

# INSTALLATION MANUAL

HF RFID INTERROGATOR SLRM1000

VERSION 1.0

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# frequent

froschelectronics GmbH

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Münzgrabengürtel 10  
8010 Graz  
Austria

The content of this document and comments made in the operating instructions may be altered without previous notice.

With this edition of the instruction manual all previous editions become void. This document and its content have been composed to the best of our knowledge.

But anyways, frequent does not guarantee the correctness of the details given in these instructions and may not be held liable for damages caused by incorrect installation.

Despite all our efforts, we know, that errors may not be completely avoided, so we would be grateful for your useful tips to improve this document.

The installation instructions given in this manual are based on normal, indoor environment and advantageous boundary conditions. frequent does not give any guarantee promise for perfect function of the equipment in a harsh surrounding.

It is forbidden to copy or reproduce of these instructions, even if only partial, as well as translation into other languages is forbidden unless a written consent has been granted by frequent. This also applies to the complete or partial storage of these operating instructions on modern input- and output media for further processing in data processing systems.

***Please read the operating- and safety instructions thoroughly before putting the appliance into operation!***

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## 1 REVISION HISTORY

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Revision	Date	Description
1.0	April 2014	Initial Version

## 2 INTRODUCTION

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Thank you for purchasing this freaquent RFID read/write device.

This Installation Manual will provide you with information to rapidly set up this freaquent device according your needs, to install the reader hardware and the freaquent RFID Studio software and to get the reader running.

Please refer to the other documents, tutorials and help files provided by freaquent in order to achieve the best performance available with this freaquent product.

freaquent reserves the right to change its product design, specifications and product range without notice. This document is subject to change without notice.

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## 3 PRODUCT OVERVIEW

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- freaquent's HF RFID Interrogator SLRM1000 is intended to read and write information from and to individual, grouped or stacked RFID-transponders.
- The communication protocol used by the reader to address these transponders is compliant to ISO/IEC 18000-3mode3 or ISO 15693 (Air Interface at 13.56 MHz).
- The SLRM1000 is a multi-antennas read/write device.
- It can operate up to 16 individual antennas at an antenna output power of max. 8 Watt.
- Available interfaces to the host are USB, RS232 and LAN.
- It offers 4 decoupled inputs and 4 decoupled outputs.

## 4 SCOPE OF DELIVERY

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- SLRM1000 Reader Device
- USB cable (A – B connector, shielded, 2 meter length)
- FCC/CE certified power supply (A power cable is not included. Users should purchase a power cable suitable for the country in which the equipment is being used. The socket of the power supply is of type IEC 320 C13).

**Note:** make sure to use a power supply cable that is compliant with the regulations of the country of use.

- One or more antennas and the antenna connection cable(s)
- Installation manual

- Optional: One field strength indicator

## 5 IMPORTANT SAFETY INSTRUCTIONS

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- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Do not use this device near water.
- Clean only with dry cloth.
- Do not install near any heat sources such as radiators, registers, stoves, or other apparatus that produces heat.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where it exits from the apparatus.
- Only use attachments and accessories specified by frequent.
- Use FCC/CE certified power supply only.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- The device may only be used for the intended purpose designed for by the manufacturer.
- The installation manual should be conveniently kept available at all times for each user.
- Unauthorized changes and the use of spare parts and additional devices which have not been sold or recommended by the manufacturer may cause fire, electric shocks or injuries. Such unauthorized measures shall exclude any liability by the manufacturer.
- The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.
- Repairs may only be executed by the manufacturer.
- Installation, operation, and maintenance procedures should only be carried out by qualified personnel.
- Use of the device and its installation must be in accordance with national legal requirements and local electrical codes.
- When working on devices the valid safety regulations must be observed.
- Special advice for carriers of cardiac pacemakers: Although this device doesn't exceed the valid limits for electromagnetic fields you should keep a minimum distance of 25 cm between the device and your cardiac pacemaker and not stay in an immediate proximity of the device respective the antenna for some time.

- **Warning:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

## 6 IMPORTANT MOUNTING INFORMATION

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### 6.1 INSTALLATION ENVIRONMENT

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- For indoor use only.
- Install this frequent reader and the antennas only in an environment whose compliance with the conditions, specified in **8. Product Specification** (page 9), is assured.
- The environment must not contain corrosive, flammable or explosive materials or be subject to rapid changes in temperature, to direct vibration or shock.

### 6.2 NOTIFICATION

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- frequent's RFID readers communicate with data carriers (RFID inlets, labels and tags) using a 13.56 MHz carrier frequency (HF band). Some industrial machines and electronic devices can generate unwanted noise which may degrade communication. Make sure that other equipment is properly installed, grounded and at a reasonable distance from the reader and/or the reader antennas.
- The wireless communication of the reader can be degraded by high-voltage and high-current lines and other sources of strong electromagnetic fields. Installation in such locations should be avoided.

### 6.3 RECOMMENDED SCREWS FOR SPECIFIC SURFACE

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When mounting the device please keep following instruction:

- Metal surface:  
Phillips Pozidriv Pan Head Self Drilling Zinc Plated Steel  
Screw No 6x12.7mm equivalent to RS 546-5660
- Timber surface:  
Phillips Pozidriv Pan Head Self Drilling Zinc Plated Steel  
Screw No 6x19mm equivalent to RS 546-5676
- Dry wall:  
Phillips Pozidriv Pan Head Self Drilling Steel Screw No 6x25.4mm  
equivalent to RS 546-5682 plus Plasterboard Anchor or equivalent to RS 546-6477

## 7 DOWNLOAD INSTRUCTIONS

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The suitable evaluation SW-package “frequent RFID Studio” and further documentation of the Hardware, the Software and the Firmware can be downloaded from the frequent download area at [www.frequent.com](http://www.frequent.com) after registration.

**Attention:** Please read the installation instructions for the SW package before installing!



## 8 HOW TO GET STARTED (QUICK START GUIDE)




- Choose one or more interface options by connecting a communication cable  
**Note:** It is recommended not to use cables longer than 2.5m in case of USB or RS232 connections, in case of LAN interface please use cables and connectors of CAT5 quality or higher!
- Connect one or more external antennas
- If the usage of the IO-port is intended, please keep strictly the instructions found in the “SLRM1000 IO-Port Manual”. Download at [www.freaquent.com](http://www.freaquent.com).
- Make sure, that On/Off switch is in “Off” position
- Connect the power supply (15V to 18Vdc, please only use power supplies, that are delivered or recommended by freaquent)
- Install “RFID Studio” (please follow the instructions in chapter 0 to download the setup file and the release notes with its installation instructions)
- Power On the reader by setting the switch to “On” position
- Start “RFID Studio”
- **Note:** By default the antenna power of all channels is set to a value (0x36). This power level ensures that for all antennas which are provided by freaquent, the maximum power levels, in terms of radiation limits (FCC and CE) as well as in terms of power dissipation, are not exceeded. Please find the specific maximum power setting in terms of radiation (FCC and CE) as well as in terms of power dissipation in the datasheet of the freaquent antenna.
- **Attention:** Please make sure that changes on the output power are done in accordance with the radiation limits legally valid in your country. These limits are specific for each antenna type and are given in the datasheet of the antenna.
- **Attention:** Please do not change the antenna cable length! If extension is necessary, refer to [www.freaquent.com](http://www.freaquent.com).
- **Now you are ready to enjoy the outstanding performance of the SLRM1000**

## 9 PRODUCT SPECIFICATION

Electrical Specifications	
Operating Frequency	13,56 MHz
Compliances	ISO18000-3mode3, ISO15693
Uplink Data Rate	Up to 80 kHz, depending on standard
Downlink Data Rate	Up to 433 kHz, depending on standard
Number of Antenna ports	16
Operating Range	Up to 1 m, depending on Tag type
Transmitted Power	0,5W – 8W, adjustable for each port
Modulation Index	15-25%, depending on antenna
Inputs	4, decoupled
Outputs	4, decoupled
Power Supply	15-18V DC
Power Consumption	Up to 20W
Mechanical Specifications	
Dimensions (W x H x D)	185 mm x 193 mm x 48mm
Weight	Ca. 1250g
Interfaces	
RS232	115 200 Baud Rate
USB	2.0
Ethernet	UDP or TCP/IP
Conformity	
<b>Europe</b>	<b>CE Marking</b>
Postal	EN 300 330
EMC	EN 301 489
Low Voltage	EN 60950
Human Exposure	EN 50364
<b>USA</b>	<b>FCC pending</b>
	FCC ID: 2ACK5-SLRM1000-16
Temperature Range	
Environment	Indoor use
Operation Temperature	0°C to 55°C
Storage Temperature	-25°C to 85°C
Relative Humidity	10% to 80% (non-condensing)

## 10 COMPLIANCE INFORMATION STATEMENT

**Model:** SLRM1000, **Type:** HF RFID Interrogator


<p><b>E-Certification:</b></p> <p>When properly used this radio equipment conforms to the essential requirements of Article 3 and the other relevant provisions of the R&amp;TTE Directive 1999/5/EC of March 99.</p> <p>Equipment Classification according to ETSI EN 300 330 and ETSI EN 301 489: Class 2</p>
<h3>FCC ID: 2ACK5-SLRM1000-16</h3>
<p>This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:</p> <ul style="list-style-type: none"> <li>• This device may not cause harmful interference, and</li> <li>• This device must accept any interference received, including interference that may cause undesired operation.</li> </ul> <p>Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.</p>
<p><b>Note:</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 or television 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:</p> <ul style="list-style-type: none"> <li>• Reorient or relocate the receiving antenna.</li> <li>• Increase the separation between the equipment and receiver.</li> <li>• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.</li> <li>• Consult the dealer or an experienced radio/TV technician for help.</li> </ul> <p><b>Caution:</b> Any changes or modifications not expressly approved by frequent could void the user's authority to operate the equipment.</p>

**Compliance Information Statement  
(Declaration of Conformity)**

Responsible Party:	Gaming Partners International Corporation
Address:	1700 South Industrial Road Las Vegas, Nevada 89102
Telephone:	+1 702.384.2425
Type of Equipment:	HF RFID Interrogator
Model Name:	SLRM1000