment as specified for actual conveyor antenna configuration.
2. Run the conveyor.
3. Check that each garment is read.
4. Repeat this procedure 10 times (1000 possible readings).
5. A read rate greater than 98% means the installation is OK.

# 5 Maintenance

## 5.1 Servicing the Conveyor Antenna



**CAUTION:** The Conveyor Antenna contains no operator serviceable parts and must only be serviced by qualified personnel.

No regular servicing is required, except for keeping the unit clean.

It is recommended that an approved TAGSYS technical representative inspect the electronics unit at least once per year.

## 5.2 Servicing the Reader Unit



**CAUTION:** The Reader Unit contains no operator serviceable parts and must only be serviced by qualified personnel.

No regular servicing is required, except for keeping the unit clean.

It is recommended that an approved TAGSYS technical representative inspect the electronics unit at least once per year.

## 5.3 Servicing the Signal Box



**CAUTION:** The Signal Box contains no operator serviceable parts and must only be serviced by qualified personnel.

No regular servicing is required, except for keeping the unit clean.

It is recommended that an approved TAGSYS technical representative inspect the electronics unit at least once per year.

# 6 Technical Data

## 6.1 Mechanical Characteristics

Description	Value
Housing	Plastic ABS UL 94-V0
Dimensions	998 x 418 x 34 mm. (39 $\frac{1}{3}$ x 16 $\frac{5}{8}$ x 1 $\frac{1}{2}$ in.)
Weight	8 kg. (17.6 lb.)
Color	Pantone P536 Blue
Protection Class	IP 21
Operating Temperature	0 °C to 55 °C (32 °F to 131 °F)
Storage Temperature	-25 °C to +60 °C (-130 °F to 140 °F)

Figure 8: Conveyor Antenna Mechanical Diagram (Mounting Hole Dimensions)



## 6.2 Electrical Characteristics

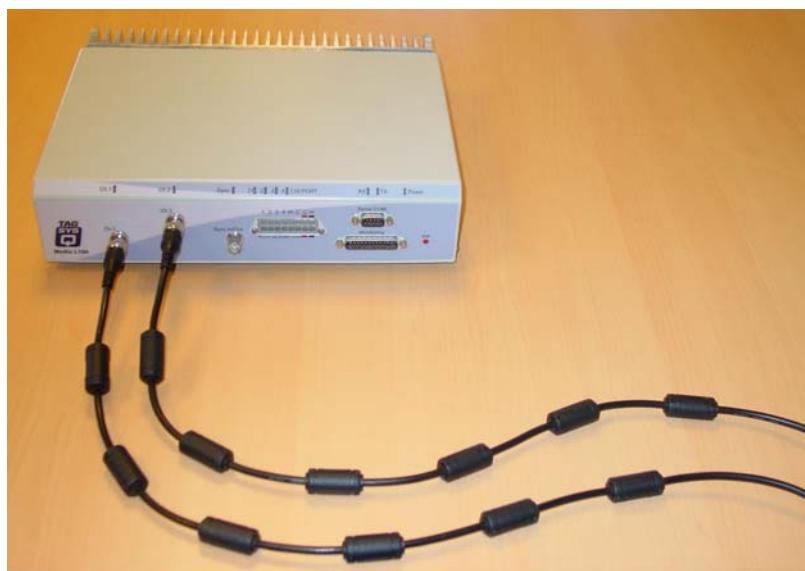
Description	Value
Input Power	
Absolute Maximum Rating	8.0 W
Max. with TR-CA1 Configuration	1.5 W
Max. with TR-CA3 Configuration	2.0 W
Operating Frequency	13.56 MHz
Impedance	50 $\pm$ 5 $\Omega$ and 0 $^\circ$ $\pm$ 5 $^\circ$
Antenna Connection	Standard 50-Ohm, BNC connection
Antenna Connection cables	Standard 50-Ohm, RG-58 cable (3 m. long) with 6 ferrite beads at the reader unit end.
Typical Performances (*)	Reading: 140 mm.

(\*) Laboratory test results using a Medio L100 reader and an Ario 10TL tag in a standard upright configuration. Tag placed in the middle of any of two active areas of the dual 120 x 470 mm. configuration.



**CAUTION:** Only use recommended cable with correct shielding for Signal Box. The Conveyor Antenna must be connected to the TR-L100 Reader unit using only the supplied RG-58 cable with 6 ferrite beads fastened at the reader unit end.

Figure 9: Ferrite Beads with TR-L100 Reader



For optimum performance in Industrial Laundry and Textile Rental applications using a Medio L100 reader, apply a typical transmitting power of 3 W and 4 W maximum.

# 7 Warranty Conditions

## 7.1 Warranty

TAGSYS warrants that its Conveyor Antenna (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 only applies to the Product and excludes all 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.

The 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.

### 7.1.1 Warranty Exclusions

The following conditions are not covered under the warranty:

- Defects or damages resulting from storage of the Product under conditions that 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 the product that prevents 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.

## 7.1.2 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.

## 7.1.3 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 4 91 27 57 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.

## TAGSYS Product Return Form

**Customer Profile:**

Company:.....

Address:.....

Contact Name:.....

.....

Contact e-mail:.....

City &amp; State:.....

Contact Phone:.....

Zip Code:.....

Contact Fax:.....

Country:.....

**Order Identification:**

Product Name:.....

Invoice Number:.....

Order Number (OEF):.....

Return Quantity:.....

**Reason for return:**

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

**To inform TAGSYS of this return, please email it to:**

[valerie.guenegan@tagsys.net](mailto:valerie.guenegan@tagsys.net) and to [catherine.thouvenin@tagsys.net](mailto:catherine.thouvenin@tagsys.net)

**Address to ship the product with this document attached:**

TAGSYS  
180, chemin de Saint Lambert  
13821 LA PENNE SUR HUVEAUNE  
France

To inform TAGSYS of this return, please also fax it to your Customer Service Representative

+33 (0) 4 91 27 57 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 the quality representative for further details

+33 (0) 4 91 91 27 57 36