

# Kronegger NFC P&P Reader customized for Autolib Car, RS232, SAM

Version 1.5

## User - Manual

Confidential

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# 1 Introduction

Kronegger GmbH. provides customer support and optional design in services for properly integrating the products. Since we do not have full information on customer's applications or products, it is due to the customer to verify that the integrated products are suitable for the application intended and that no patents or intellectual property rights are infringed. Integrating the products into the customer's application is a development process that requires special experience, professional skills and involves usual technical risks. Kronegger GmbH. assumes no responsibility or liability for customer's applications, their performance, the required development effort, production, installation, operation, their suitability, reliability and safety. The products are not designed for applications where malfunction could cause potential risk of death, personal injury or environmental damage.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

If using a permanently affixed label, the modular transmitter must be labeled with its own FCC identification number, and, if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID ZKCPP-0403-3003 or contains FCC ID ZKCPP-0403-3003". Any similar wording that expresses the same meaning may be used. The Grantee may either provide such a label, an example of which must be included in the application for the equipment authorization, or, must provide adequate instructions along with the module which explains this requirement. In the latter case, a copy of these instructions must be included in the application for equipment authorization.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The manual has been written to the best of our knowledge. We do not guarantee the correctness and completeness of the provided information and insist on the good practice of crosschecking during the customer's development process through sufficient testing coverage. Feedback on errors in the manual are highly appreciated.

This document may be used to support the integration of Kronegger products. Any other use, duplication, storage or circulation is not authorized shall be prosecuted as a violation of copyright laws.

## 2 Getting Started

As factory default the data are transmitted at 115200, n, 8, 1 and no handshake. Two protocol modes are available. As default the binary protocol is used. To change the protocol type or the baud rate you have to configure the EEPROM (see EEPROM Memory Organization).

First of all you need a Mifare+ reader with an USB cable (Type A to mini B)  
For the communication with the reader you have to download a virtual com-port driver (VCP) for the USB interface. Please check the following link for the latest version:

<http://www.ftdichip.com/Drivers/VCP.htm>

The driver will map the USB to a serial communication port. Install the driver and connect the reader. It will show "new hardware detected." You can check your setup under System Setting/System/Hardware/Device Manager to find out which com-port had been assigned to your reader. Optionally you can change the com number in the advanced settings of the com-port.

For the communication with the reader you need the ReaderTool which is delivered with any Kronegger Reader. The Microsoft .NET Framework 2.0 (or any higher version) needs to be installed first in order to run the ReaderTool:

<http://www.microsoft.com/downloads/details.aspx?familyid=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displaylang=en>

The ReaderTool needs no installation, simply start it and the reader will be selected automatically. Now you can communicate with your Mifare+ reader.

Step by Step:

Download and install the FTDI driver

Connect the Reader via the USB cable to the PC

Download and install the Microsoft .NET Framework

Start the ReaderTool

Now you can communicate with the reader

### 3 Instruction Set

Following table describes all commands of the reader device. Each command sends a response to the host. Exceptions are mentioned explicitly. The green LED is acknowledging a successfully executed command. The red LED indicates an error.

#### **Generic Commands – Overview**

Generic commands apply to all supported tags.

Command	Description	Applicable OEM		
		Micro	Plus	XXL
'b'	Get Serial Number	✓	✓	✓
'c'	Continuous Read	✓	✓	✓
'e'	Send SAM APDU			✓
'k'	Lock Block			✓
'poff '/'pon'	Antenna Power off/on	✓	✓	✓
'pp'	Set/Get User ports	✓	✓	✓
'pr'/'pw'	Read/Write User ports	✓	✓	✓
're'	Read EEPROM register	✓	✓	✓
's'	Select	✓	✓	✓
't'	Send 14443-4 APDU		✓	✓
'v'	get Version	✓	✓	✓
'vs'	Set Version	✓	✓	✓
'we'	Write EEPROM register	✓	✓	✓
'x'	Reset	✓	✓	✓

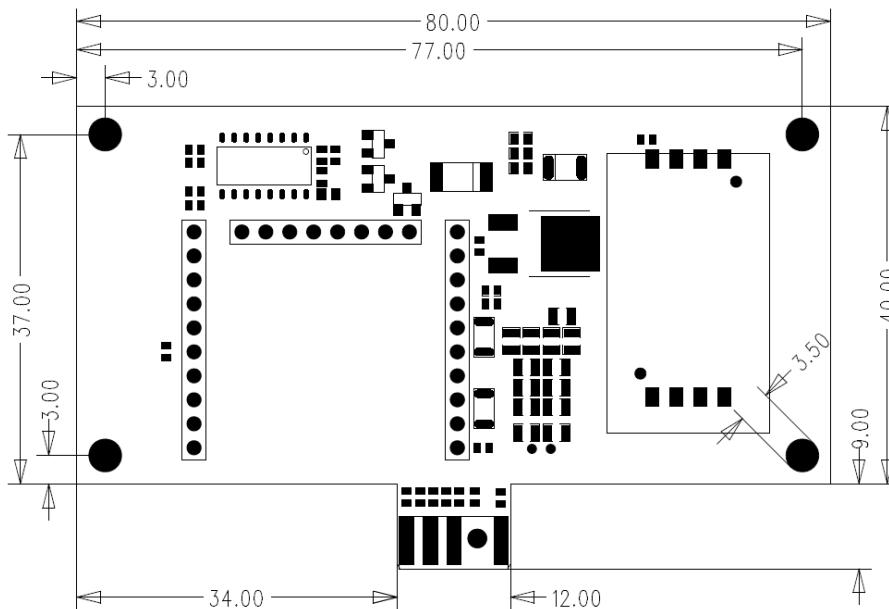
## **4 Hardware**

### **4.1 Features**

Dimensions	80,0 x 40,0 x 10,0 (LxWxH) ±1 mm
Antenna	on board
Interface type	RS232
Reading distance	up to 50mm depending on tag
Signaling	1 LED tri-colour
Power supply	12 VDC regulated

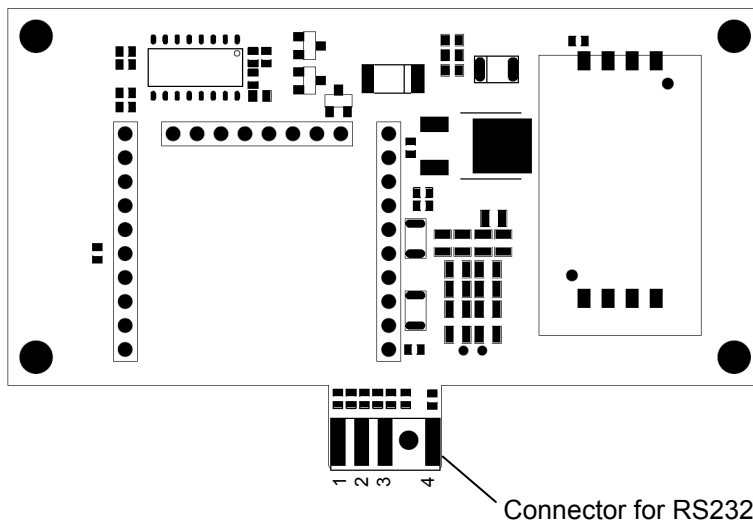
## 4.2 Dimensions:

All dimensions listed in mm



PCB thickness: 1,5 ± 0.1 mm

## 4.3 Pinout

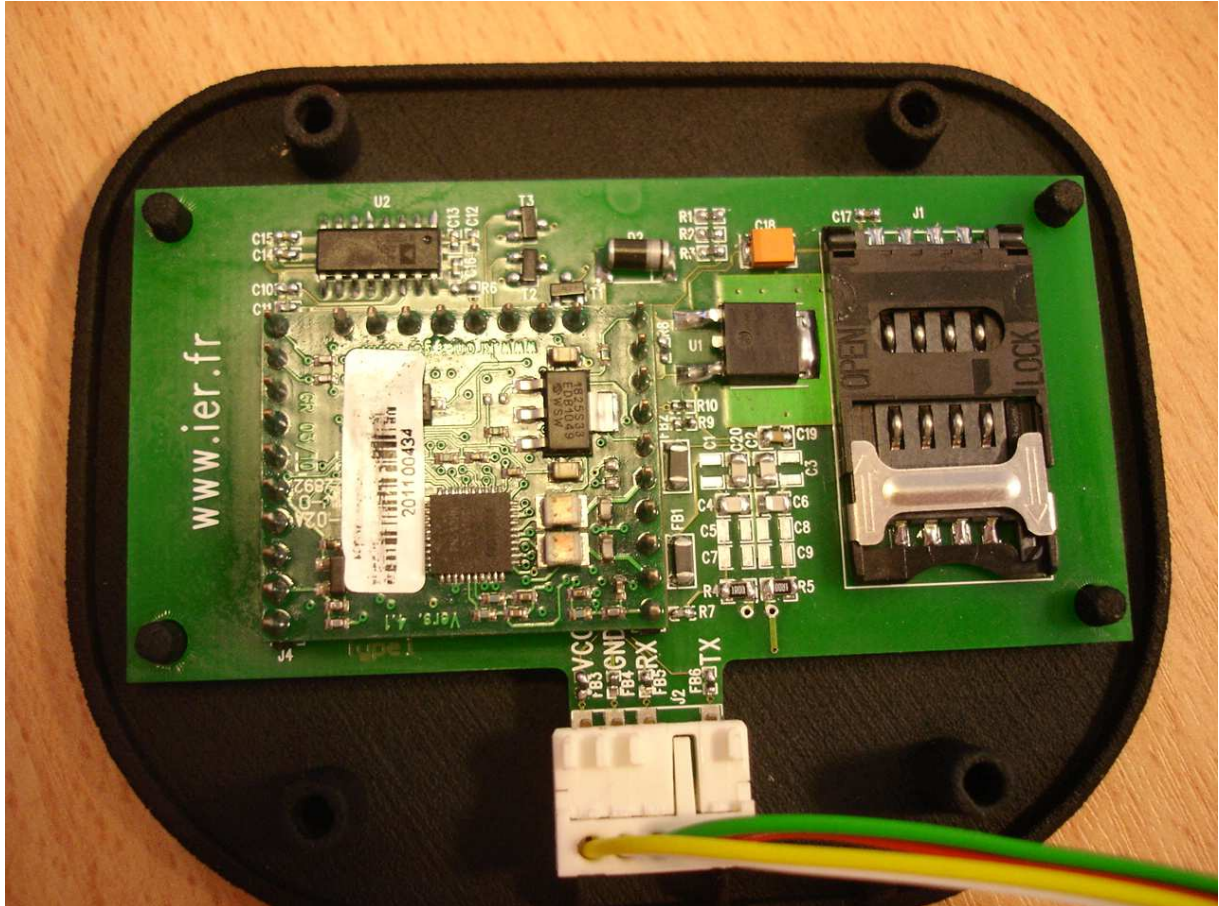


#### 4.4 Electrical characteristics of RS232 Supply Pins

<b>PIN</b>	<b>PIN No.</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Description</b>
+5V	1	10,0 V	12,0 V 150 mA	13,0 V 250 mA	Supply Voltage Supply Current
GND	2		GND		Ground for Power Supply and Interface
RX	3	-15 V 3 k $\Omega$	5 k $\Omega$	+15 V 7 k $\Omega$	RS232 Voltage Levels Input Impedance
TX	4	$\pm$ 5 V 200 k $\Omega$	$\pm$ 9 V		RS232 Voltage Levels Output Impedance



## 5 Integration



### Version History

Date	Revision Number
05.08.2011	Version 1.5