CONFIGURATION HANDBOOK

RFID90

LOREME 12, rue des Potiers d'Etain Actipole BORNY - B.P. 35014 - 57071 METZ CEDEX 3
Phone 03.87.76.32.51 - Telefax 03.87.76.32.52
Contact : Commercial@Loreme.fr - Technique@Loreme.fr
Download manual at : www.loreme.fr

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Table of contents

LOREME 12, rue des Potiers d'Etain - 57071 Metz ☎ 03.87.76.32.51 - Fax 03.87.76.32.52 - Email: Commercial@Loreme.fr - Technique@Loreme.fr

Device Presentation

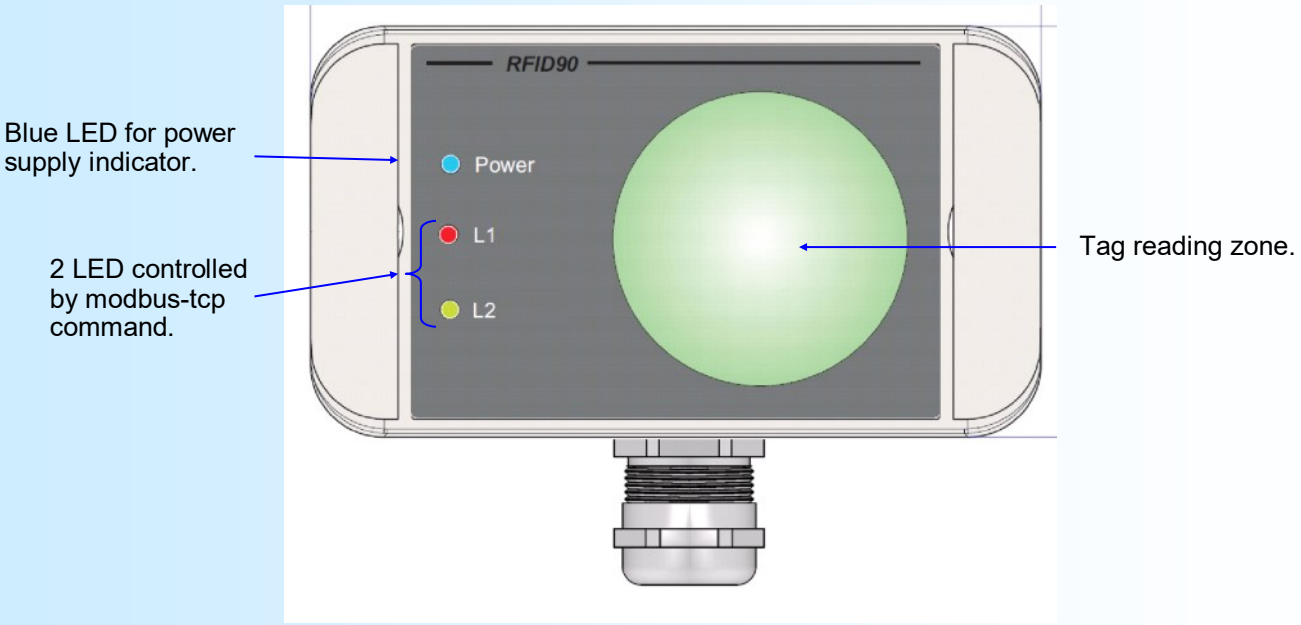
The RFID90 is a RFID Tag reader (125 kHz, EM4102 ISO card) designed for access control. It can be powered directly by Ethernet (PoE) or with an auxiliary supply (8 to 28 Vdc). Modbus TCP communication support. Provide a Web server to display tag and configuration. Indoor or outdoor use with its IP66 plastic box (power connector and Ethernet RJ45 plug are inside the box).

A buzzer can be use to confirm the good TAG reading.
An internal push button reset the RFID90 with it's default configuration:

- IP address : 192.168.0.253,
- network mask: 255.255.255.0,
- IP gateway : 0.0.0.0,
- Buzzer operating mode: standalone,
- TAG reading time-out: 2 seconds.

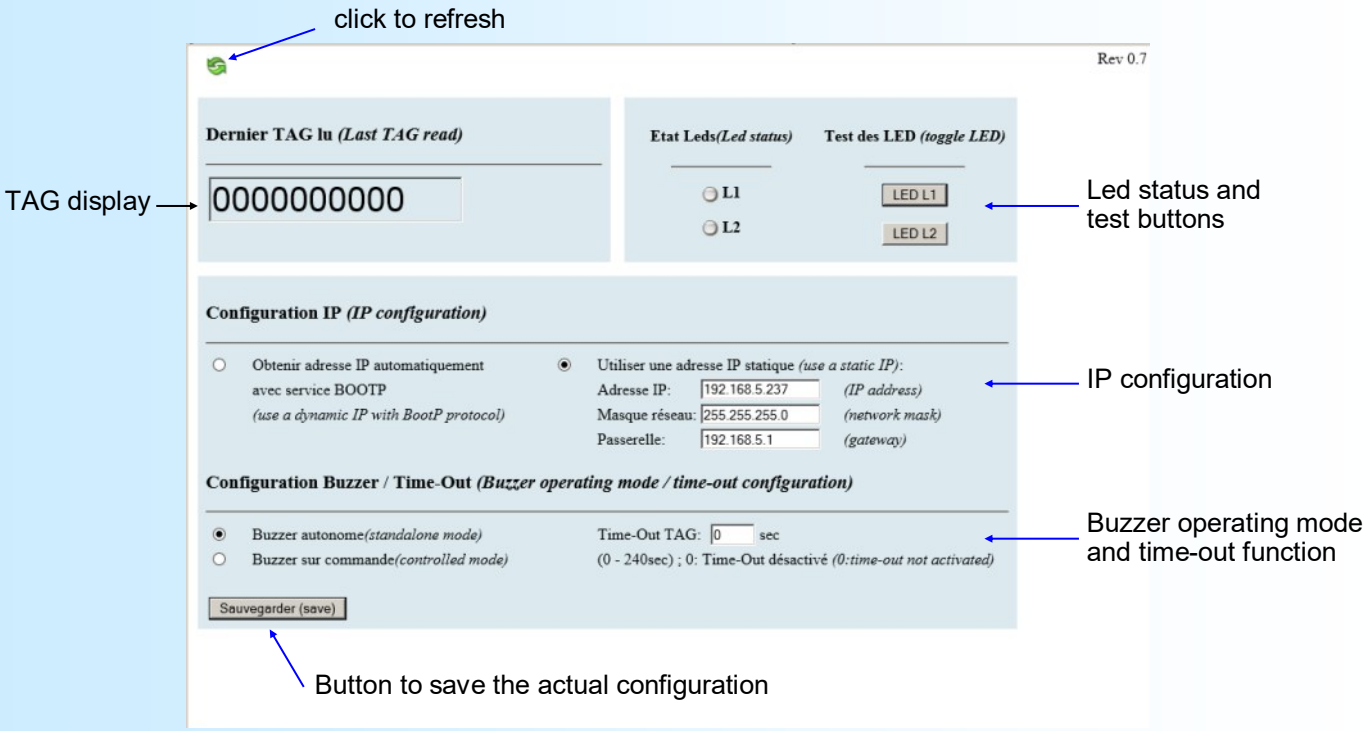
Important note : If the Bootp option is activated, A Bootp server should be present in network !. If not, the RFID90 can't fully start-up and the reset push button become inoperative.

The technical data sheets are downloadable here: http://www.loreme.fr/fichtech/RFiD90_eng.pdf



WEB server

The web server integrated in the RFID90 shows some information.



TAG displaying:
If the timeout function is not activated (timeout delay = 0 s), The TAG indication is the last tag read.
When the timeout function is activated (timeout delay is not 0), the last TAG reading is accessible only during the time-out delay.

Led status:
This 2 pictures showing the state of the LED L1 (red) and the LED L2 (green).

Toggle LED:
This buttons can be use to toggle the state of LED L1 and L2.

IP configuration:
- Static address: Select this option to use an static IP for device. Enter the IP address, the gateway and the mask and save it with the button.
- Dynamic Address: The RFID90 supports only the BootP protocol. To use it, **a BootP server must be present** on the network to associate the MAC address to an IP address.
Select this option to use the BootP protocol and save it with the button.

Buzzer configuration:
- Standalone mode: The buzzer sounds for each TAG reading.
- Controlled mode: The buzzer is controlled by modbus tcp command.

Timeout configuration:
- Setting from 0 to 240 seconds. This delay is the amount of seconds that the last TAG number is accessible after the reading. When this delay is expired, the reading is erased (TAG number is set to 0).
- If the timeout value is set to zero, this function is not activated and the last reading is still accessible until the next TAG detection (the TAG number is never set to 0) or may be erased by a modbus tcp command.

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MODBUS TCP communication

1) Characteristics

Protocol:	MODBUS TCP	Link:	Ethernet 10/100 base T
Default IP address:	192.168.0.253	Port:	502
Connector:	RJ45	Read request:	function code 03, 04
		Write request:	function code 06, 16, 23

2) Multi-master operation

The RFID90 allows to be interrogated by multiple modbus tcp master (up to 4). The response time to a request is < 50ms. This time is strongly influenced by the network traffic. An important load on network may generate communication errors.

3) Details of data

The data are provide in different format:

- 3 words, 6 bytes for the TAG number (Most significant byte set to 0, TAG number on 5 bytes (40 bits, 10 digits)),
- 1 word, 2 bytes for the state of LED L1 (green) and LED L2 (red) and buzzer operating mode.

4) Table of registers

4.1) Registers for read request

Registers Address	Designation	Format
00	TAG number	MSB set to 0 + 2 digits of TAG
01	TAG number	4 digits of TAG
02	TAG number	4 digits of TAG
03	Led status and buzzer operating mode.	bit 0: green LED, bit 1: red LED (0: OFF, 1: ON) bit 3: buzzer operating mode (0: standalone, 1: controlled)

Example:
If the TAG reading is 02007F297D. The reading of 3 registers starting at address 00 will give : 0002, 007F, 297D.
If the timeout function is activated, this 3 registers are set to 0000 after the timeout expired.

4.2) Registers for write request

Registers Address	Designation	Format
04	Control word: - Status of LED and buzzer - Erasing the TAG value	bit 0: green LED, bit 1: red LED bit 2: buzzer control bit 15: TAG erasing command

Explanation of the TAG erasing command:

- The erasing process is operative only if the "Timeout" is deactivated (Timeout = 0).
- To erasing the last TAG, set the bit 15 to 1 in the control word and write it in the address register 04

Explanation of buzzer control:

To drive the buzzer, the operating mode must be set to «Controlled mode» (See Web page details).
The buzzer don't sound continuously. It sound only after a writing request and during 200 ms.
A buzzer command is recognize only if the bit 2 is set to 1 AND if it was at 0 before writing. This bit is automatically set to 0 after device power on or reset. So, if after a power on, we send two writing request with the bit 2 = 1, the buzzer sounds only once! (only the first writing cause a "0 -> 1" transition).
The best way to control the buzzer is to send two write request. The first with the bit 2 = 0 and the second with the bit 2 = 1.

EMC Consideration

1) Introduction

To meet its policy concerning EMC, based on the Community directives **2014/30/EU** & **2014/35/EU**, the LOREME company takes into account the standards relative to this directives from the very start of the conception of each product.
The set of tests performed on the devices, designed to work in an industrial environment, are made in accordance with **IEC 61000-6-4** and **IEC 61000-6-2** standards in order to establish the EU declaration of conformity. The devices being in certain typical configurations during the tests, it is impossible to guarantee the results in every possible configurations. To ensure optimum operation of each device, it would be judicious to comply with several recommendations of use.

2) Recommendations of use

2.1) General remarks

- Comply with the recommendations of assembly indicated in the technical sheet (direction of assembly, spacing between the devices, ...).
- Comply with the recommendations of use indicated in the technical sheet (temperature range, protection index).
- Avoid dust and excessive humidity, corrosive gas, considerable sources of heat.
- Avoid disturbed environments and disruptive phenomena or elements.
- If possible, group together the instrumentation devices in a zone separated from the power and relay circuits.
- Avoid the direct proximity with considerable power distance switches, contactors, relays, thyristor power groups, ...
- Do not get closer within fifty centimeters of a device with a transmitter (walkie-talkie) of a power of 5 W, because the latter can create a field with an intensity higher than 10 V/M for a distance fewer than 50 cm.

2.2) Power supply

- Comply with the features indicated in the technical sheet (power supply voltage, frequency, allowance of the values, stability, variations ...).
- It is better that the power supply should come from a system with section switches equipped with fuses for the instrumentation element and that the power supply line be the most direct possible from the section switch.
- Avoid using this power supply for the control of relays, of contactors, of electrogates, ...
- If the switching of thyristor statical groups, of engines, of speed variator, ... causes strong interferences on the power supply circuit, it would be necessary to put an insulation transformer especially intended for instrumentation linking the screen to earth.
- It is also important that the installation should have a good earth system and it is better that the voltage in relation to the neutral should not exceed 1V, and the resistance be inferior to 6 ohms.
- If the installation is near high frequency generators or installations of arc welding, it is better to put suitable section filters.

2.3) Inputs / Outputs

- In harsh conditions, it is advisable to use sheathed and twisted cables whose ground braid will be linked to the earth at a single point.
- It is advisable to separate the input / output lines from the power supply lines in order to avoid the coupling phenomena.
- It is also advisable to limit the lengths of data cables as much as possible.

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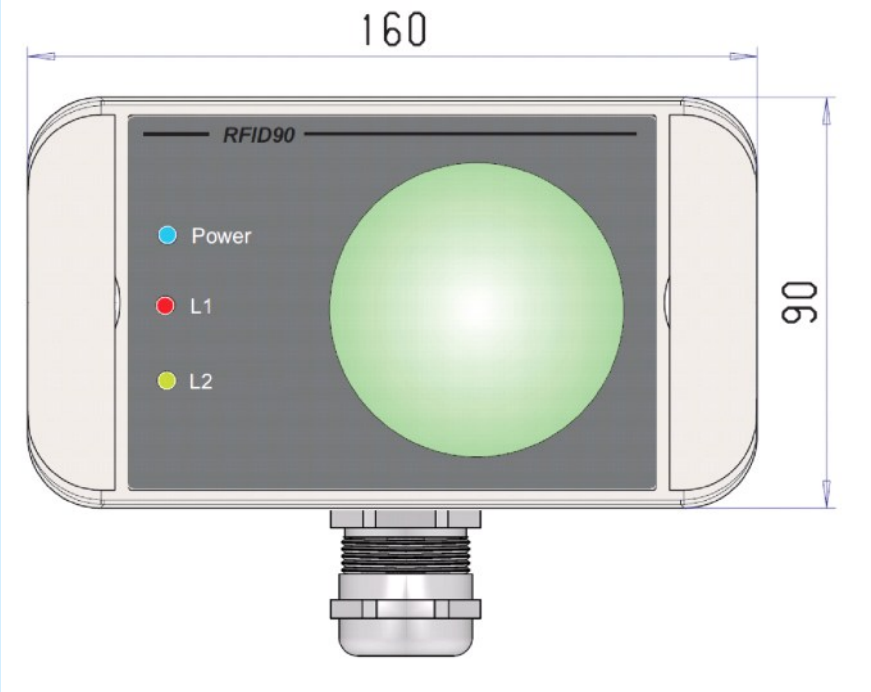
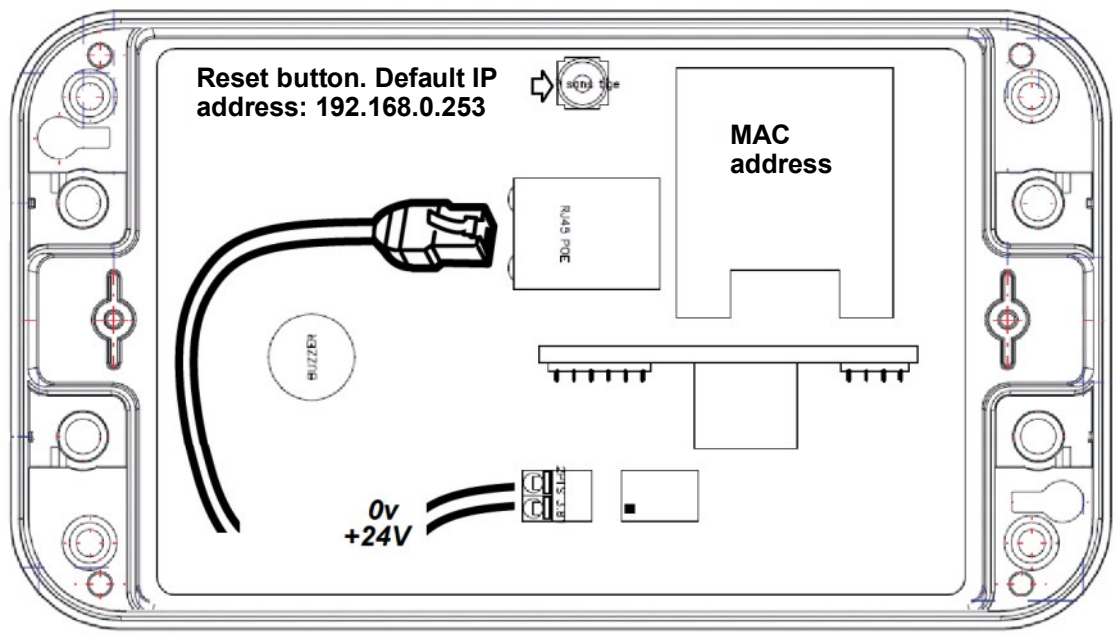
Wirings


160
RFID90
Power
L1
L2
90


Reset button. Default IP address: 192.168.0.253
MAC address
RJ45 POE
BUZZER
0v
+24V