TR-PS1 Textile Rental Programming Station

User's Guide

Revision 1.0

TAGSYS

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Publishing Information

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Read This First

Welcome to the TAGSYS Textile Rental (TR) Programming Station system. This user's 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:

- Identifying your system's features
- Viewing and entering data
- Using your system

After you become familiar with the basic functions of your system, you can use the rest of this handbook as a reference for less common tasks, for maintaining your system, and also as a source of information if you have problems operating your system.

This user's 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
	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.

Abbreviations and Acronyms

AFI	Application Family Identifier
AON	All Or None
API	Application Programming Interface
ASK	Amplitude Shift Keying
CPU	Central Processing Unit
CRC	Cyclic Redundancy Check
DLL	Dynamic-Link Library
DPU	Digital Processing Unit
DSFID	Data Storage Format Identifier
DSP	Digital Signal Processor

EAS	Electronic Article Surveillance
ETX	End of Text
HPI	Host Port Interface
I/O	Input/Output
IFD	Interface Device
LED	Light Emitting Diode
LSb	Least Significant Bit
LSB	Least Significant Byte
MSb	Most Significant Bit
MSB	Most Significant Byte
OS	Operating System
PC	Personal Computer
PCB	Printed Circuit Board
RAM	Random Access Memory
RF	Radio Frequency
RFID	Radio Frequency IDentification
RFU	Reserved for Future Use
RPU	Radio Processing Unit
RTC	Real Time Clock
SAM	Security Access Module
STX	Start of Text
TTF	Tag Talks First
TTL	Transistor-Transistor Logic
TTY	TeleTYpe
UID	Unique Identifier

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.

Baud A unit of measure of data transmission speed representing the number of signal changes per second.

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.

Data Storage Format Identifier Identifies the structure of the data stored in the smart label.

Digital Signal Processor This part of the Radio Processing Unit (RPU) performs real-time smart label decoding and manages the Medio L200 configuration.

Dynamic-Link Library Executable routines that are stored as separate files with DLL extensions and executed only when needed by the program.

Host Port Interface Interface used to access the DSP memory.

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.

Interrogation Pulse A signal transmitted by the coupler to activate the smart label's transponder.

Monitoring Port Parallel Port granting access to the HPI. It communicates directly with the Radio Processing Unit

Multi-Read See Anti-Collision

Nibble Half a byte (4 bits)

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.

Radio Processing Unit This unit controls the main features of the Medio L200, such as the RF channels, the multiplexer and the smart label decoding.

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:

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Contact for Comments

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

For technical comments, please contact our welcome desk:

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Please remember to quote the Document Reference Number 10879A0, 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

Table of Contents

1   For Your Safety

1.1   General Use

The TR-PS1 Textile Rental Programming Station system 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, do not leave the device in front of a window on a hot day, 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 performance.

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 Electronic 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.

Medical Devices

Operation of radio transmitting equipment, including RFID devices, 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 TR-PS1 Textile Rental Programming Station as described in 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 standards and will void the TAGSYS warranty.

An RF fields survey has been carried out on all TAGSYS 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 µW/cm2.

2.2   Regulatory Notices

An RFID system typically composed of an RF emission device such as the TR-PS1 Textile Rental Programming Station 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 TR-PS1 Textile Rental Programming Station meets these limits.

CAUTION	It is the responsibility of the TAGSYS Partner to install the TR-PS1 Textile Rental Programming Station as described in this User's Guide or in TAGSYS Documentation.

2.2.1 In Europe (CE and RTTE Directives)

The TR-PS1 Textile Rental Programming Station complies (CE Declaration of Conformity granted) with the European EMC directive.

The TR-PS1 Textile Rental Programming Station 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 TR-PS1 Textile Rental Programming Station as described in this User's Guide or TAGSYS Documentation.

Any modification of the TR-PS1 Textile Rental Programming Station 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	If a TR-PS1 Textile Rental Programming Station 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 TR-PS1 Textile Rental Programming Station 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).

TR-PS1 Textile Rental Programming Station

WARNING TO USERS IN THE UNITED STATES

FEDERAL COMMUNCIATIONS 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.

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3   Overview

3.1   TR-PS1 Programming Station

The Textile Rental Programming Station (TR-PS1) is a low-profile smart tags reader unit that includes the electronics required to read smart tags through its built-in antenna (Figure 1).

Specifically designed for use in Textile Rental applications the TR-PS1 can work with most smart tags and will be compliant with the future ISO18000 standard.

The TR-PS1 Programming Station is factory-calibrated to offer an optimum performance on the surface of the desk or table far from metal pieces.

The TR-PS1 has a built-in serial interface in compliance with RS-232C specifications. The RS-232 cable supplied with the TR-PS1 is used to communicate with a personal computer. The TR-PS1 is supplied power through a jumper to be plugged to the mouse or keyboard connector of the personal computer connected to the TR-PS1 RS-232 connector (Figure 3).

Figure 1: TR-PS1 Antenna

3.2   Delivery Kit

When shipped, the TR-PS1 Textile Rental Programming Station contains the following items:

Table 1: Contents of the Delivery Kit

Quantity	Description
1	TR-PS1 Textile Rental Programming Station with its serial cable and power supply cable
1	Copy of this document
1	Welcome Letter / Product Return Form
1	CD-ROM which includes: ▪ Electronic copy of this document ▪ TR-PS1 Textile Rental Programming Station monitoring and firmware loading software (S002 Explorer)

4   Installation

## 4.1   Standard Installation

The Textile Rental Programming Station (TR-PS1) has been designed for indoor use:

- On wooden or composite desks (not too close to metallic parts)
- In proximity with other TR-PS1 Programming Stations

Note that the sides of the TR-PS1 are slanted. This ergonomic feature was designed in order to be able to slide items on/off the active face; saving time and effort.

1. Place the TR-PS1 Programming Station on the desk with the active face facing upwards (Figure 2).
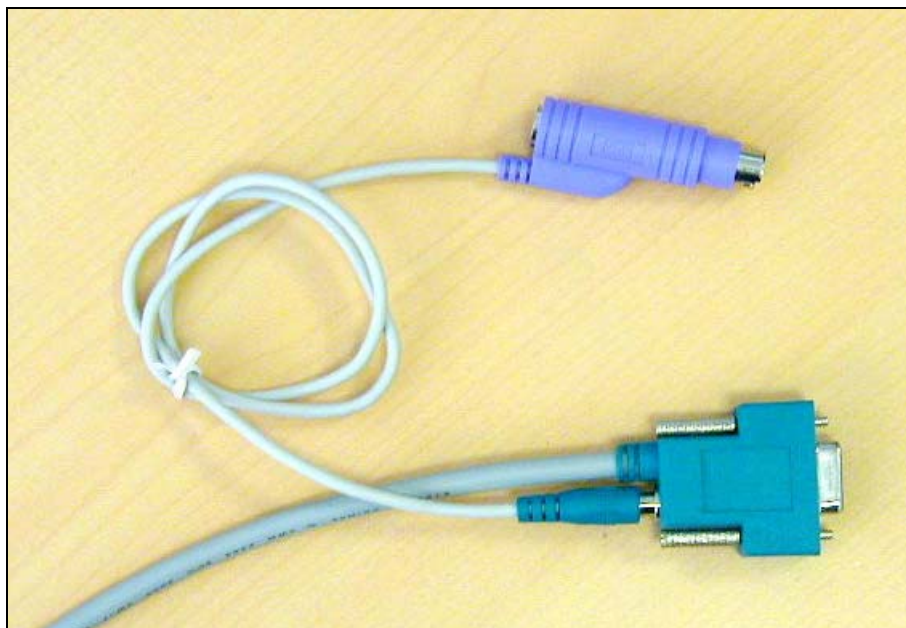
Figure 2: TR PS-1 Desktop Placement
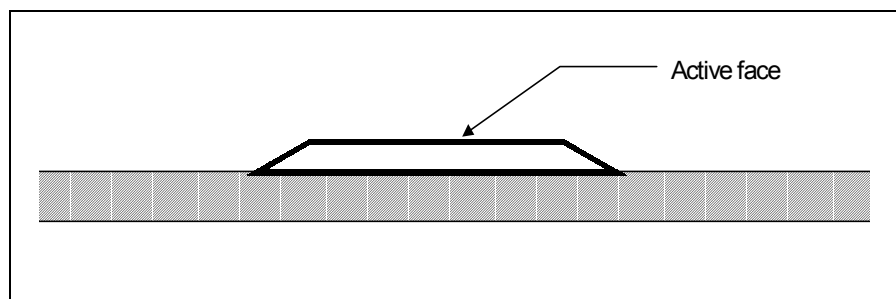
For optimum performance, always ensure that any metallic or conductive parts are located at 20 cm from the TR-PS1 Textile Rental Programming Station.

2. Connect the serial connector of the TR-PS1 Programming Station to any serial port of the host PC.

Figure 3: Connecting the TR-PS1 Textile Rental Programming Station to the Host PC

3. Connect the male jack of the jumper cable to the female jack of the TR-PS1 Programming Station serial connector as shown in Figure 3. This PS/2 jumper connection is used to supply power to the TR-PS1 Programming Station.

4. Connect the jumper cable to the PS/2 port of the host PC and connect the peripheral connector (mouse or keyboard) to the other end.

In certain cases, you may wish to supply power to the TR-PS1 Programming Station using an external power supply.

To do so, connect a standard AC/DC 5V power supply with a male jack connector with the positive polarity on the center connector to the power supply jack of the TR-PS1 Programming Station Sub-D9 serial connector (Figure 16).

|	If you use an external power supply to power on the TR-PS1, make sure that:
CAUTION	- its voltage is within the rated range of 5 VDC ± 10% at 500 mA. - its wiring is compatible with the one indicated in Figure 16 of this guide. - it is not connected to another device.

4.2   Active Area

Due to the magnetic field radiated by the antenna of the TR-PS1 Programming Station, a protective area must be maintained around the active area of the device to prevent unwanted reading of smart tags. The TR-PS1 has been specifically designed to minimize this area.

All tagged items and any blank smart tags must be kept outside of this active area that extends 15 mm. (3/5 in.) around the TR-PS1 unit (Figure 4).

Figure 4: Active Area in Standard Installation
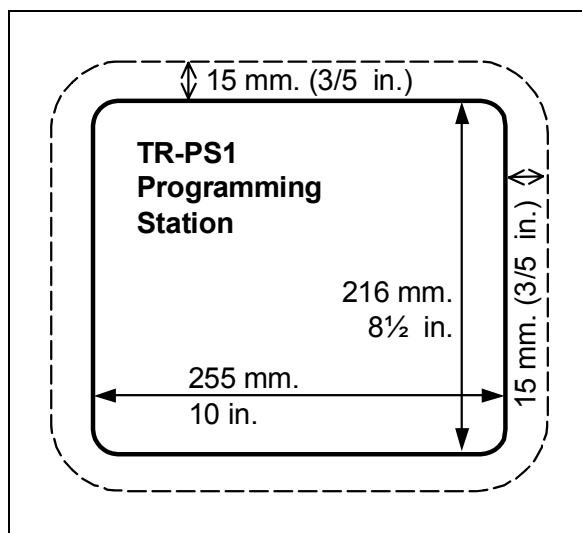
	The active area of the TR-PS1 when used for other applications may be more limited. Please refer to your TAGSYS technical consultant for more information.

5   Operation

5.1   Smart Labels

The TR-PS1 Programming Station is capable of reading most types of smart labels. Smart labels must be encapsulated in a highly resistant plastic casing when used in Textile Rental applications.

5.1.1 Chip Types

There are three major types of smart labels used in Textile Rental applications. Each type of label has its own special features as described in Table 2.

Table 2: Smart Label Types

Features	Ario™ 10SL	Ario™ 20SL	Ario™ 70TL
Read Distance	45 mm. (1¾ in.)	40 mm. (1½ in.)	60 mm. (2⅓ in.)
Memory	64-bit ROM	73-bit EEPROM	64-bit ROM and 384-bit EEPROM

5.1.2   Encapsulation

Electronic chips must be protected when used in Textile Rental applications. For protection against harsh chemicals and washing/drying conditions, chips are encapsulated in a highly resistant plastic casing able to withstand the mechanical and environmental requirements of such applications.

There are two types of encapsulation processes:

- TL: Polyphenlyene Sulfide (PPS)
- SL: Polyethylene Therephtalate (PET)

5.2   Reading

The primary use of the Textile Rental Programming Station (TR-PS1) is to read tags of garment to access to the laundry database.

Once the TR-PS1 Programming Station is connected to the host PC and the programming interface software is installed, the reading is easy and straightforward.

Place the item with the tag on the TR-PS1, making sure that the tag attached to the item is as close as possible to the active face of the antenna surface.

Once read the tag serial number is sent to the host PC.

Only one item at a time should be placed on the antenna surface or within the active area when reading. This is to prevent unwanted items from being incorrectly programmed in the database.

CAUTION	Any attempt to use the TR-PS1 Programming Station with more than one item at a time may lead to programming the same data in the different items data present on the Programming Station or within the active area.

5.3   Firmware

The firmware stored inside the TR-PS1 Programming Station is designed for use as a Standalone system.

When the smart label enters the 13.56-RF field, the TR-PS1 reads its serial number and sends it to the host PC via the RS communication link in ASCII format.

When set in Continuous mode, the TR-PS1 sends the smart label data each time the smart label is read.

For example, when an Ario™ 20 label is read, its locked, 10-character ID number is sent to the host PC. I-CODE® and read-only Ario™ 10 labels both have a 16-character ID number.

After the label ID number is read, the frame sends a TagSN\0D\0A value.

Communication parameters are 9600 bauds, 8 bits/char, 1 stop bit, and no parity.

6   How to Improve Performance

In certain cases when the Textile Rental Programming Station (TR-PS1) is installed in a highly metallic environment, its reading performance can be significantly reduced.

In this event, it is strongly recommended changing the location of the TR-PS1 Textile Rental Programming Station.

6.1   Verification of L-PS1 Performance

The S002 Explorer software tool is used to verify the reading performance of the TR-PS1 Programming Station.

Procedure:

1. Install the S002 Explorer software tool on your PC. (Compatible with Windows® 9x, NT®, 2000 and XP operating systems.)

2. Connect the TR-PS1 Programming Station to the serial port of your PC and connect the power supply.

3. Run the S002 Explorer software tool.

4. If the TR-PS1 Programming Station is not detected (error message), adjust the communication settings for the TR-PS1 Programming Station.

   a. In the Settings menu, open Communication Settings and select the communication port that is connected to the TR-PS1 Programming Station.

Figure 5: Adjusting Communication Settings
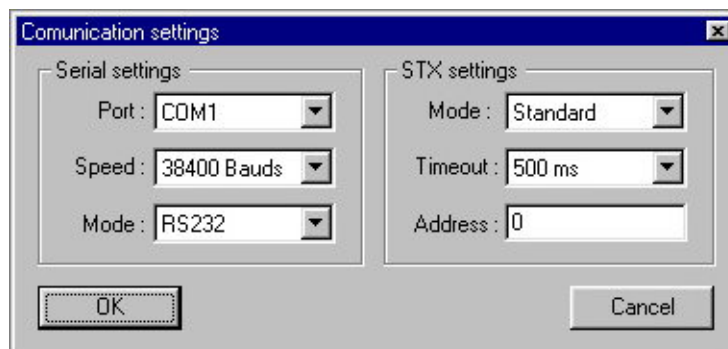
5. In the Settings menu, select General Reader Settings and set the following parameters as listed below.

   a. Place a book with a Folio 20 smart label on the TR-PS1 Programming Station antenna.

   b. Set the Output Power selection to Full.

   c. Select the Read Continuously button in the Default Read Parameters.

   d. Click on Detect in the Default Read Parameters.

   e. The 'C220 is now the default tag type' message is displayed.

Figure 6: General Reader Settings
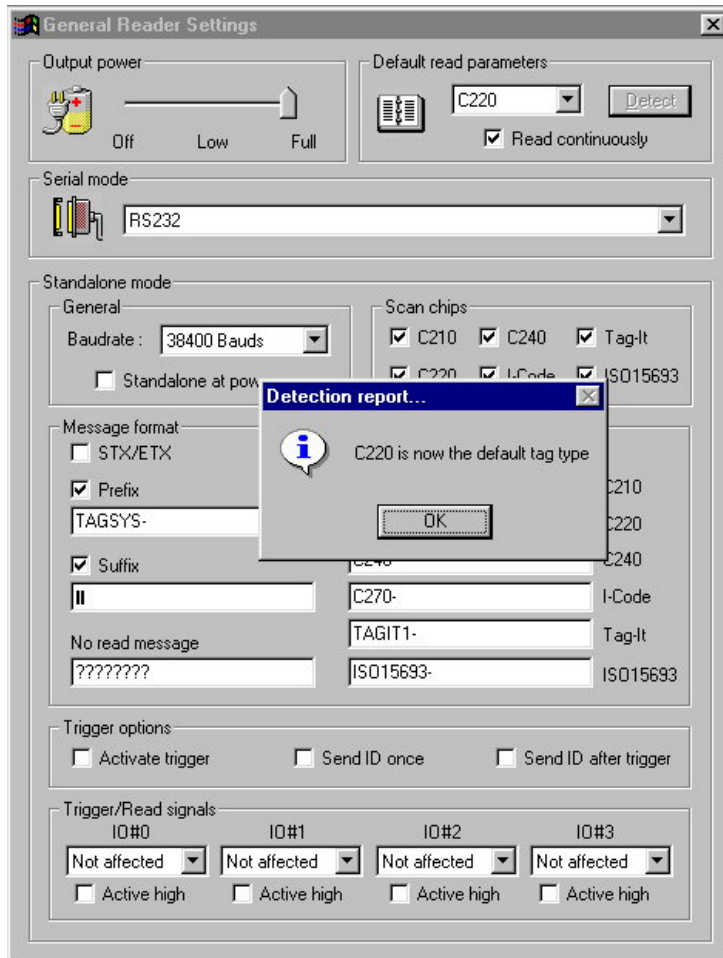
6. In the Commands menu, click C220 and select Default Read.

7. In the Default Read dialog box, click Read.

Figure 7: Default Read Window
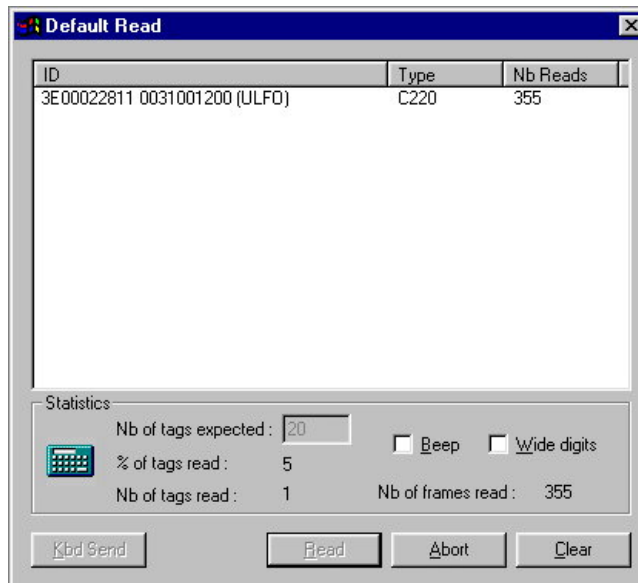
8. Using a ruler, measure the distance in which the antenna is able to read a Folio 20 smart label. If this distance is less than 100 mm., you should verify the tuning of the antenna.

6.2 Tuning Procedure

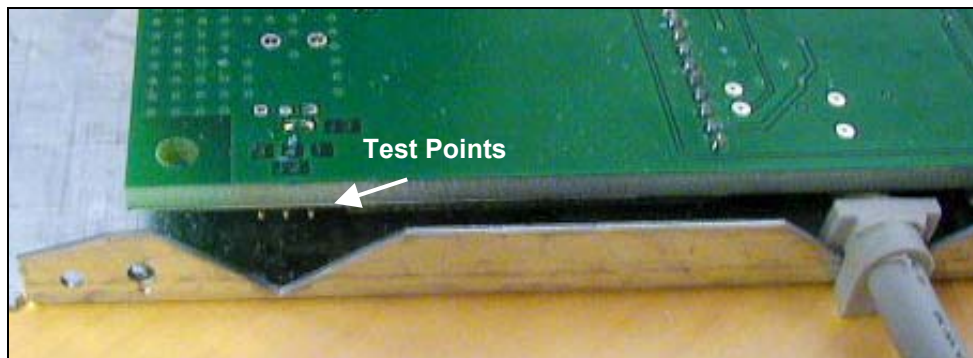The TR-PS1 Programming Station antenna must be re-tuned only by an approved TAGSYS integrator or by a TAGSYS technical consultant. Any attempt by a non-qualified third-party to re-tune the antenna will void the product's warranty.

1. Unscrew the four screws on the sides of the TR-PS1 Programming Station and remove the antenna cover.

2. Remove the jumper on Test Points 1 and 2.

3. Connect the 2-pin connector of the TAGSYS Tuning Kit to Test Points 3 and 2.

Figure 8: Antenna Connectors for Tuning Procedure

For detailed tuning procedures, a helpful guide is available. Refer to the TAGSYS Antenna Tuning User's Guide.

The two tuning capacitors of the antenna of the TR-PS1 Programming Station antenna are accessible from the bottom of the TR-PS1 (Figure 9).

Figure 9: Position of the Tuning Capacitors on the TR Programming Station

When re-tuning the antenna, handle the tuning capacitors with care. Any re-tuning of the antenna by an approved TAGSYS integrator will damage the plastic label but will not void the warranty of the TR-PS1 Programming Station provided that the tuning procedure defined in the antenna tuning kit has been followed.

When re-tuning the antenna, make sure that the TR-PS1 Programming Station is not connected to the PC.
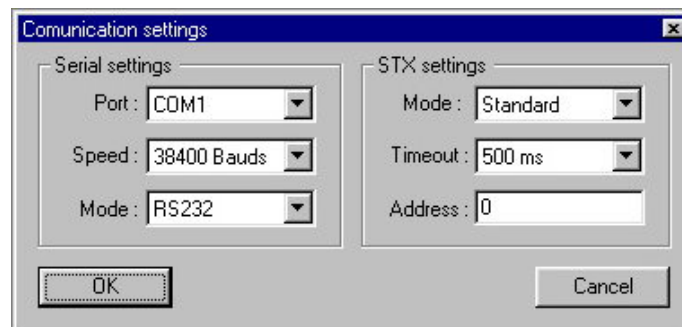
6.3   Upgrading the Firmware

The TR-PS1 Textile Rental Programming Station has the capability to have firmware upgrades. This feature allows you to protect your investment by upgrading your TR-PS1 Programming Station when an enhanced chip-decoding algorithm or new chip drivers become available.

Upgrading the Firmware of the TR-PS1 Programming Station is a straightforward operation.

1. Install the S002 Explorer software tool on your PC. (Compatible with Windows® 9x, NT®, 2000 and XP operating systems.)

2. Connect the TR-PS1 Programming Station to the serial port of your PC and the power supply connected.

3. Run the S002 Explorer software tool.

4. If the TR-PS1 Programming Station is not detected (error message), adjust the communication settings for the TR-PS1 Programming Station.

    a. In the Settings menu, open Communication Settings and select the communication port that is connected to the TR-PS1 Programming Station.

Figure 10: Adjusting Communication Settings

5. In the Info menu, select About S002 Explorer and enter the access key provided with the firmware upgrade and click Enter.

Figure 11: Entering the Firmware Key

6. In the File menu, select Upgrade Firmware.

    a. In the Flasher window, click Select File.

    b. Select the BIN file supplied with the firmware upgrade.

    c. Enter the firmware key provided with the BIN file.

    d. Click Download.

Figure 12: Upgrade Firmware Window
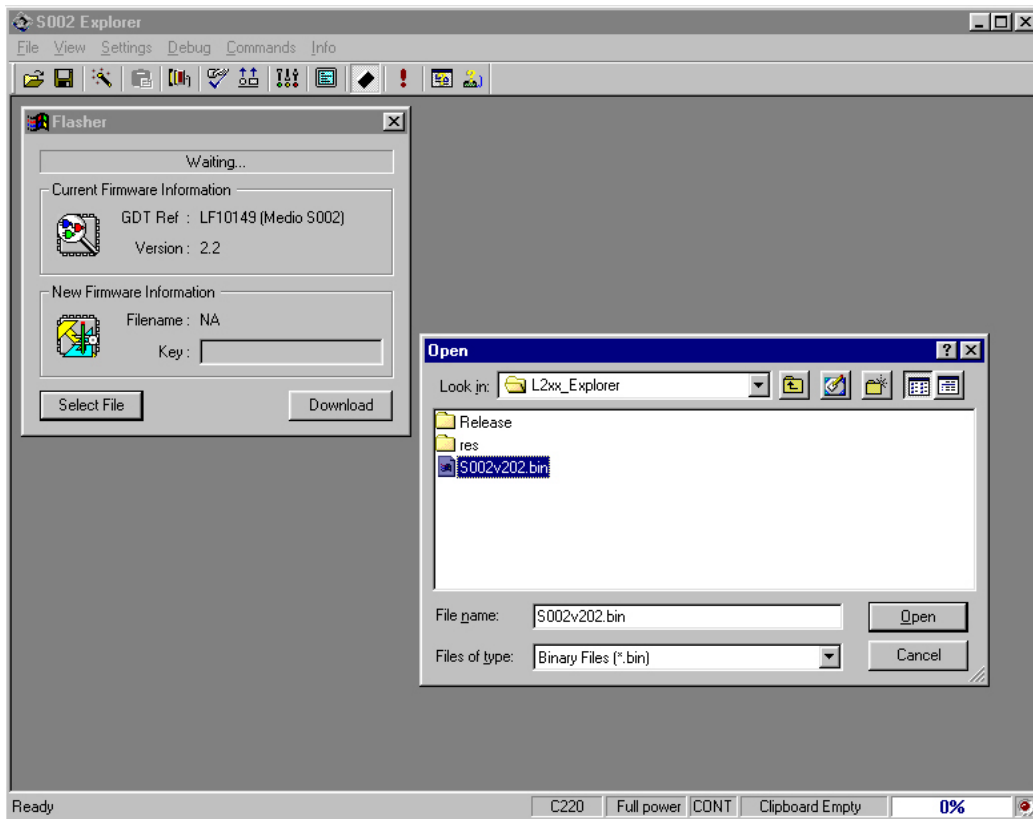
7. The Download procedure may take several minutes. A progress bar is displayed.

Figure 13: Entering Firmware Key
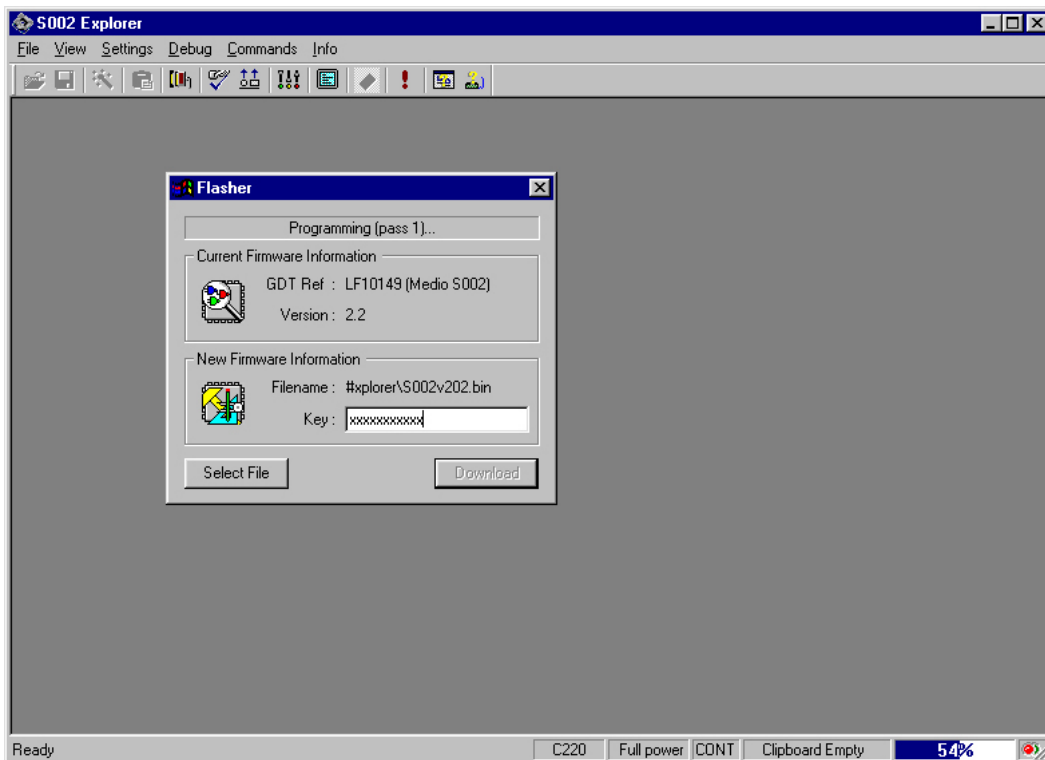
8. If the new firmware has been successfully downloaded, a message is displayed. If the final dialog box at the end of the procedure contains an error message, reload the original firmware supplied with the TR-PS1 Programming Station and contact your approved TAGSYS representative.

9. Click OK to reset the TR-PS1 Programming Station.

	Always use Firmware upgrades supplied by TAGSYS. If you have any doubt on the origin of the firmware you intend to download; contact your TAGSYS approved reseller. Any attempt to download a Firmware supplied by a third party may lead to permanent damages to the TR-PS1 Programming Station.
CAUTION	Never interrupt the Firmware upgrade procedure while the firmware is being downloaded. This may lead to permanent damages to the TR-PS1 Programming Station.

7 Maintenance

7.1 Servicing the TR-PS1 Programming Station

8   Technical Data

8.1   Mechanical Characteristics

Description	Value
Housing	Plastic ABS UL 94-V0
Weight	1 kg (2.2 lbs.)
Dimensions	255 x 216 x 20 mm (10 x 8½ x ¾ in.)
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 14: Mechanical Dimensions (in millimeters) (Bottom View)
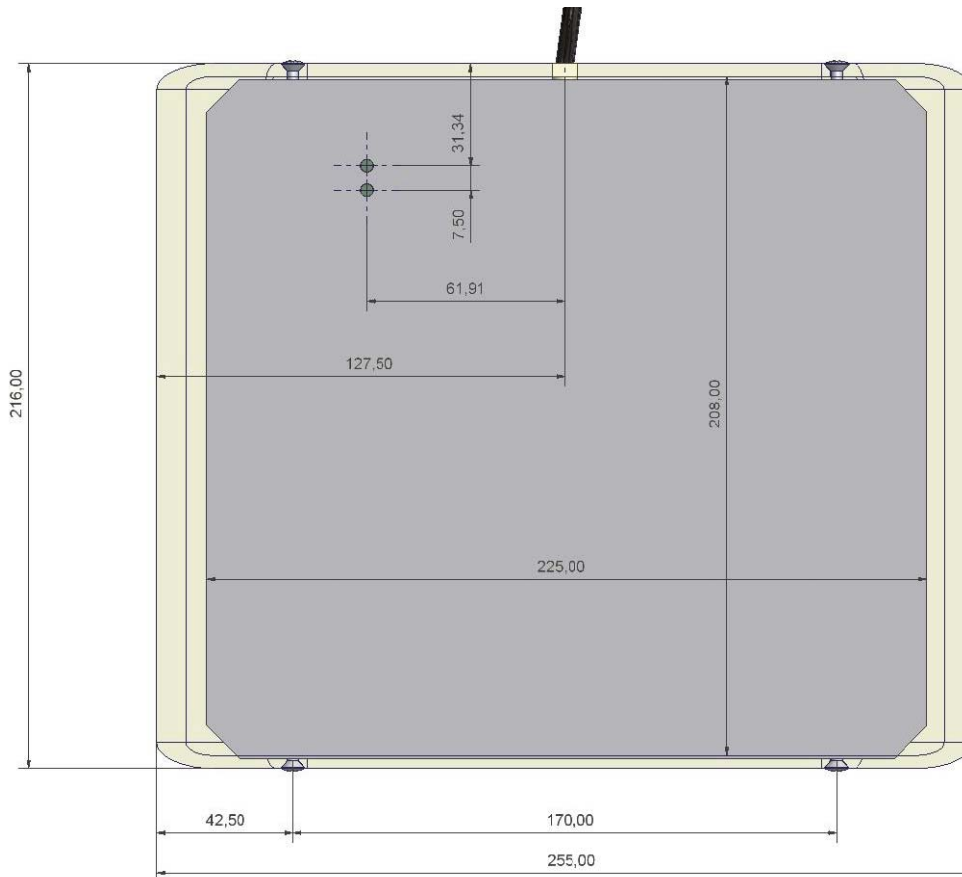
8.2   Electrical Characteristics

Description	Value
RF Power	0.25 W
Operating Frequency	13.56 MHz
Power consumption	165 mA under 5V
Communication specification	RS-232
Communication speed	9600 bit/s

8.3   Typical Performance

Description		Value
Reading	C210 C220 C270	50 mm.
Writing	C210 C220 C270	??? mm.

Figure 15: RS-232 Serial Link Connector Diagram
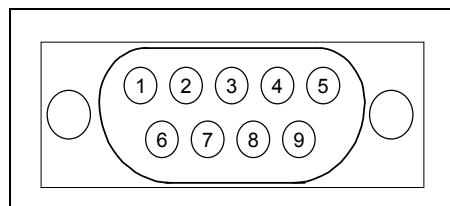
Connector	Description	Connector	Description
1	Carrier Detect	6	DSR
2	Rx	7	RTS
3	Tx	8	CTS
4	DTR	9	Ring Indicator
5	GND		

Figure 16: Power Connection Wiring
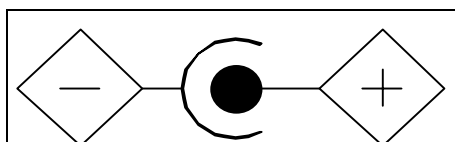
External diameter(- polarity): 5.45 mm.
Internal diameter (+ polarity): 2.1 mm.

9 Warranty Conditions

9.1 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.

9.2 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.

9.2.1 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.

9.2.2 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 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 & 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 and to 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 27 57 36