



# **IDENTEC SOLUTIONS**

## **i-B350L -CC**

### **HARDWARE USER MANUAL**

**Visibility Delivered.**



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## Radio Frequency Compliance Statement

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

MODEL:		i-B350L CC
Region/Country	Organization	Marking
EUROPE:	EU	CE
USA:	FCC	FCC ID: OO4-ILR-IB350LCC
CANADA:	Industry Canada	3538A-IB350LS

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 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, 12<sup>th</sup> 2016] and 2014/53/EU [valid from June, 13<sup>th</sup> 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 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.

#### CAUTION TO USERS

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

Class B: (Section 15.105) FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT 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 from that to which the receiver is connected. -Consult the dealer or an experienced radio/ TV technician for help. (Section 15.21) CAUTION: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

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



### **Electrostatic Discharge**

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.**

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



## 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-B350L CC was designed, tested and supplied in perfect condition according to document IEC/EN 60950-1 Safety Requirements.

## 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.

## Connections / Power Supply

The supply circuits must comply with the conditions set out for the SELV circuits (see EN 60950-1).

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.

## Battery Inside

All system tags contain a battery; therefore, the following warning should be heeded:



**WARNING** - Fire, explosion and burn hazard risk of explosion if battery is replaced by an incorrect type. Do not recharge, short circuit, crush, disassemble, heat above 100 °C (212 °F). Do not incinerate, or expose contents to water

## 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.

## Glossary

- SELV Safety Extra Low Voltage – Protective measure against dangerous body currents. Protective first voltage, circuit not floating.



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## 1. Preface

This installation manual must be read carefully prior to starting the installation. The described installation works assuming that installation materials like cables, antennas and any mechanical parts are available.

This document is the hardware description of the i-B350L CC. This document is intended only for mechanical and electrical installation of these central units.

IDEN TEC 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.

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

**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 IDEN TEC SOLUTIONS should also be informed to facilitate the repair or exchange of the system.**

### **Product Contents (deliverables):**

- i-B350L CC tag

### **Associated Documents**

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



## 2. Introduction

### 2.1 General Information

The ILR i-B350L CC active RFID broadcast tag transmits data over 500 meters in predetermined intervals. The credit card holder housing provides mounting possibilities for an ID card and is ideally suited for personnel safety applications.

The i-B350L CC active RFID tag is ideally suited for industrial applications such as tracking, tracing and identification of assets and facility wide access and area control. Using advanced UHF radio frequency technology, the i-B350L CC tag transmits data up to 500 meters (1600 feet) to portable or fixed readers.

With ultra-low power consumption and a configurable ping rate, the i-B350L CC tag can operate maintenance-free up to eight years.

In combination with IDENTEC's i-Mark® RFID tag exciter, the i-B350L CC provides accurate localization for gates, zones, and lanes.

The credit card housing is designed to be worn by personnel via necklace or in a pocket and provides mounting possibilities for an ID card.

### 2.2 System Components – Tags

The i-B350 series of tags are a state-of-the-art generation of active RFID tags.

The tags provide highly accurate, real-time data collection without human intervention in wireless applications such as:

- identification
- tracking and tracing
- localization and
- Measurements monitoring.

Using advanced UHF radio frequency technology, i-B350L CC tags transmit and receive data at distances of up to 30 meters (100 feet) from a handheld device or up to 500 meters (1,640 feet) from a fixed reader.

#### **i-B350L CC**



The i-B350L CC tag includes a card holder for an ID card.

The i-B350L CC tag operates in the 850 – 928 MHz UHF band.





## 2.3 System Components — Readers

### i-PORT M352 UHF



The i-PORT M352 UHF is used as a reader in Identec’s system.

It can be connected to the host PC software via several different interfaces (RS422, Ethernet, Power-over-Ethernet).

It communicates with the ILR® Tags wirelessly up to a distance of up to 500 meters.

### i-PORT BT USB



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 and personnel safety.

With its integrated Bluetooth interface, the mobile reader can communicate with a wide range of mobile devices independent of platform or operating system.

The compact and robust housing with internal antenna is designed to be mounted onto a handheld device or a tablet computer. The small form factor also allows users to carry the reader in a pocket.

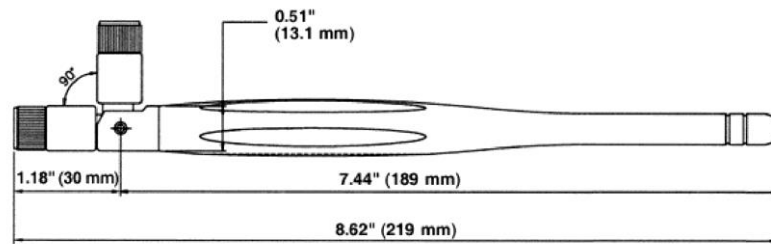
## 2.4 System Components—Antennas

Only approved antennas should be used. Other antennas not provided by IDENTEC SOLUTIONS may void permit of use and violate compliance regulations.

### Omnidirectional sub-1GHz Antenna



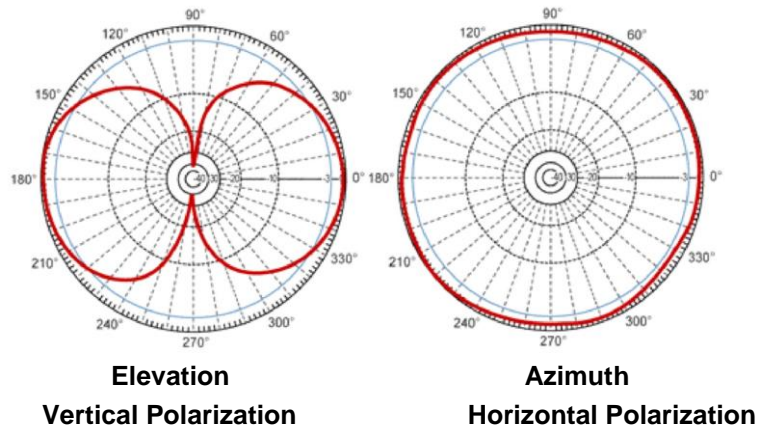
#### Dimensions



Half-wave Dipole Antenna Ordering number:

- 289070 Half-wave Dipole Antenna SMA i-CTA868 MHz – (CTA 868/2/DR/SM/S2)

#### Orientation Diagrams



## 3. Configuration of the Tag

### 3.1 General

The i-B350L CC is configured using the i-PROG M350L programming device.

#### Important Note

Do not open the housing! Configuration is done using the built-in air interface of the i-B350L CC.

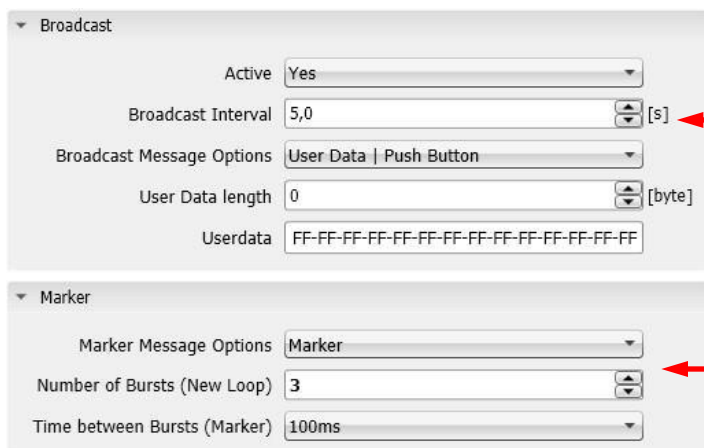
In addition to the Broadcast mode the i-B350L CC offers the following special functions that can be configured:

- Bursts on entering a marker field can be configured independent from regular Pings
- Marker technology
- Bursts triggered by the push button can be configured independent from regular Pings

#### Tools Needed

- PC running on MS Windows with the SensorSMART Tool software
- Connected to an i-PROG M350L to configure the tags

#### Overview on the Configuration Software



The screenshot displays two configuration sections: 'Broadcast' and 'Marker'. The 'Broadcast' section includes fields for 'Active' (set to 'Yes'), 'Broadcast Interval' (set to '5,0' with a '[s]' unit), 'Broadcast Message Options' (set to 'User Data | Push Button'), 'User Data length' (set to '0' with a '[byte]' unit), and 'Userdata' (displaying 'FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF'). The 'Marker' section includes 'Marker Message Options' (set to 'Marker'), 'Number of Bursts (New Loop)' (set to '3'), and 'Time between Bursts (Marker)' (set to '100ms'). Two red arrows point from text boxes to the 'Broadcast Interval' and 'Number of Bursts' fields.

Select Ping Rate and Ping Message Content in the block "Broadcast"

Select Burst behavior on entering a marker field in the block "Marker"

### 3.2 Ping Rate

Note: This setting can be found in the ILR Tag Configuration software tool in the edit block "Broadcast"

- Broadcast Interval: 0 = no broadcast messages are sent, value > 0 = Broadcast interval in seconds. This can be set in steps of 0.5 sec, from 0.5 to 300 seconds.



- **Broadcast Message Options:** The options in this field depend on the capabilities of the tag.
- **User Data Length:** Configure the number of Bytes from the "User Data" that is sent with a broadcast message. The number starts from Byte 0 (zero). Please pay attention to the limits of the User Data Length described at the end of this chapter.

### 3.3 Bursts when passing a Position marker

Note: This setting can be found in the ILR Tag Configuration software tool in the edit block "Marker"

- **Number of Bursts (New Loop):** 0 = no bursts, max. 15 bursts
- **Time between Bursts (Marker):** This sets a timeslot inside which the tag sends out as single burst. This gives a random delay between every single burst message to avoid collisions with tags that are triggered by the same source to burst. Possible settings are 40, 100, 200, 300, 400, 500, 600, and 700 ms. Please read the details in the following subchapter "Information on Burst Settings".
- **Marker Message Options:** Entering a marker field triggers a burst. This parameter determines the contents of the burst messages.

### 3.4 Limitations of the User Data Field

The total length of the broadcast message (burst or ping) is limited to 50 Bytes. So depending on the broadcast message options, these are the allowed number of bytes for the user data:

- User Data only => max. 50 Bytes of user data
- Marker | User Data => max. 38 Bytes of user data

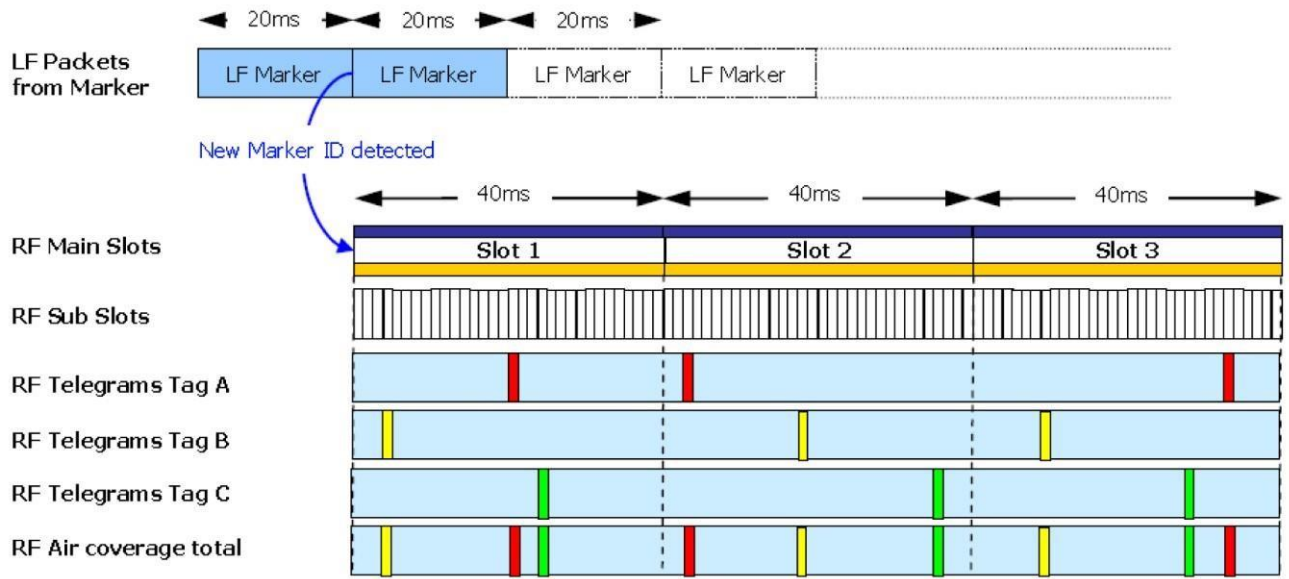
### 3.5 Information of Burst Settling

The parameter "Time between Bursts (Marker)" is not simply a delay time. It is in fact a timeslot. In this timeslot the tag chooses a random moment to do a single burst. This avoids that bursts collide with other tags, that are simultaneously triggered by the same marker loop. These timeslots are repeated until all bursts are sent.

With very few tags the factory setting of 40 ms is sufficient. In case there is the possibility that dozens of tags are triggered to burst at once, this value can be increased. This brings the tradeoff of a longer overall time until all bursts are sent. E.g. with a slot width (Time between Bursts) of 700 ms and 8 bursts, the amount of time for all bursts is 5.6 seconds.

#### Example

This example shows 3 tags (A, B, C) that are simultaneously triggered by a marker loop (LF marker) and are configured to burst 3 times. The timeslot (Time between Bursts) is set to the default of 40 ms.



The last row shows how the random use of the timeslot avoids collision between the tags.



## 4. Troubleshooting

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 ILR® Tags, 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.

### 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?

## 5. Maintenance

When installed correctly the 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.

### 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.

### 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.

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

### 5.1 Returns

Parts or main components returned for repair or exchange must be handled with great care. All returns should include an error description and a short application overview and be sent to the local distributor or to:

IDEN TEC SOLUTIONS AG  
Service Department  
Millennium Park 2  
6890 Lustenau  
AUSTRIA



## 6. Technical Specifications

### Communication - ILR<sup>350</sup> technology

Operation Mode	UHF Broadcast communication
Read Range	up to 500 m <sup>1</sup>
Compatibility	i-PORT M350, i-PORT M352, i-PORT BT USB, iPOINT
Operating Frequency	UHF ISM Band: 868 MHz (EU) or 920 MHz (NA) <sup>2</sup>
Transmit Power	<1mW

### Communication - Marker

Operation Mode	Receives Marker ID and transmits marker information via Broadcast (350 telegrams)
Read Range	up to 5m (16ft)*
Compatibility	i-MARK S350, iPOINT
Operating Frequency	125 kHz

### Data

Identification Code	48-bit fixed ID
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### Configuration

Device	i-PROG M350L
Ping Rate	Configurable from 0.5 to 300 seconds insteps of 0.5 seconds
Number of bursts	Configurable from 0 to 15
Broadcast User Data	Up to 50 Bytes

### Electrical

Power Source	Lithium Battery (non-replaceable)
Battery Monitoring	Yes

### Environmental Conditions

Operating Temperature	-30°C to +70°C (-22°F to +158 °F)
Humidity	10% to 95% relative humidity @ 30°C
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
Vibrations	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	<b>CE</b> (EN 300 220-1,-2,-3; EN 301 489-1,-3; EN 62368-1, EN 60950)
North America	<b>FCC</b> Part 15 (US); <b>IC</b> RSS210

### Mechanical Data

Dimensions	104,5 x 58,4 x 12,0 mm (4.1 x 2.3 x 0.47 inches)
Enclosure Material	Plastic (Luran® S) light grey
Enclosure Rating	IP 52

### Order Code

i-B350L CC	455361
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<sup>1</sup> The communication range depends on environmental conditions and national regulation limits

<sup>2</sup> Other country frequencies are available, please contact IDENTEC SOLUTIONS



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