TAGSYS RFID™
e-connecting goods

Medio P101-Ethernet

User's Guide

Revision 2.2

April 2008

Publishing Information

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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 the Medio P101-Ethernet reader.

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:

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Fax:	+33 (0)4 91 27 57 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 91 27 57 00
Fax:	+33 (0)4 91 27 57 01
E-Mail:	info@tagsysrfid.com

Please remember to quote the Document Reference Number DOC12085B2, 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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Table of Contents

1 For Your Safety

1.1 General Use

The Medio P101-Ethernet 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.

To avoid contact with electrical current:

- Never install electrical wiring during an electrical storm.
- Never install an ethernet connection in wet locations unless that connector is specifically designed for wet locations.
- Use caution when installing or modifying ethernet lines.
- Use a screwdriver and other tools with insulated handles.
- You and those around you should wear safety glasses or goggles.
- Do not place ethernet wiring or connections in any conduit, outlet or junction box containing electrical wiring.
- Installation of inside wire may bring you close to electrical wire, conduit, terminals and other electrical facilities. Extreme caution must be used to avoid electrical shock from such facilities. You must avoid contact with all such facilities.
- Ethernet wiring must be at least 6 feet from bare power wiring or lightning rods and associated wires, and at least 6 inches from other wire (antenna wires, doorbell wires, wires from transformers to neon signs), steam or hot water pipes, and heating ducts.
- Do not place an ethernet connection where it would allow a person to use an ethernet device while in a bathtub, shower, swimming pool, or similar hazardous location.
- Protectors and grounding wire placed by the service provider must not be connected to, removed, or modified by the customer.
- Do not touch non-insulated ethernet wiring if lightning is likely!

Any external communications wiring you may install needs to be constructed to all relevant electrical codes. In the United States this is the National Electrical Code Article 800. Contact a licensed electrician for details.

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 and Safety Notices

TAGSYS Medio P101-Ethernet 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 P101-Ethernet 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 60 dBµA/m in Europe and at a distance of 30 meters from the antenna that must not exceed 84 dBµA/m in US.

The Medio P101-Ethernet meets these limits.

It is the responsibility of the TAGSYS Partner to install the Medio P101-Ethernet as described in this User’s Guide or in TAGSYS Documentation.

2.2.1 In Europe (CE and RTTE Directives)

The Medio P101-Ethernet complies (CE Declaration of Conformity granted) with the European EMC directive.

The Medio P101-Ethernet 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 P101-Ethernet as described in this Reference guide or TAGSYS Documentation.

Any modification of the Medio P101-Ethernet 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 Medio P101-Ethernet 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 FCC ID Cross Reference Table

It is the responsibility of the TAGSYS Partner to install the Medio P101-Ethernet 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
LSA 4	230X262mm	Single Channel	1W	QHKMEDIOP101ETHER
Aero LF SHD	Ø 25mm	Single Channel	1W	QHKMEDIOP101ETHER
Aero LB Antenna	250X250mm	Single Channel	1W	QHKMEDIOP101ETHER
L-W1 Antenna	Ø 100mm	Single Channel	1W	QHKMEDIOP101ETHER

2.2.3 In USA (FCC Directive)

The Medio P101-Ethernet has been designed to comply with Part 15 of the FCC Rules. Furthermore typical configurations based on the use of Single Antenna like Aero LB at 1W, LW 1 at 1W, Aero LF SHD at 1W and LSA 4 at 1 W, have been successfully tested with Part 15 of the FCC rules (FCC ID Numbers are listed on all system-mounted TAGSYS Antennas).

Medio P101-Ethernet

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 system devices must accept any interference received, including interference that may cause undesired operation.

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 stricly prohibited for use with this device. The require antenna impedance is 50 ohms.

Aero LB, LW 1, Aero LF SHD and LSA 4 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 P101-Ethernet is a Medium Range 13.56 MHz RFID reader designed for Library, Textile Rental and I&L applications. The Medio P101-Ethernet has been designed to be used in combination with Aero LB, LW 1, Aero LF SHD and LSA 4 antennas that comply with FCC and CE rules. The Medio P101-Ethernet can decode C210, C220, C240, C320, C370(ISO 15693), C270(I-Code1)and I-Code ePC and I-Code UID tags.

Thanks to its small size, the Medio P101-Ethernet can be used either in desktop configuration or easily integrated in self check stations.

The Medio P101-Ethernet is equipped with the following communication interfaces:

- USB 1.1 communication link (prioritary)
- Ethernet (Raw TCP serial communication)

3.2 Medio P101-Ethernet Key Features

Table 1: Medio P101-Ethernet Key Features

Description	Medio P101-Ethernet	
Operating Frequency	13.56 MHz	
Compatibility (depends on application firmware)	**Firmware**	**Chips**
	Library	C220, C320, C370(ISO 15693)
	Textile rental	C210, C240, C270(Philips I-Code1), C370(ISO15693)
	I&L	C270 (Philips I-Code1), C370 (ISO15693), I-Code EPC/I-Code UID
Serial Link	USB 1.1 or Ethernet raw TCP serial communication	
Firmware Downloadable	Yes	

3.3 Delivery

The Medio P101-Ethernet Tag Reader kit contains the following items:

Table 2: Package Contents

Quantity	Item
1	Medio P101-Ethernet reader
1	SMA/BNC adaptor
1	Set of rubber feet
1	USB cable
1	I/O connector
1	Wall fixing accessory
1	12 V power supply
1	*CD-ROM including:* • Medio P101-Ethernet User's Guide, Command Set • USB drivers for Win32 X86 platforms • User-friendly Px Explorer software provided for test and debug operations on Windows® 9x, NT®, 2000 and XP platforms • TAGSYS Software Development Kits including o Medio STX Dll package o Library SDK including Dlls and ActiveX control o Java Package • Digiconnect Ethernet module integration kit • Adobe Acrobat reader version 6&7
1	Welcome Letter / Product Return Form

4 Installing the Reader

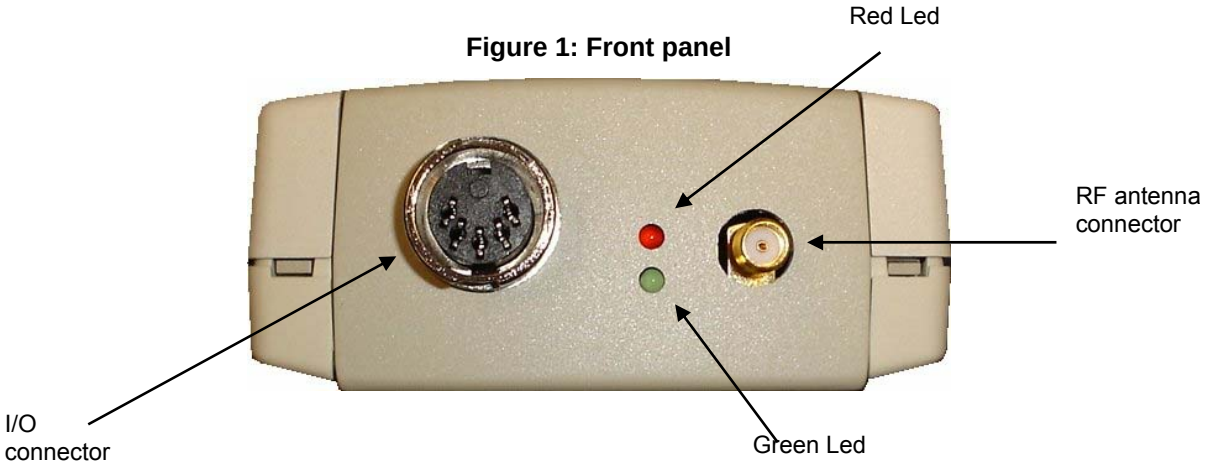
This section describes how to install the Medio P101-Ethernet reader.

4.1 Reader Connections

4.1.1 Front Panel

The front panel is dedicated to RF and I/O connectors:

Figure 1: Front panel



- **RF antenna connector:**

Any of the following antennas can be connected to the standard SMA connector:

Antennas that apply to CE rules	
• L-W1	• Aero LI
• TR-HA1	• L-SA3

- **Leds**

The red LED lights on continuously when the power supply voltage is correct.

If the red LED is blinking the power supply voltage is insufficient.

During firmware downloading the red Led is blinking.

The green Led is turned on when the output I/O connector is active.

- **I/O connector**

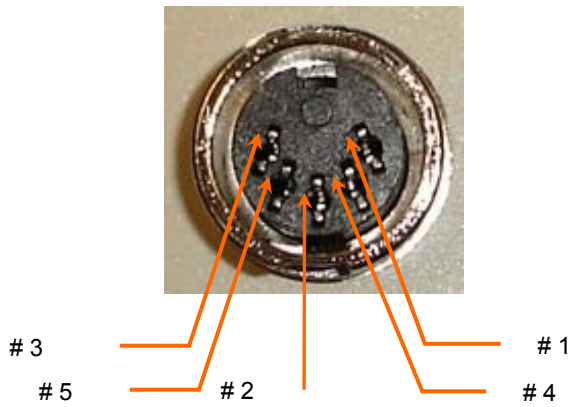


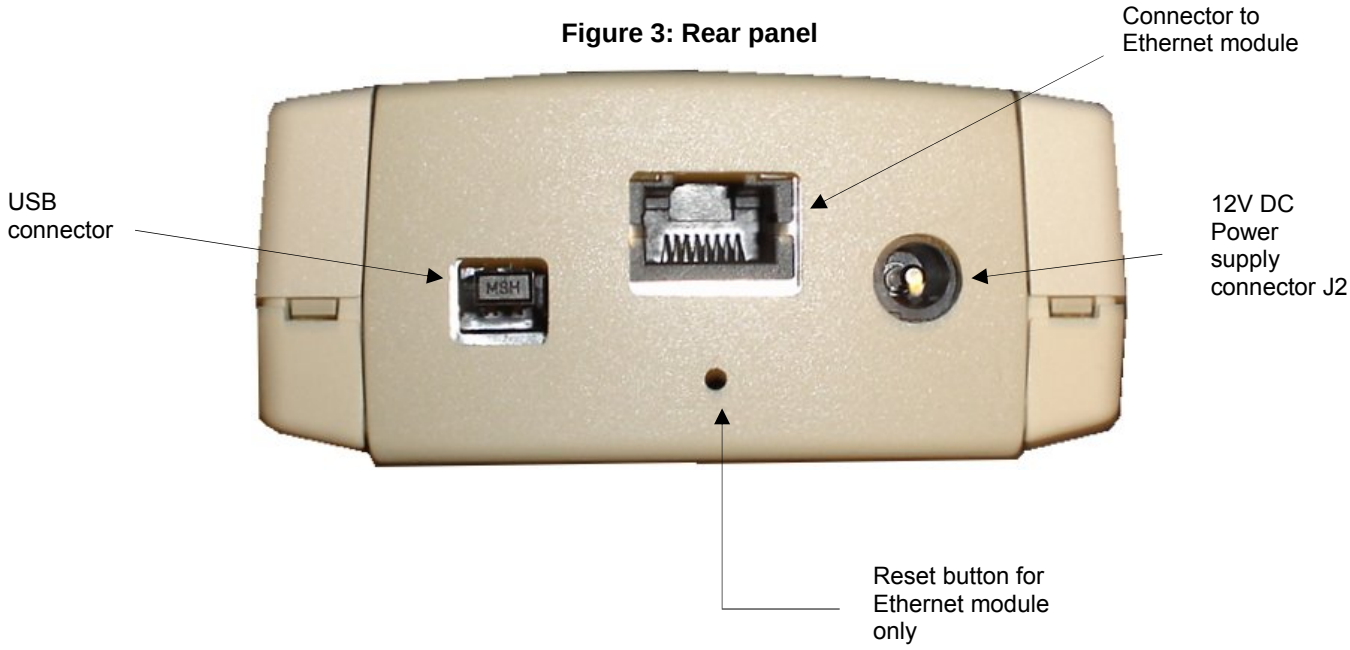
Table 2: J3 Wiring

Pin number	Signals
1	Output
2	Supply output (12V with 470 Ω serial resistor)
3	Universal input
4	Ground
5	Ground

4.1.2 Rear Panel

The rear panel is dedicated to power supply and communication connectors.

Figure 3: Rear panel



- **Ethernet module connector**

A **shielded** RJ 45 connector (Please refer to the Ethernet network cabling rules)

- **Power supply connector J2**

2.5mm Jack type (positive connection on the center pin)

- **Reset button**

Reset button only used for Ethernet module (Please see Chapter 4.2 for more details)

- **USB connector**

USB connector type B

When USB communication link is active (plugged and powered), the Ethernet module is turned off.

4.2 Communicate with Ethernet Interface

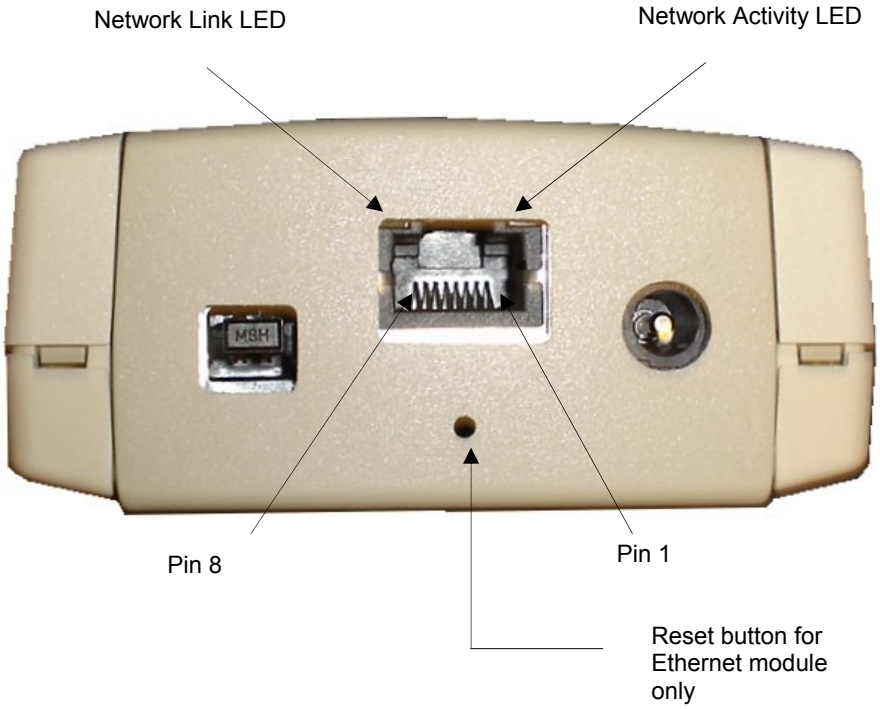
Preliminary checking:

- USB cable must be unplugged to ensure that the Ethernet Module is turned on
- **Shielded** ethernet cable must be correctly connected to the rear panel

The embedded Ethernet module is the DigiConnect -ME. Any information on this module is available on the CDROM in the directory "\DigiConnect IntegrationKit\Documentation" or on the DigiConnect WEB pages at "www.digi.com".

Please read the **DigiConnect User's Guide** to have an overview of the module characteristics. The following explanations will give you the first steps to run the reader. Advanced functionalities can be found in the **DigiConnect User's Guide**.

4.2.1 Ethernet Module Description



Ethernet Interface Pin Assignments							
Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
TXD+	TXD-	RXD+	EPWR+	EPWR+	RXD-	EPWR-	EPWR-
Transmit Data +	Transmit Data -	Receive Data +	Power From Switch +	Power From Switch +	Receive Data -	Power From Switch -	Power From Switch -

- **LED description**

LED	Color	Description
Network Link	Yellow	This LED stays on continuously when a link has been detected. Note that this LED is turned off during device starting up.
Network Activity	Green	This LED monitors the network traffic. It turns on when any traffic is detected.

- **Reset Procedure**

To reset the Ethernet module 2 procedures are available:

- Reboot the device: it is used to reinitialize the communication with your network.
- Reset the device to TAGSYS default factory settings: it is used when you can no more communicate with the reader due to wrong WIFI settings.

Both reset procedures are available by software via the WEB or TELNET interface.

Reset	Description
Reboot	While the reader is supplied, push the reset button with a thin object and release it. Wait for the reader start up.
Reset To TAGSYS Factory defaults	This procedure reset the entire device configuration (including network settings) to the TAGSYS factory defaults. - Unplug the reader power supply - Push the reset button - Plug the reader power supply - Keep the reset button pressed until the yellow LED blinks once and 3 times. - Release the reset button - Unplug the power supply and plug it again - Wait for reader start up.

- **Safety Statements**

To avoid contact with electrical current:

- Never install electrical wiring during an electrical storm
- Never install an Ethernet connection in wet locations unless that connector is specifically designed for wet locations
- Use caution when installing or modifying Ethernet lines
- Do not place Ethernet wiring or connections in any conduit, outlet or junction box containing electrical wiring
- Installation of inside wire may bring you close to electrical wire, conduit, terminals and other electrical facilities. Extreme caution must be used to avoid electrical shock from such facilities. You must avoid contact with all such facilities
- Ethernet wiring must be at least 6 feet from bare power wiring or lightning rods and associated wires, and at least 6 inches from other wire (antenna wires, doorbell wires, wires from transformers to neon signs), steam or hot water pipes, and heating ducts
- Do not place an Ethernet connection where it would allow a person to use an Ethernet device while in a bathtub, shower, swimming pool, or similar hazardous location
- Protectors and grounding wire placed by the service provider must not be connected to, removed, or modified by the customer
- Do not touch uninsulated Ethernet wiring if lightning is likely!

Any *external* communications wiring you may install needs to be constructed to all relevant electrical codes. In the United States this is the National Electrical Code Article 800. Contact a licensed electrician for details.

4.2.2 Default Reader Network Settings

You will not be able to configure any network setting before no Ethernet link has been detected. It depends to you to engage the reader with your Ethernet network correctly first.
Additionally, the default settings for the reader network configuration are:

- DHCP : Off
- Static IP Address : 192.168.0.2
- Subnet Mask : 255.255.255.0
- Default Gateway : 0.0.0.0

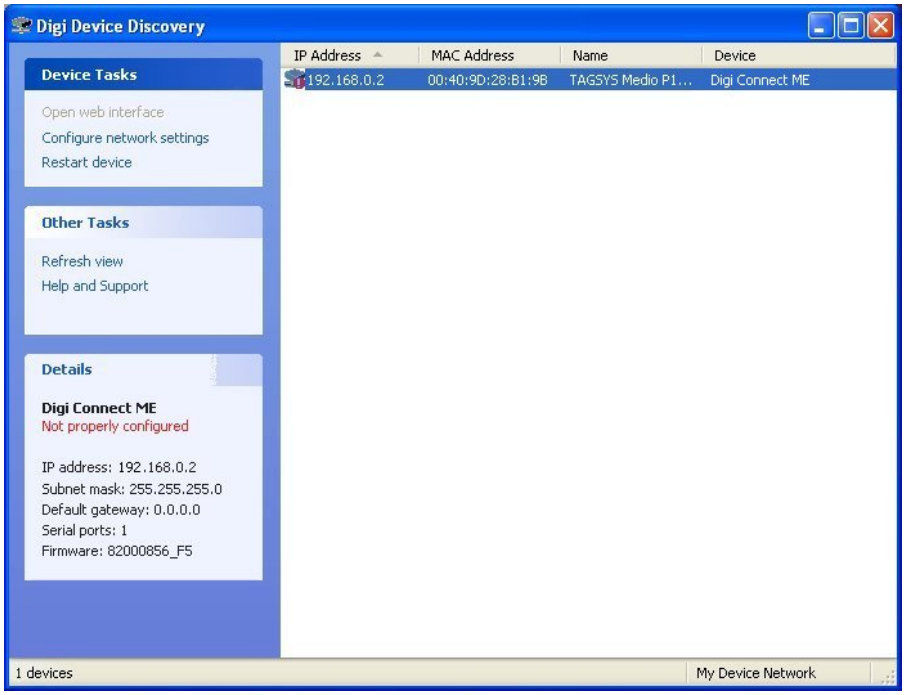
You can now configure your Ethernet network to link the reader or follow the ADDP procedure to change the basic network IP settings.

If you decide to configure your Ethernet network to meet the default settings of the reader, you can check your system is operational by pinging the reader using then “ping 192.168.0.2” MSDOS command prompt.

4.2.3 ADDP procedure (Advanced DigiConnect Discovery Device)

Firewalls may block ADDP broadcast protocol. Please turn your firewall off for initialization to avoid issues (This includes Windows XP firewall)

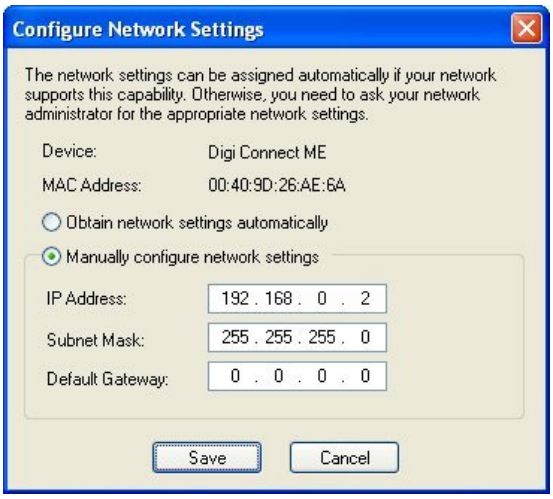
Run “\DigiConnect Integration Kit\dgdiscvr.exe” program available on the product CDROM. The following window pops up:



If no reader appears in the Discovery windows, check that:

- no firewall program is running
- the reader is properly linked with your Ethernet network

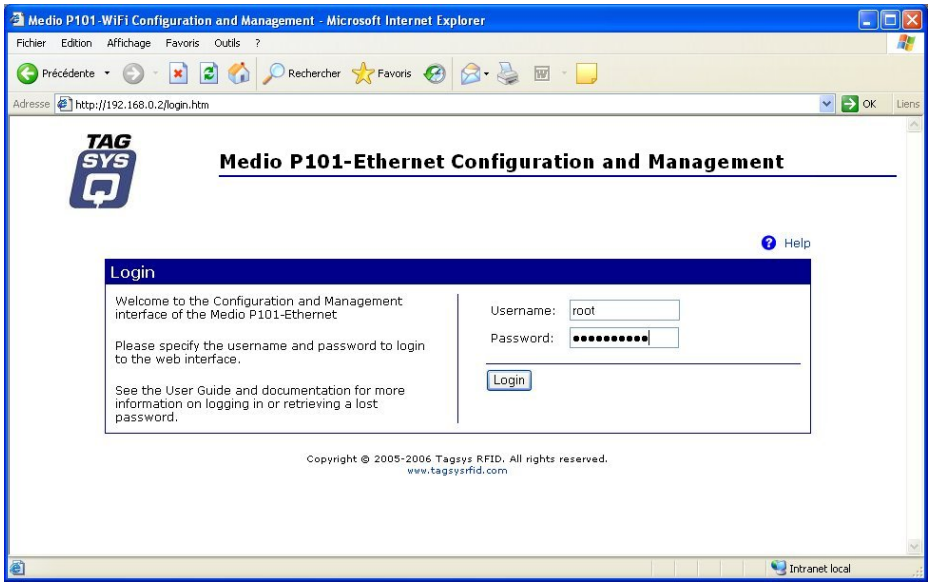
If the reader is not properly configured, double-click on the device. The following window pops up:



Select the correct Static IP, Subnet mask and Default Gateway or check the automatic setting in case a DHCP protocol is available on your network.

Then, click Save. The reader starts to rebooting and the window closes.

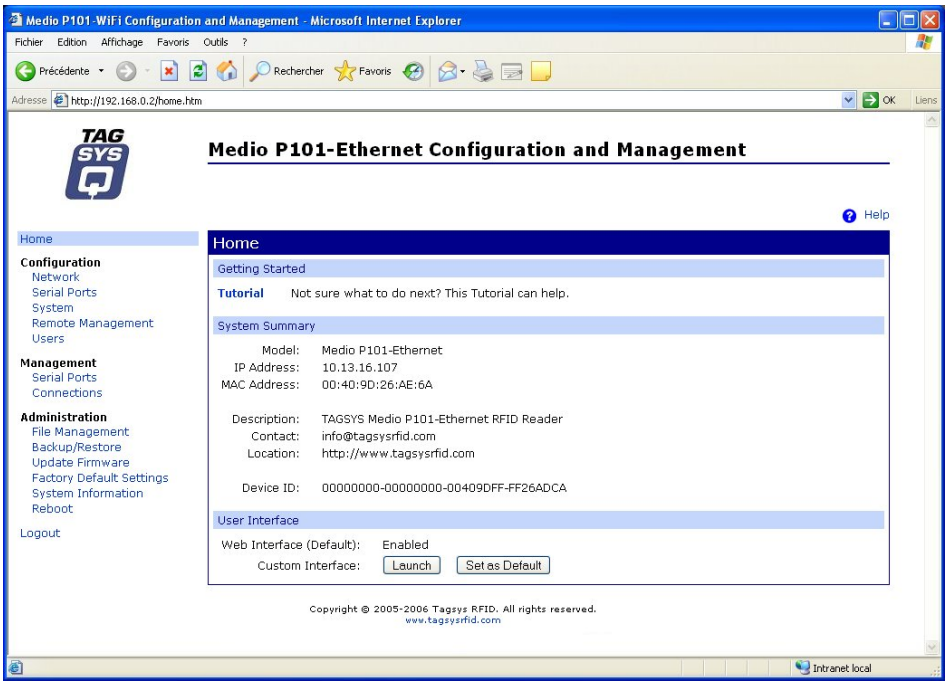
Back to the main window, double-click once again on the device. The WEB interface opens in the Internet Explorer browser (caution to the proxy settings of your internet browser connection, it must be set to allow access to this device).



Log on to the configuration WEB page device:

- username : root
- password : tagsysrfid

Follow DigiConnect ME **user's guide** to configure the device.



4.3 Communicate with the USB Interface

At first connection to the PC USB port, Windows® will detect the TAGSYS Medio P101-Ethernet reader and will ask you for drivers installation. USB drivers are located into the USB Drivers folder on the product CD-Rom.

Two drivers must be installed:

- The first one is the direct driver, which provides direct access to USB device via a dynamic link library (DLL).
- The second one is the virtual COM port (VCP) driver. The VCP driver emulates a standard PC COM port.

4.3.1 Window 98® USB Drivers Installation

Power up and connect your Medio P101-Ethernet to a spare USB port on your PC. This should bring up a “Building Driver Information Database” followed by the Windows Add New Hardware Wizard.

Click “Next” to proceed with the installation

- Select “Search for the best driver for your device” and then click “Next”
- Select “Specify a location” and click the Browse button to select the USB Drivers folder on the Product CR-Rom. Once the files have been located, click “Next” to proceed with the installation
- Click “Next” to install the device
- Windows® should then display a message indicating that the installation was successful. Click “Finish” to complete the installation.

To confirm that the installation has completed successfully, open the Device Manager and select “View devices by type”. The TAGSYS Medio P101 appears as a USB device connected to a USB port

The next step is to install the VCP drivers.

Power up and connect your Medio P101-Ethernet to a spare USB port on your PC. This should bring up a “Building Driver Information Database” followed by the Windows Add New Hardware Wizard.

- Select “Search for the best driver for your device” and then click “Next”
- Select “Specify a location” and click the Browse button to select the USB Drivers folder on the Product CR-Rom. Once the files have been located, click “Next” to proceed with the installation
- Click “Next” to install the device
- Windows® should then display a message that the installation of the serial converter driver was successful. The COM port emulation driver must now be installed. Click “Finish” to complete the installation.

To confirm that the installation has completed successfully, open the Device Manager and select “View > devices by type”. The TAGSYS Medio P101 appears as an additional COM port.

4.3.2 Windows XP USB Drivers Installation

Power up and connect your Medio P101-Ethernet to a spare USB port on your PC. This will 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

To confirm that the installation has completed successfully, open the Device Manager and select “View > Devices by type”. The TAGSYS Medio P101 appears as a USB device connected to a USB port.

The next step is to install the VCP drivers.

Power up and connect your Medio P101-Ethernet to a spare USB port on your PC. This will 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 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. This has installed the serial converter. The COM port emulation driver must be installed after this has completed.
- After clicking “Finish”, the Found New Hardware Wizard will continue by installing the COM port emulation driver.

To confirm that the installation has completed successfully, open the Device Manager and select “View > Devices by type”. The TAGSYS Medio P101 appears as an additional COM port.

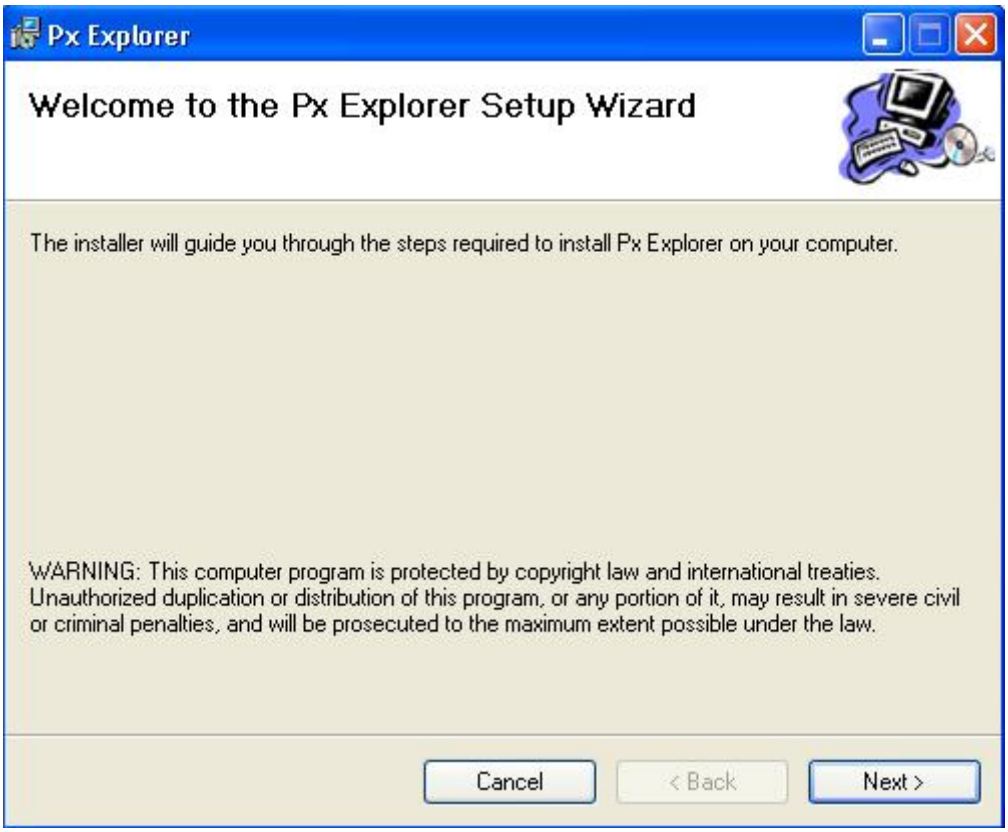
When the USB cable is plugged and communication is active, the ETHERNET module is turned off.

5 Px Explorer

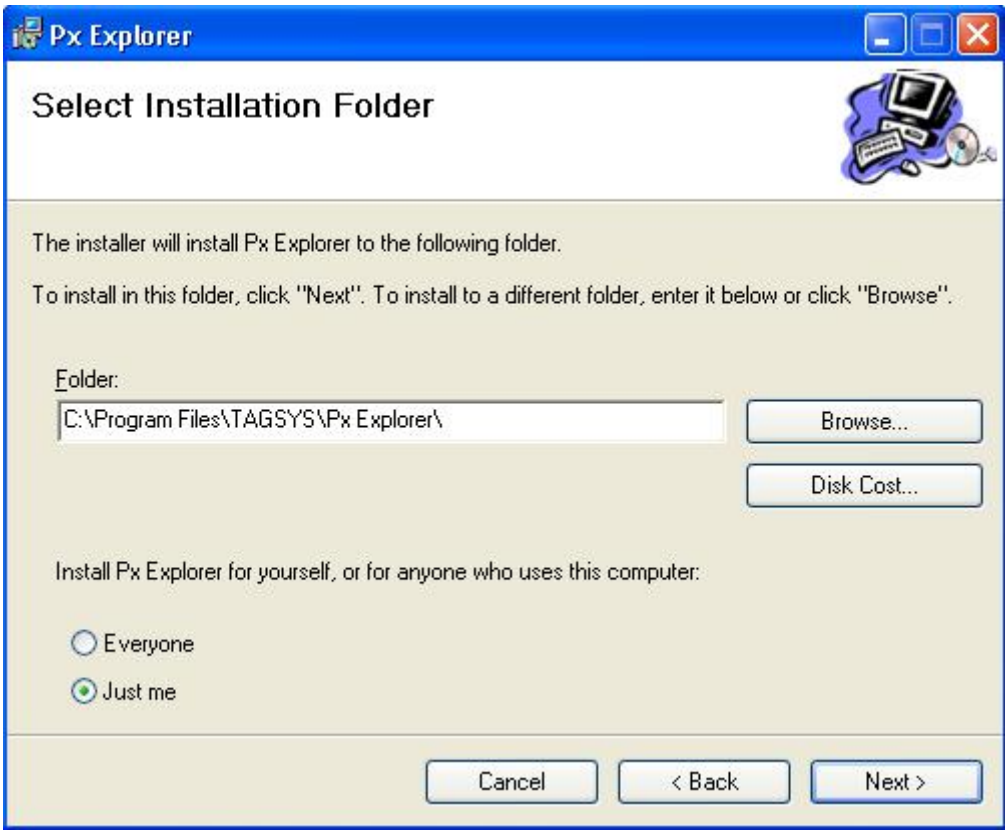
The Medio P101-Ethernet reader is delivered with the Px Explorer software tool intended to easily setup the reader, test it and perform reading and writing operations according to the antenna and type of tag to be used. In addition, Px Explorer can display additional information such as the Product Reference and Firmware version and revision. This section describes how to start with Px Explorer.

5.1 Installing Px Explorer

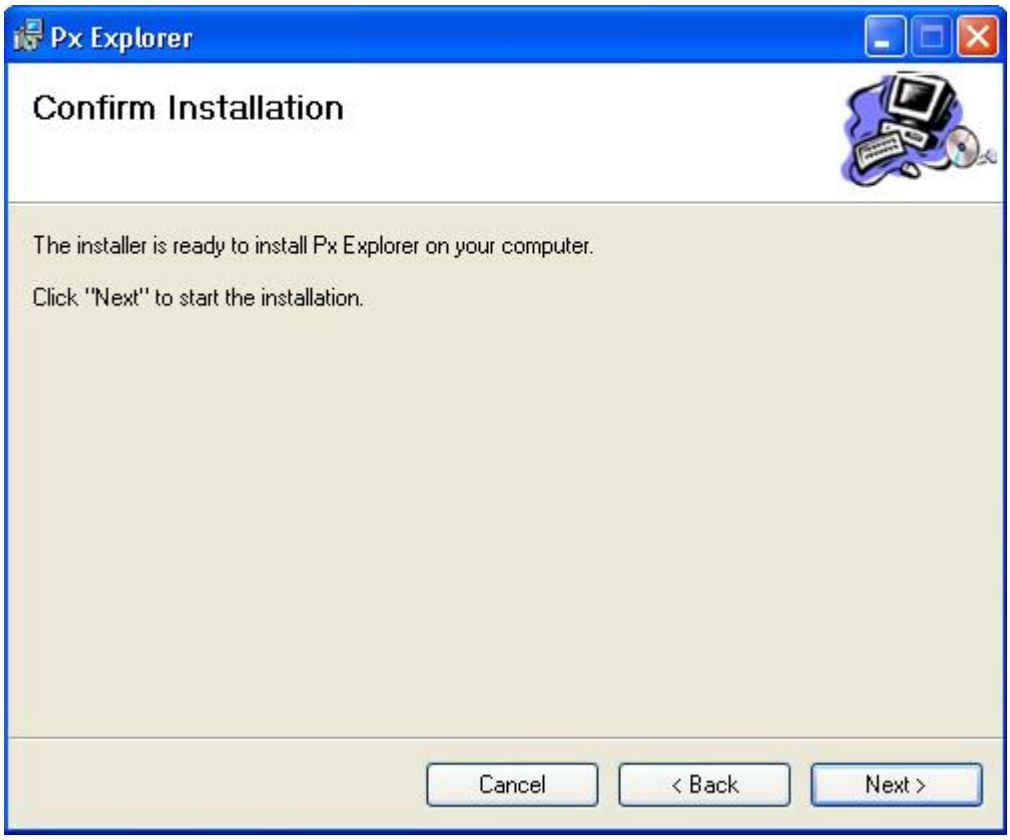
To install Px Explorer software, insert the product CD-ROM into the disk drive on your PC and run the Setup from the Medio P101 – Software Suite\ Tools\Px Explorer 1-5-7 folder and click “Next”



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

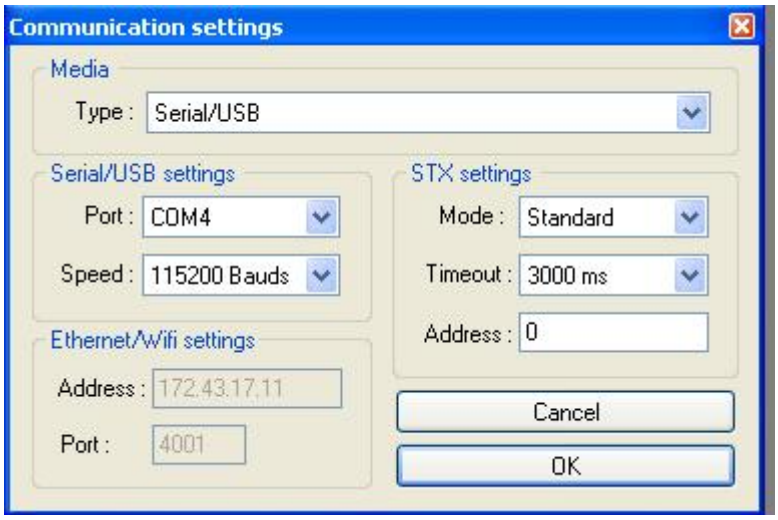
5.2.1 USB Communication

Before launching Px Explorer be sure which COM port number is assigned to the TAGSYS Medio P101-Ethernet reader. Open the Device Manager and select “View > Devices by type”.

The COM port number is assigned to the Medio P101.

Power up the Medio P101-Ethernet and connect the USB cable to both your PC and the Medio P101-Ethernet. Run Px Explorer. If the following window is displayed click yes.

Open the Communication Settings window (CTRL+C) and check the type of the media, the COM port number and the communication speed. The default communication speed for the Medio P101-Ethernet is 115200 Bauds.

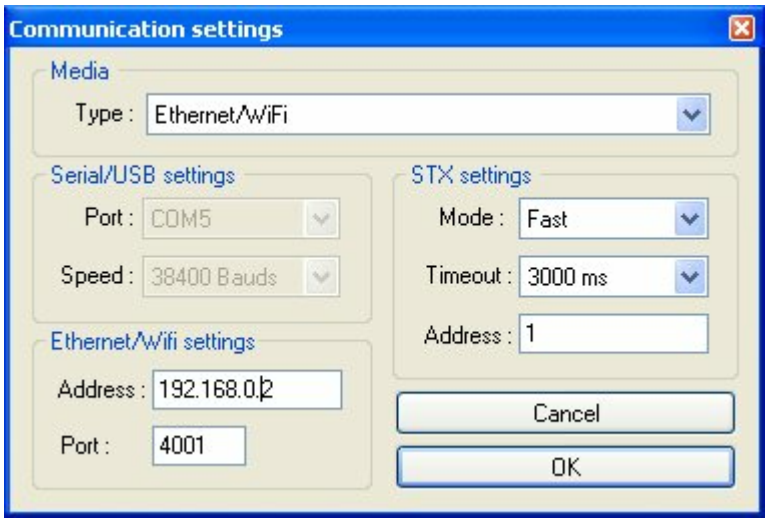


Set the STX setting mode to Fast to increase performances and click OK. Now Px Explorer is ready to communicate with your Medio P101-Ethernet.

5.2.2 Ethernet Communication

Before running Px Explorer, be sure that the Medio P101-Ethernet module is power up and correctly linked to your Ethernet network.

Open the communication setting window (CRTL+C) and check that the media type is selected to Ethernet/WIFI as shown below.



Enter the correct reader IP address.

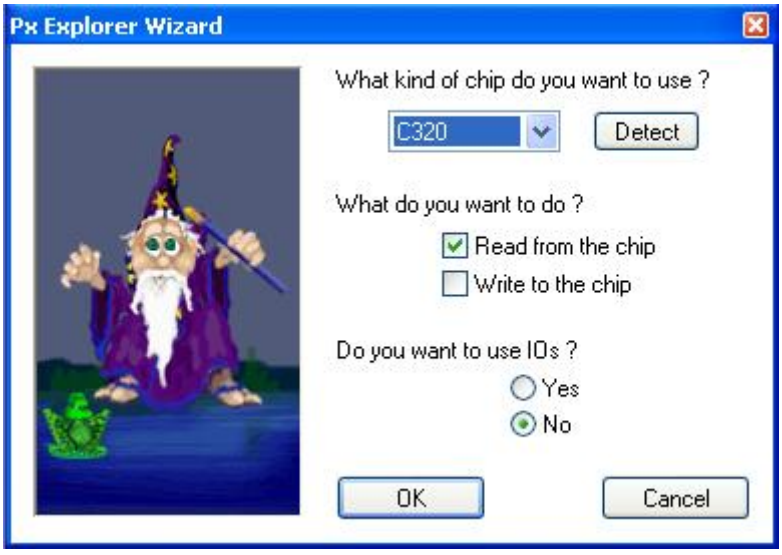
Check the port number value and change it to the correct value in case the default raw TCP port value of the Medio P101-Ethernet reader has been modified.

Set the STX setting mode to Fast to increase performances and click OK.

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.

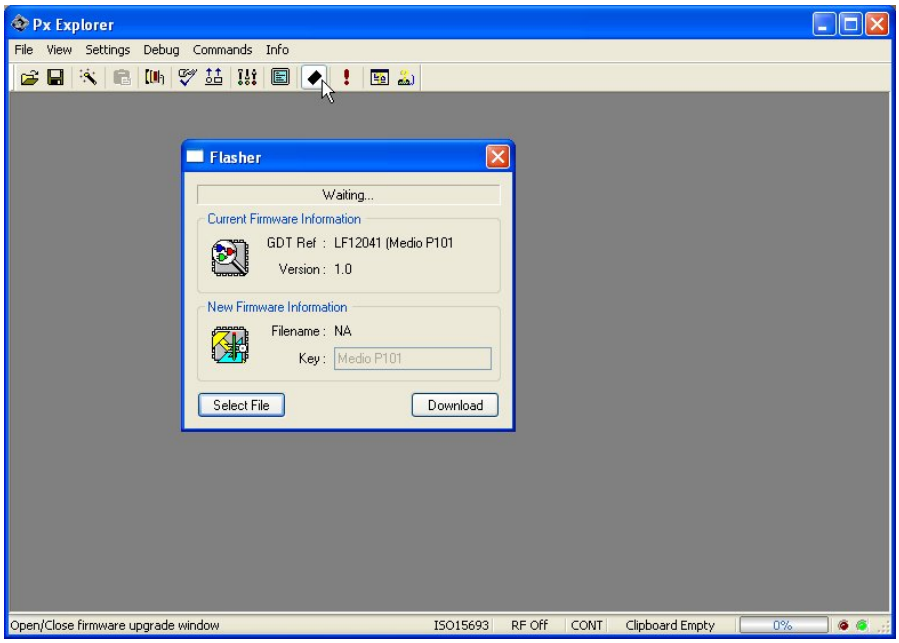
For more details concerning Px Explorer select the info menu and click Help (CTRL+H) to display the Px Explorer User's Guide.

5.4 Downloading a firmware

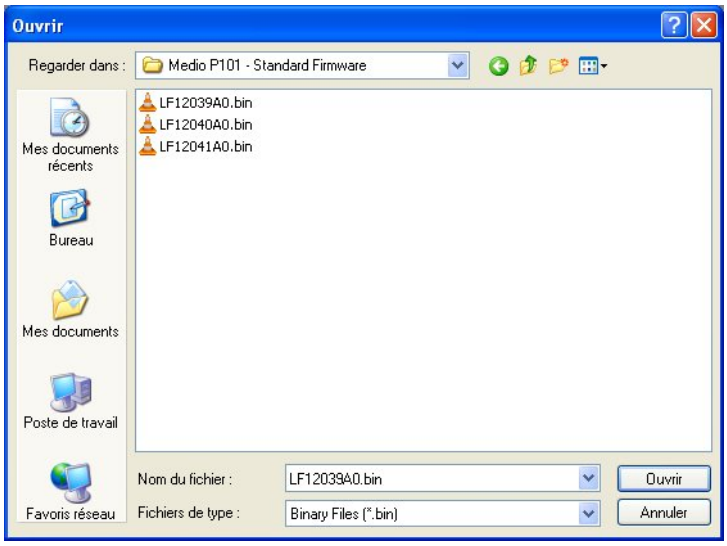
Use Px Explorer to download a new firmware. When a communication is established with the reader, click on the upgrade firmware button

By default Library firmware is already loaded.

The firmware upgrade can be done either using the USB or Ethernet communication interface.



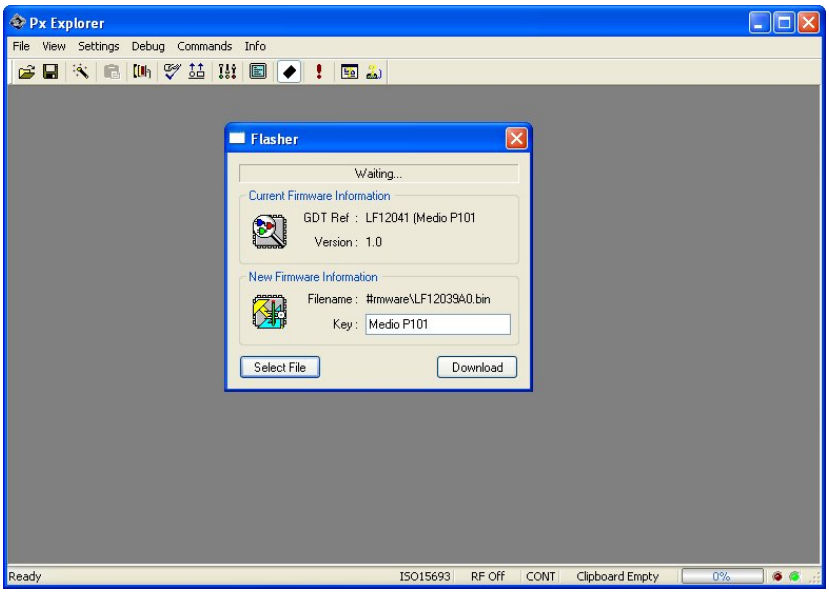
The flasher window pops up. Click on select file and go to the directory "\Medio P101 - Standard Firmware" on the CDROM or to any other directory containing Medio P101 compatible firmware (.bin files)



Select the firmware you want to download.

Standard firmwares are:

Firmware	File Name	Key	Compatible chips
Library	LF12039xx.bin	Medio P101	C220 C320 C370 (ISO 15693)
Industry and Logistics (I&L)	LF12040xx.bin	Medio P101	C270 (I-Code 1) C370 (ISO 15693) ePC UID
Textile Rental	LF12041xx.bin	Medio P101	C210 C240 C270 (I-Code 1) C370 (ISO 15693)



Verify the Key of the firmware to be able to download it. Key for standard firmware is “Medio P101” (with a space character between Medio and P101). For non standard firmware, a key will be supplied with.

Click on Download button and wait until the download is complete.

6 Stand-alone Mode

Stand-alone Mode is designed to use the reader without using any command set. While in this mode, the reader is limited to tag reading.

The reader sends the tag ID to the Host System using ASCII protocol via the Reader-to-Host interface.

ASCII protocol is used in order to provide hexadecimal data that can be read by a variety of terminal programs (e.g. Microsoft® HyperTerminal).

6.1 Stand-alone Mode Features

Table 3 lists the available Stand-alone mode features.

Table 3: Available Features in Stand-alone Mode

Features	TR-P101
Customized tag type reading compatibility (depending on downloaded application firmware)	C210 C240 C220 C270 (ICode1) C320 C370 (ISO15693) I-Code ePC/I-Code UID
Serial Communication Type	USB 1.1 Ethernet (Raw TCP serial communication)
Repetition Option	Available
Customized ASCII message format	STX/ETX Characters Header String Chip Description String ID String (variable length) End of Message String
Input Trigger	Available
Output for active trigger information	Available
Output for tag reading information	Available

6.1.1 Customized ASCII Message Format

When a tag is read, its data are transmitted to the host in the form of an ASCII character frame.

Table 4: Customized ASCII Message Format (TAGSYS RFID Tag is read)

	Start of Text	Header String	Chip Description String	ID		End of Message String	End of Text
Description	<STX> (0x02)	"TAGSYS-" (Default)	Chip name			<CR/LF> (Default)	<ETX> (0x03)
Size	1 character	0 to 16 characters	0 to 16 characters	C210	2 to 16 characters	0 to 16 characters	1 character
				C240	2 to 16 characters		
				C220	2 to 10 characters		
				C270	2 to 16 characters		
				C320	2 to 16 characters		
				C370 (ISO 15693)	2 to 16 characters		
				ePC	2 to 24 characters		
				UID	2 to 10 characters		
TR-P101	Optional	Optional	Optional	Required		Optional	Optional

Medio P101-Ethernet reader can decode all chips in Stand-alone mode. Only the ID field is retrieved in the return ASCII message. All other fields are optional. The ID field length is programmable; the default lengths are given in Table 5.

Table 5: Default ID Field Lengths

Chip Type	Default ID Field Length
C210 chip	16 (Total memory)
C240 chip	16 (Block 0 Page 0)
C220 chip	10 (Lockable memory)
C270 chip	16 (Block 0 and Block 1)
C320 chip	16 (Block 0)
C370 chip (ISO 15693)	16 (UID)
ePC	24 (Block 0 to 11)
UID	10 (UID block 14 to 18)

6.1.2 Repetition Option

The reader constantly attempts to read any chips present in the field. When a chip ID is detected, the reader can send the information to the host in one of 2 modes:

1. In "Repeated Read" mode, the reader returns a chip's ID to the host with each successful read operation.
2. In "Read Once" mode, the reader only returns the ID of a chip if the previous read corresponds to a different chip, or if all reading attempts have failed 4 times (this feature makes it possible to detect a chip's potential exit out of the field).

6.1.3 Trigger Input

When the trigger capability is enabled, a trigger state is used to start and stop the RF scanning. The trigger is connected to the input of the reader.

Depending on the reply settings of the trigger, the ASCII message can be sent during the trigger activity (Repeated Read mode and Read Once mode are available) or at the end of the trigger. In this last case, a message is always sent to the host system:

- if a tag has been read, the message contains its ID,
- if a tag has not been read, the message contains a No Message string (that can be defined) as shown in Table 6.

Table 6: Customized ASCII Message Format (TAGSYS RFID Tag is not read)

	Start of Text	Header String	No Tag Found String	End of Message String	End of Text
Description	<STX> (0x02)	“TAGSYS-“ (Default)	“????????“ (Default)	<CR/LF> (Default)	<ETX> (0x03)
Size	1 character	0 to 16 characters	0 to 16 characters	0 to 16 characters	1 character
Status	Optional	Optional	Required	Optional	Optional

6.1.4 Output Settings

The output of the reader can be used to monitor the trigger activity or the successful reads.

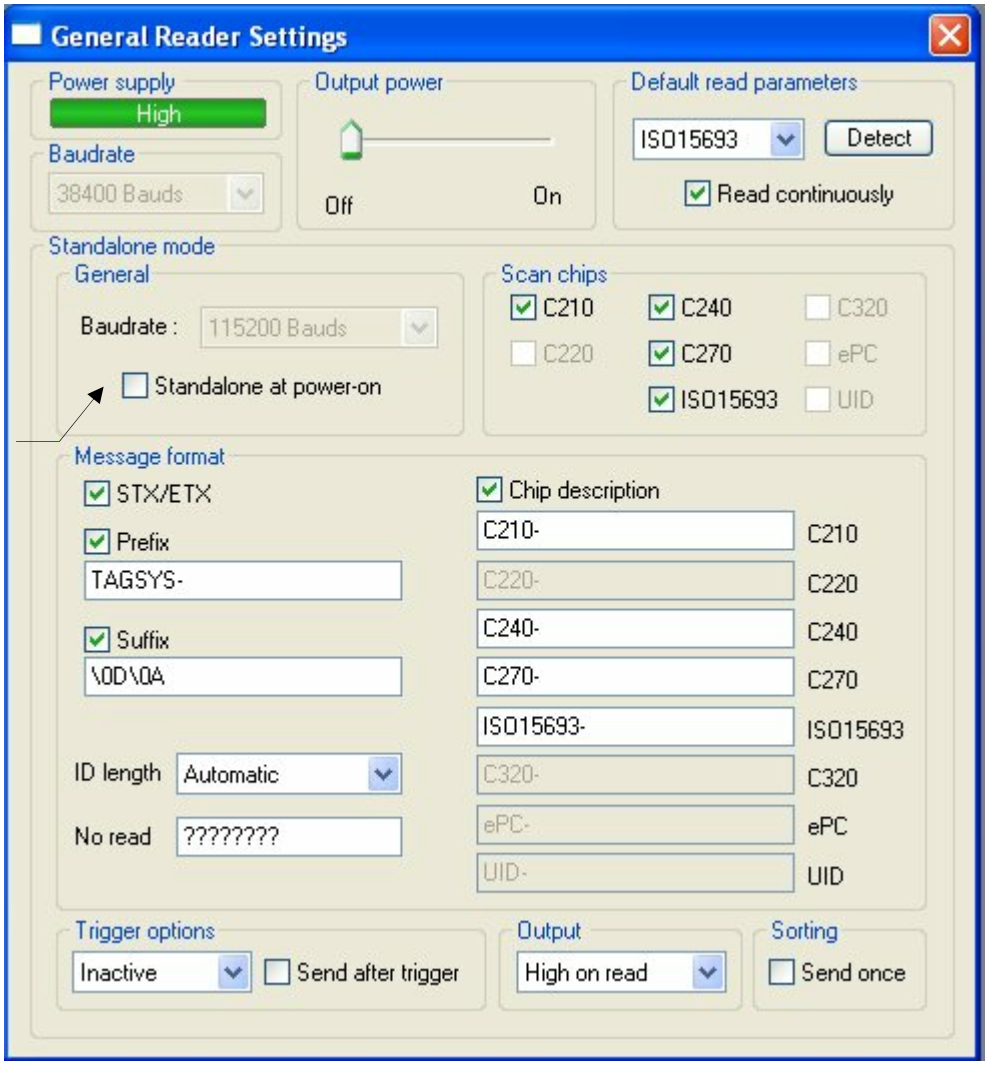
6.2 Stand-alone Mode Settings

Stand-alone Mode can be set in one of two ways while the reader is in Normal Operating mode

- By using the Px Explorer software provided with the reader
- By using “Set Stand-alone Mode” command followed by a “Reset Reader” command. For more information, refer to the Medio P101-Ethernet **Command Set** document.

6.2.1 Using Px Explorer

Run the Px Explorer software. In the Settings menu, select General Reader Settings



Enable Standalone mode at next power on

6.3 Disabling Stand-alone Mode

The Medio P101-Ethernet can be reset in Standard mode in one of two ways as described below:

- Use the Px Explorer software provided with the reader and click Yes when the following window is displayed

- Send the 'S' character using a console interface (for example, HyperTerminal).

7 Connecting Peripheral Devices

7.1 Using the Universal Input pin

The reader input can be driven by a voltage source from 0V up to 25V referring to the input ground.

A relay (open chain transistor, switch…) can also be used to connect the input pin and its ground.

- Low level input voltage is defined to be in the range of 0 to 1.5V
- High level input voltage is defined to be in the range of 3 to 25V

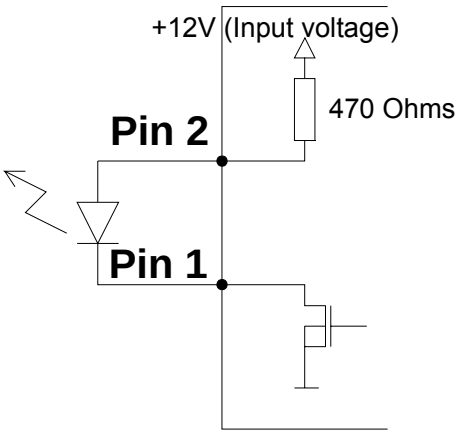
7.2 Using the Universal Output pin

The output pin is an open drain power transistor that can drive a current up to 6A. When activated, the power transistor connects the output pin and its ground.

The output transistor is protected against heating and current overload. If an overload happens, the output stops driving current automatically. The output must be turned off to be re-activated.

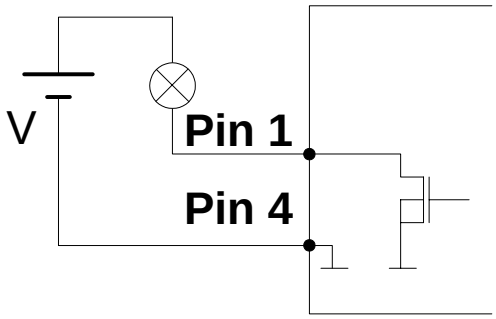
7.2.1 Output Wiring

Example: Connecting a LED to the Output



The LED's cathode is connected to the Output pin and its anode to the Output Supply Pin. Note that the Output supply selector is configured to deliver 5V to supply the LED. The internal serial resistor limits the current delivered to the LED.

Example: Connecting a load using an external power



The external power must be less than 25V

7.3 I/O Electrical Signal Requirements

Table 7 provides the electrical DC characteristics.

Table 7: I/O Interface Pins - Electrical Characteristics

Parameters	Conditions	Min.	Typ.	Max.	Unit	Note
Input Voltage Low		0		2	V	
Input Voltage High		3		25	V	
Output Current				6	A	

8 Technical Specifications

Table 8: Medio P101-Ethernet Technical Specifications

Reference	Medio L-P101
Size (L x W x H)	154 x 84 x 38 mm (TOPTEC 154F)
Weight	200 g
DC power	12 VDC +/- 10% Typical
Chip compatibility (depending on downloaded firmware type)	C210 C240 C220 (Folio 20) C320 (Folio 320) ISO 15693 (Folio 370) EPc UID
Communication interface	USB 1.1 Ethernet (Raw TCP)
RF Output Power	1.2 W Typical
Power consumption	4.5 W
Operating temperature	0° to +55°C
Storage temperature	-20° to +70°C
Mechanical fixation	Accessories for TOPTEC 154F boxes (Manufacturer : OKW)
Conformity	ETSI 300-330 European Radio compliance EN 50364
Communication protocol	TAGSYS-specific STXE-2

9 Electrical Characteristics

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

9.1 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	4.5 W
Total Power Dissipation on Antenna	1.2 W

9.2 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)		50	45	40	mA
I_{RFOn}	Supply Current (RFOn, Dummy Load 50Ohm, V_{Supply} = 12V)	USB		268		mA
		ETHERNET		339		
I_{RFOn}	Supply Current (RFOn, V_{Supply} = 12V, Antenna connected, Ethernet Communication)	TR-HA1		339		mA
		L-W1		351		mA
		LSA-3		336		mA
T_{Op}	Operating Tempature		0		55	°C
V_{USB}	Supply Voltage on USB cable		5.25	5	4.35	V
I_{Usb}	Supply Current on USB cable		-	340	-	µA
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
Input Voltage Low			2		0	V
Input Voltage High			25		3	V
Output Current			6			A

10 Warranty Conditions

10.1 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.

10.2 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.

10.2.1 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.

10.2.2 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.

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
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

+33 491-275-701

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.

+33 491-275-736

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.