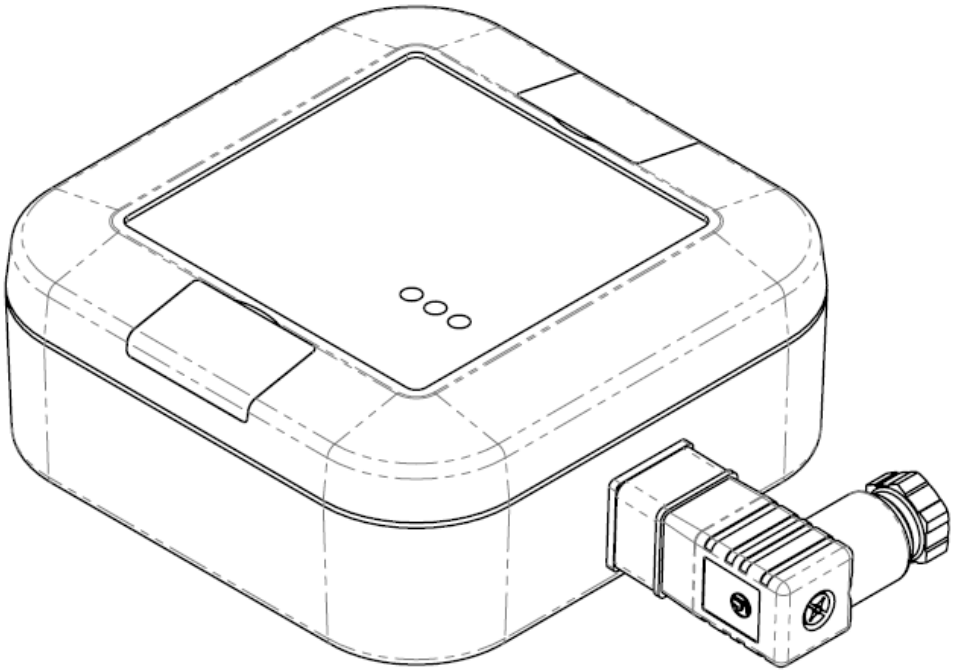
IDENTEC SOLUTIONS



i-MARK S350

Short Range Marker

i-MARK S350 -ER

Extended Range Marker

User Manual

Proprietary Notice

This document contains confidential information proprietary to IDENTEC SOLUTIONS and may not be used or disclosed to other parties in whole or in part without the prior written authorization from IDENTEC SOLUTIONS.

Disclaimer and Limitation of Liability

IDENTEC SOLUTIONS AG and its affiliates, subsidiaries, officers, directors, employees and agents do not make any express or implied warranties or representations with respect to such information including, without limitation, warranties as to non-infringement, reliability, suitability for a particular purpose and accuracy. IDENTEC SOLUTIONS shall not under any circumstances be liable to any person for any special, incidental, indirect or consequential damages, including without limitation, damages resulting from use of or reliance on information presented herein, or loss of profits or revenues or costs of replacement goods, even if informed in advance of the possibility of such damages.

Trademarks

"IDENTEC SOLUTIONS", "Intelligent Long Range", "ILR" and the stylized "i" are registered trademarks and "i-CARD", "i-PORT", "i-LINKS", "Visibility Delivered." are trademarks of IDENTEC SOLUTIONS, Inc. and/or IDENTEC SOLUTIONS AG.

Copyright Notice

Issue 1.0 / August 2016 (EGD)

Printed in Austria

Contact us

EUROPE
+43 5577 87387-0
sales@identecsolutions.com

NORTH AMERICA
+1 972 535-4144
sales@identecsolutions.com

HEAD OFFICE
IDENTEC SOLUTIONS AG
Millennium Park 2
6890 Lustenau
Austria
Tel. +43 5577 87387 0
Fax +49 5577 87387 15

GERMANY
IDENTEC SOLUTIONS DEUTSCHLAND GMBH
AURUM 05 / Ost
Goldbeckstraße 5
69496 Hirschberg
Germany
Tel.: +49 (0)6201 9957-0
Fax: +49 (0)6201 9957-99

USA
IDENTEC SOLUTIONS, INC.
Preston Plaza, Suite 200,
17950 Preston Rd.
Dallas, Texas 75252
USA
Tel: (972) 535 4144
Fax: (469) 424-0404

NORWAY
IDENTEC SOLUTIONS NORWAY AS
Andøyfaret 15
4623 Kristiansand
Norway
Tel. +47 38 00 35 30
Fax +47 38 00 35 31

AUSTRALIA
IDENTEC SOLUTIONS AUSTRALIA AND NEW ZEALAND P/L
Riverview Business Park 72
Maribyrnong St, Footscray,
3011 Australia
Tel. +61 3 9396 8900
Fax +61 3 9689 2493

Radio Frequency Compliance Statement

IDENTEC SOLUTIONS is the responsible party for the compliance of the following devices:

MODEL:		i-MARK
Region/Country	Organization	Marking
EUROPE:	EC	CE
USA:	FCC	FCC ID: OO4-ILR-IMS350
Canada:	Industry Canada	IC: 3538A-IMS350

The user(s) of these products are cautioned to only use accessories and peripherals approved, in advance, by IDENTEC SOLUTIONS. The use of accessories and peripherals, other than those approved by IDENTEC SOLUTIONS, or unauthorized changes to approved products, may void the compliance of these products and may result in the loss of the user(s) authority to operate the equipment.

European Notification according R&TTE Directive

This equipment complies to Art. 6.4 of R&TTE Directive (2014/35/EU, 2014/30/EU, 99/5/EC [expires on June, 12th 2016] and 2014/53/EU [valid from June, 13th 2016]). It is tested for compliance with the following standards: EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 489-1, ETSI EN 301 489-3, EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011

USA Notification

This device complies with FCC and Industry Canada RF radiation exposure limits set forth for general population (uncontrolled exposure). This device must not be collocated or operating in conjunction with any other antenna or transmitter. 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.

Canada Certification

This device complies with Industry Canada's license exempt RSS's. 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.

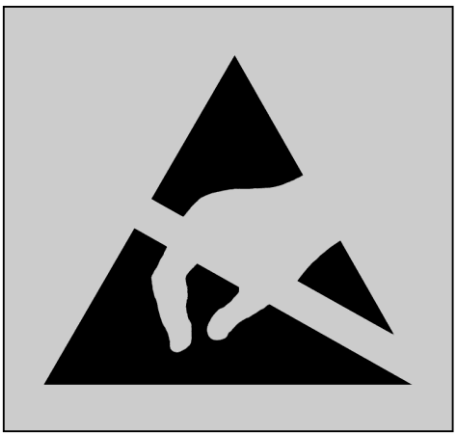
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

WARNING – Do not open housing while device is connected to power. The device internally generates high voltage.

WARNING - This product should be installed by personnel trained in installation of equipment in industrial environments and meet the representative country's National Electrical Code.



This product contains components that are sensitive to electrostatic discharges. Please observe the special instructions for their protection. Incorrect handling can damage the unit and cause the invalidation of the warranty.

Minimum safety precautions against electrostatic discharge:

- Establish earth contact before you touch the unit. (For example, touch the earthing screw on the unit.) Best practice is to use an antistatic ribbon and earth yourself permanently for the time you handle the unit.
- Avoid unnecessary contact with the unit connectors and assemblies inside the unit.
- Only open the unit if the operational settings (as described in the manual) expressly requires it.
- Use antistatic tools for the setting of the unit. (Warning: Do not touch life-threatening voltages with these tools).
- Do not store unit and components without protective packaging.
- Remove unit and components from the packaging only prior to installation.

These notes are not sufficient to guarantee complete protection from electrostatic discharges! We recommend the use of suitable protective equipment.

Contents

Safety Instructions

The system described in this manual is for exclusive operation of trained employees. Only qualified personnel that have knowledge of the potential dangers involved should perform the installation, settings, maintenance and repair of the units used.

Operational Safety

The correct and safe use of these systems assumes that operating and service personnel follow the safety measures described in the manual alongside the generally acceptable safety procedures.
If there is a possibility that safe operations cannot be guaranteed, the system must be switched off, secured against accidental use and the service unit responsible immediately informed.

Safety Documents

The i-MARK was designed, tested and supplied in perfect condition according to document IEC348 Safety Requirements for Electronic Units of Class 1.

Condensate / Change of Temperature

To avoid condensation in the system, the unit must be allowed to slowly adjust itself to warmer temperatures after removal from cold and cool environments.

Do not open the housing

There is no need to open the housing in order to set the i-MARK unit. The unit does not have any internal setting elements or displays. The i-MARK is not configured directly.

Connections / Power Supply

The supply circuits must comply with the conditions set out for the SELV circuits (see EN 60950). During maintenance damage could occur if printed circuit boards or cables are connected or disconnected whilst the power supply is still on. Therefore, only work on the connection and the components when they are not live.

Fuses

Only experts who are aware of the dangers involved may replace the fuses. It must be ensured that only fuses of the required current rating and the correct type are used for replacement. The use of repaired fuses and/or short-circuiting the fuse holders is prohibited.

Spare Parts

We recommend that only personnel, original products, spare and replacement parts authorized by IDENTEC SOLUTIONS be used for installation, service and repair. IDENTEC SOLUTIONS does not accept any responsibility for materials used, work carried out or possible consequences from unauthorized third party vendors.

Electrostatic Discharge

Semi-conductors of the type MOS or CMOS as well as two-pin types and precision resistance are sensitive to ESD. All components, printed circuit boards and auxiliary systems should therefore always be classed as sensitive to electrostatic discharge.

Before opening the cover the unit should be placed onto an ESD-protected surface. As with all work on modern electronic modules, the use of ESD clamps and ESD mats during work on the unit is recommended.

- Sufficiently protect all printed circuit boards that were removed from the unit from damage.
- Observe all normal precautions for the use of tools.
- Use ESD-protected packaging material.

Never use measuring units with low impedance for measuring or testing systems with semi-conductor components. Never use high voltage testing units or dielectric test units to test systems with semi-conductor components.

If it is necessary to check the isolating properties of the field wiring, the assemblies (electronic units and sensors) should be disconnected.
Earth the test units.

IDENTEC SOLUTIONS does not accept the return of products where the regulations concerning the ESD precautions and protective packaging materials were not followed.

ESD – Electrostatic Discharge

EMC – Electromagnetic Compatibility

SELV – Safety Extra Low Voltage – Protective measure against dangerous body currents, formerly: protective first voltage range

1. PREFACE

1.1. Preparations

This installation manual must be read carefully prior to starting the installation. The described installation works assume that installation materials like cable, antenna and data sensor holder, etc. are available.

1.2. Scope of This Document

This document is the hardware description of the i-MARK. This document is intended only for mechanical and electrical installation of these central units.

1.3. Responsibility

IDENTEC SOLUTIONS reserves the right to make changes and updates to the content contained herein. It is the user's responsibility to contact the service department for any possible changes or updates to operating and maintenance procedures.

1.4. Updates

Updates will be provided upon request. The information in this document may be subjected to changes without prior notice.

1.5. Scope of Delivery—Visual Inspection

Check whether delivery is complete and for any damages. If the delivery is not complete or damaged immediately inform the carrier. The dispatch and service organization of IDENTEC SOLUTIONS should also be informed to facilitate the repair or exchange of the system.

1.6. Associated Documents

Software description and Programmer's Guide

- SDK Online Help
- i-SHARE Manual
- Specific sensor manuals

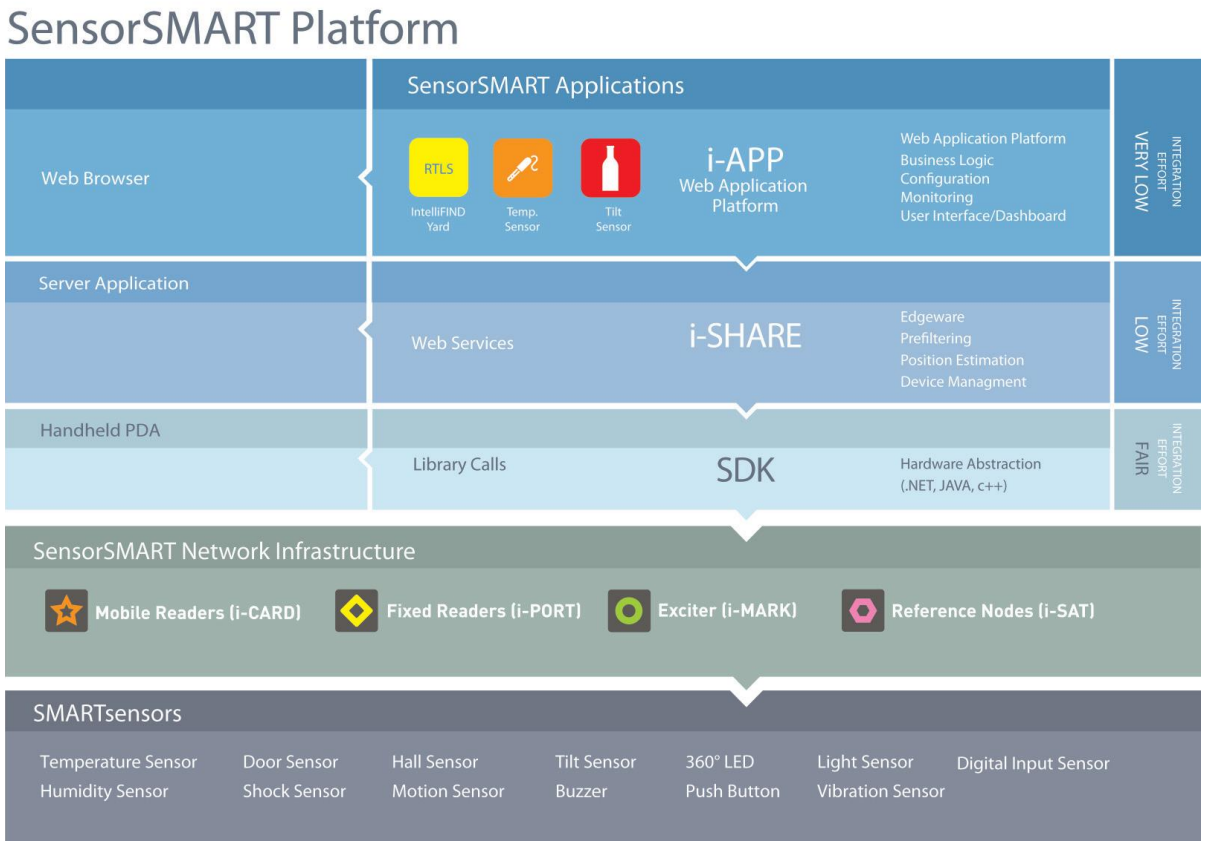
2. INTRODUCTION

2.1. Fundamentals

The IDENTEC SOLUTIONS' SensorSMART Platform is the latest development in asset management, localization and process optimization. Developed to deliver the last mile in industrial communication, the SensorSMART Platform fulfills a niche not previously addressed by available networks.

The SensorSMART Platform takes the complexity out of managing assets, personnel safety monitoring and/or the tracking of valuable cargo and the need for multiple technologies. The unique combination of active RFID, RTLS and WSN in one platform eliminates the necessity for complex deployments of multiple technologies, or the need to compromise with one technology's specific functionalities. The pinnacle of the SensorSMART Platform is that it captures the best of RFID, WSN, and RTLS while also avoiding the less desirable features of each technology. Third party application development is also simplified for added flexibility.

2.2. Component Overview



2.3. Compatibility ILR350

2.3.1. Fixed Reader

The i-PORT M350-2 is a reader for the i-Q350 and i-B350 series of IDENTEC SOLUTIONS's Response and Broadcast Sensors. Built into a compact housing, the i-PORT reads and writes data to the sensors at distances of up to 500 meters (1640 feet) on two antennas. Connection to the host system is established via a RS422 interface, resulting in the capability to connect up to 8 readers in a Daisy Chain using commercially available CAT 5 cables and connectors.

A simple master/slave protocol enables data exchange. Not only does the protocol contain the data received from the sensor but it can also provide information about the time of data reception, field strength and information about the number of times the sensor has been received by the reader.

2.3.2. Mobile Reader

The battery powered mobile reader with Bluetooth and USB interface communicates with a wide spectrum of handheld devices and tablet computers.

It is ideally suited for mobile applications such as laydown yards or personnel safety.
With its integrated Bluetooth interface, the mobile reader can communicate to a wide range of mobile devices independent from platform or operating system.

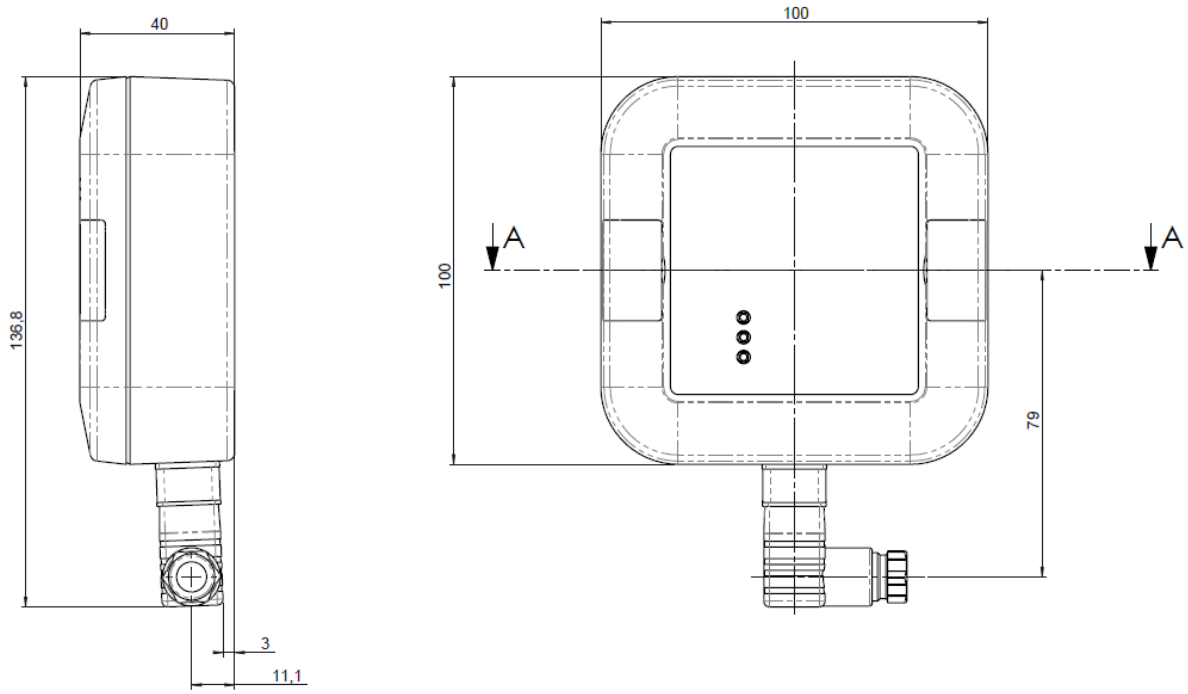
The combination of low power components, smart battery management and the high performance battery allows an operational time of more than 8 hours. The battery can be recharged within a very short recharge cycle via USB.

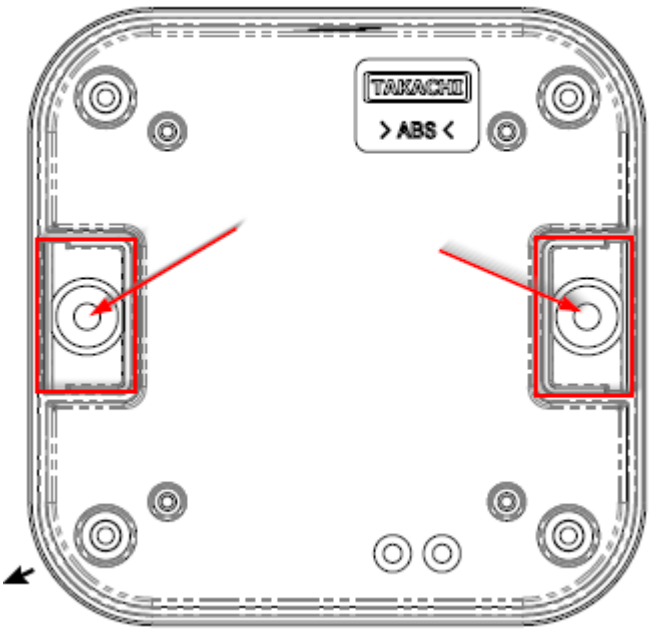
The compact housing with internal antenna is designed to be mounted onto a mobile device or a tablet computer.

2.4. Compatibility LF*boost*

LF: Only LF*boost* enabled tags in mode LF*boost* Mode

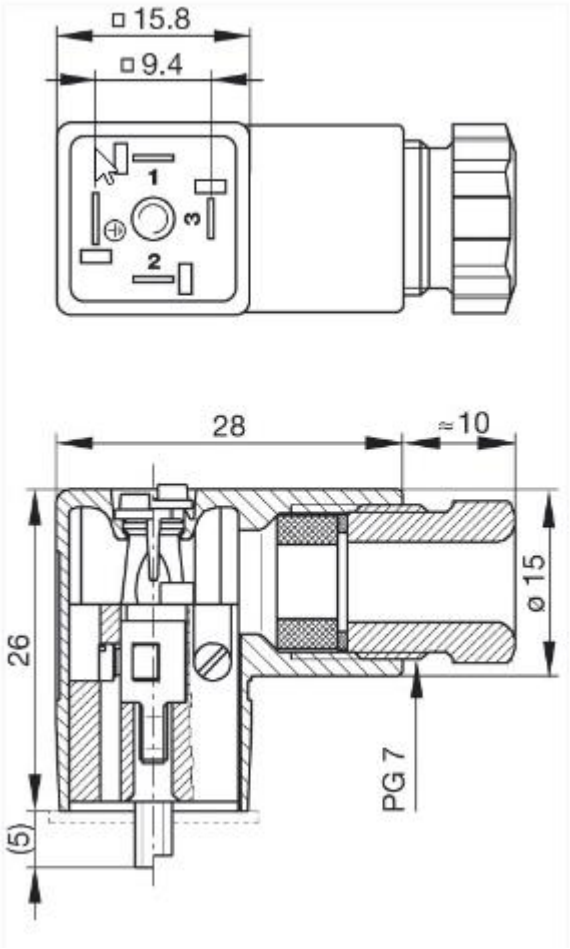
3. MECHANICAL INSTALLATION





Mounting hole distance: 81mm
Mounting hole diameter: 4mm

4. POWER SUPPLY



Connectivity:

Pin	Name	Description
1	+VDC	+24 VDC, 250mA with an inrush current of 500mA.
2	NC	Not connected
3	NC	Not connected
4	GND	Ground

5. INITIAL OPERATION

5.1. General

WARNING – Do not open housing while device is connected to power. The device internally generates high voltage.

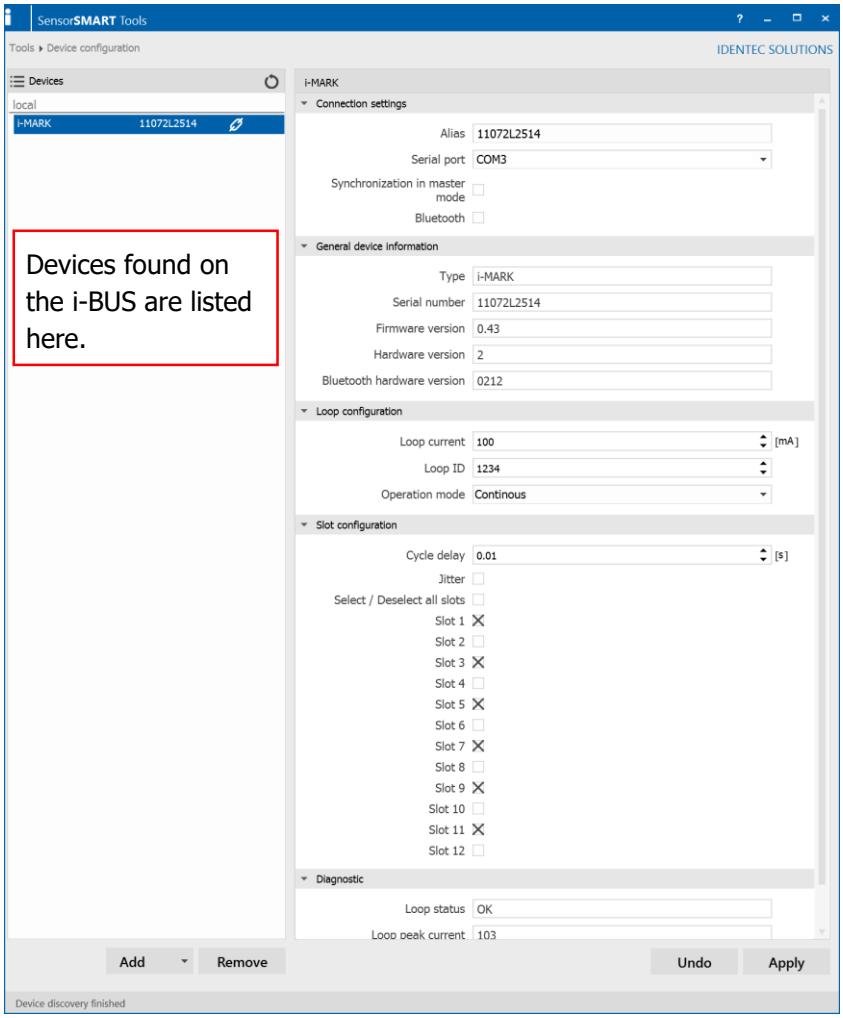
Opening the housing is not necessary in order to set the i-MARK. The unit has no internal setting elements or displays. All settings are performed using software via the ILR^{350} service interface.

5.2. Tools required

- PC with SensorSMART Tools
- i-PORT M350-2 or i-PORT 350 USB -BT connected to PC
- Power supply for i-MARK S350 or i-MARK S350 -ER

5.3. SensorSMART Tools – Overview

<insert new screenshot including UHF settings here>



Devices found on the i-BUS are listed here.

<= Set Master Mode only for the first device on the i-BUS.

<= Version Information on the currently selected device.

<= Use "Select/deselect all slots" to quickly come close to your desired setting.

<= Diagnostic Information on the currently selected device.

5.4. Example Configurations

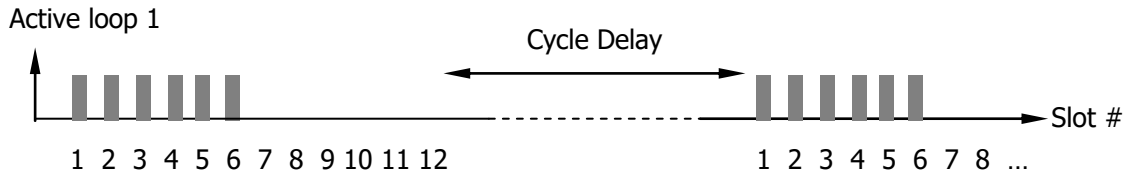
The range setup of the devices defers depending on the Variant:

Range is up to 1.0m

Range is up to 3m

Depending on the range setup, the number of slots may be limited.

<insert slot limitation table here>



<insert range behavior curves here>

The absolute range strongly depends on the on the environmental conditions.

5.5. Checking the Installation

After completing the installation, the operation must be systematically checked. The installation check can be divided into three sections:

- Visual test
- Basic operational check
- Detailed operational check.

If the basic check of the operational behavior is to be carried out using a (portable) PC a final check via the intended user control system should also be carried out.

6. TROUBLESHOOTING

6.1. General

This chapter covers how faults can be recognized and rectified. There are potentially four main problem sources:

- The user control system, including task requirements, communication cables, peripheral units with possible object recognition switches.
- The SensorSMART platform including peripheral units and their cables, also potential object recognition switches.
- The environment including large objects between antenna and sensor, electrical disturbance sources, intervention by persons, etc.
- The quality of the technical design, including alignment between antenna, data, ratio of task requirements/available communication time etc. The information about system performance is contained in the relevant datasheets.

When planning the total system, not overlook the problem sources and "Fault finding procedures on system level" should be included in the host system. How this could look in detail depends on the relevant system concept and very likely varies from one system to another.

6.2. Status Display (LEDs)

LF: Green when LF message is sent.
COM: UHF communication – if broadcast is sent, LED goes green; if a packet is received as a valid answer, LED goes orange.
RUN: Green when device is powered.

7. MAINTENANCE

7.1. General

When installed correctly the SensorSMART system will operate virtually maintenance free for many years. However, in the event maintenance is required only trained and authorized personnel are permitted to perform the updates, changes and necessary maintenance.

7.2. Regular Cleaning of The Surface

Remove dust with a brush or compressed air. If the device has come in contact with greasy or oily substances use a soft cloth moistened with a mild rinsing agent. Do not use cleaning products containing chemical additives.

7.3. Precautionary Maintenance

A regular check of the system is recommended. Unstable connections could lead to damage and malfunctions of the system and should therefore be repaired as soon as possible.

A Brief Checklist

- Are all housings intact?
- Are all cables intact?
- Are all connectors intact?
- Are all connectors securely fastened?
- Are all screws still tight?
- Is there a sudden malfunction at a specific unit?

7.4. Firmware Update

The firmware is stored in a FLASH memory and can be updated if needed.

7.5. Returns

Parts or main components returned for repair or exchange must be handled with great care. PC cards must be returned in the appropriate ESD-protecting packaging material. All returns should include an error description and a short application overview and be sent to the local distributor or to:

IDENTEC SOLUTIONS AG
Service Department
Millennium Park 2
6890 Lustenau
AUSTRIA

8. TECHNICAL SPECIFICATIONS

8.1. I-MARK S350 -ER

Communication Marker LF*boost* technology

Operation Mode	Sends Marker ID at predefined interval
Exciter Range	up to 3 m* (adjustable)
Compatibility	LF*boost* enabled Tags
Operating Frequency	125 kHz

Communication ILR350

Operation Mode	Bi-directional communication (configuration of device, monitoring)
Read Range	up to 100m*
Compatibility	i-PORT M350, Mobile Reader 350
Operating Frequency	UHF ISM Band
Transmit Power	<1mW

*The communication range depends on the environmental conditions.

Performance

Marker ID	16 bit (programmable)
Diagnostics	Remote surveillance via ILR350 interface, status LEDs

Electrical

Power Source	24V DC +/- 5%
Power Consumption	max 6W**
Connector	Hirschmann GDS 307

**inrush current 500mA.

Environmental Conditions

Operating Temperature	-30°C to +65°C (-22°F to +149 °F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Humidity	90%, non-condensing
Shock	EN 60068-2-32: Multiple drops to concrete from 1m (3ft), 5 times EN 60068-2-29: 50G on all 3 axis, 3 times per axis
Vibration	EN 60068-2-64: noise 5 to 1000Hz, 90 minutes per axis EN 60068-2-6: 5G, 20 sin wave cycles per axis, 5-500Hz

Standard/Certification

Europe	CE (EN 300 220-1, -3; EN 301 489-1,-3; EN 60950)
North America	FCC Part 15 (US); Industry Canada

Mechanical Data

Dimensions	100x100x40mm
Mounting	2 mounting holes, distance 81mm, 4mm
Enclosure Material	Plastic (ASA)
Enclosure Rating	IP65

Order Code

i-MARK S350 -ER	458502

8.2. i-MARK S350

Communication Marker LF*boost* technology

Operation Mode	Sends Marker ID at predefined interval
Exciter Range	up to 1.5 m* (adjustable)
Compatibility	LF*boost* enabled Tags
Operating Frequency	125 kHz

Communication ILR350

Operation Mode	Bi-directional communication (configuration of device, monitoring)
Read Range	up to 100m*
Compatibility	i-PORT M350, Mobile Reader 350
Operating Frequency	UHF ISM Band
Transmit Power	<1mW

*The communication range depends on the environmental conditions.

Performance

Marker ID	16 bit (programmable)
Diagnostics	Remote surveillance via ILR350 interface, status LEDs

Electrical

Power Source	24V DC +/- 5%
Power Consumption	max 6W**
Connector	Hirschmann GDS 307

**inrush current 500mA.

Environmental Conditions

Operating Temperature	-30°C to +65°C (-22°F to +149 °F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Humidity	90%, non-condensing
Shock	EN 60068-2-32: Multiple drops to concrete from 1m (3ft), 5 times EN 60068-2-29: 50G on all 3 axis, 3 times per axis
Vibration	EN 60068-2-64: noise 5 to 1000Hz, 90 minutes per axis EN 60068-2-6: 5G, 20 sin wave cycles per axis, 5-500Hz

Standard/Certification

Europe	CE (EN 300 220-1, -3; EN 301 489-1,-3; EN 60950)
North America	FCC Part 15 (US); Industry Canada

Mechanical Data

Dimensions	100x100x40mm
Mounting	2 mounting holes, distance 81mm, 4mm
Enclosure Material	Plastic (ASA)
Enclosure Rating	IP65

Order Code

i-MARK S350	455793