ILR 350 Series
i-B350L S
Installation and Operation Manual
(preliminary)

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

MODELS:	i-B350 S, i-B350L S	
Region/Country	Organization	Marking
EUROPE:	EC	CE
USA	FCC	FFC ID OO4-ILR-IB350LS
Canada	Industry Canada	IC: 3538A-IB350LS

European Notification according R&TTE Directive

This equipment complies to Art. 6.4 of R&TTE Directive (1999/5/EC). It is tested for compliance with the following standards: ETSI EN 300 220, ETSI EN 301 489, EN 60950

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.

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

Canada Notification

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.

Printed in Austria

Contents

1 Introduction

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, tag holder, etc. are available.

1.2 Recommended Procedure

1. Check the Scope of Delivery according to the Bill of Delivery
2. Read this manual completely
3. Do the initial operation for every single tag
4. Mount the tags
5. An additional performance check of the tags and a system test can now be done

1.3 Scope of this Document

This document is the users' manual of the models i-B350 S and i-B350L S.
This document is intended only for mechanical installation rsp. everyday use.

1.4 Responsibility

IDENTEC SOLUTIONS is not responsible for any errors occurring in this document.

1.5 Associated Documents

- i-B350L W — ILR350 Wristband Tag Datasheet

1.6 Scope of Delivery—Visual Inspection

Check delivery whether it 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.

2 Safety Precautions

Important Safety Note

The devices described in this manual are for exclusive operation by trained employees. Only qualified personnel that know 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 where a safe operation cannot be guaranteed, the system must be switched off and secured against accidental use. Then, the service unit responsible must be informed.

Do not open the housing

There is no need to open the housing. There are no user serviceable parts inside. Set-up and configuration during initial operation is done wireless with the built-in air interface.

Handling Safety

In the event of high operating temperature of 70 °C (+158 °F), the tags are heated and must be handled with care. To prevent burns, wait until the tags have cooled down or use appropriate gloves. At temperatures below 0 °C (+32 °F) tags can be frozen. In this case, wait a while until tags are warmed up or use appropriate gloves.

Battery Inside

All tags contain a battery. That is the reason for the following instructions:

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 70 °C (158 °F)
Do not incinerate, or expose contents to water

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.

Safety Documents

This ILR system was designed, tested and supplied in perfect condition according to the test report document EN60950.

Condensation/Change of Temperature

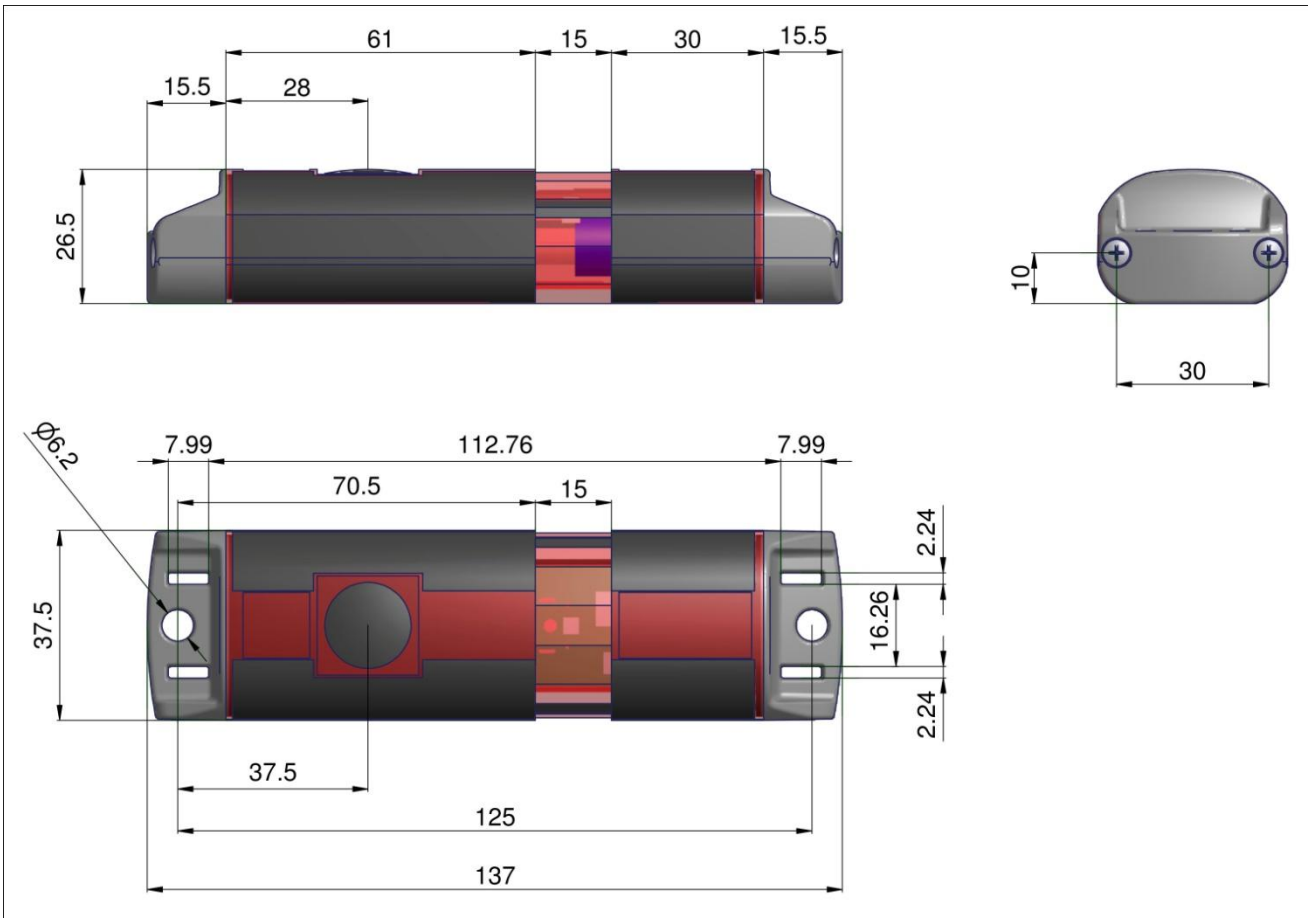
Moving the systems from a cold to a warm environment could lead to dangerous situations due to condensation. Therefore it must be ensured that the system can adjust itself to the warmer temperature.

Spare Parts

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

1 Tag Mounting Techniques

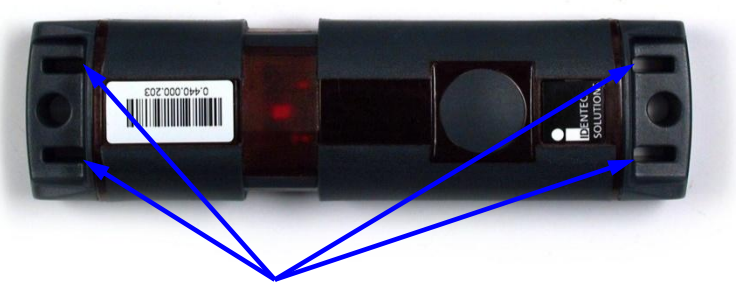
1.1 Dimensional Drawing



All dimensions in mm.

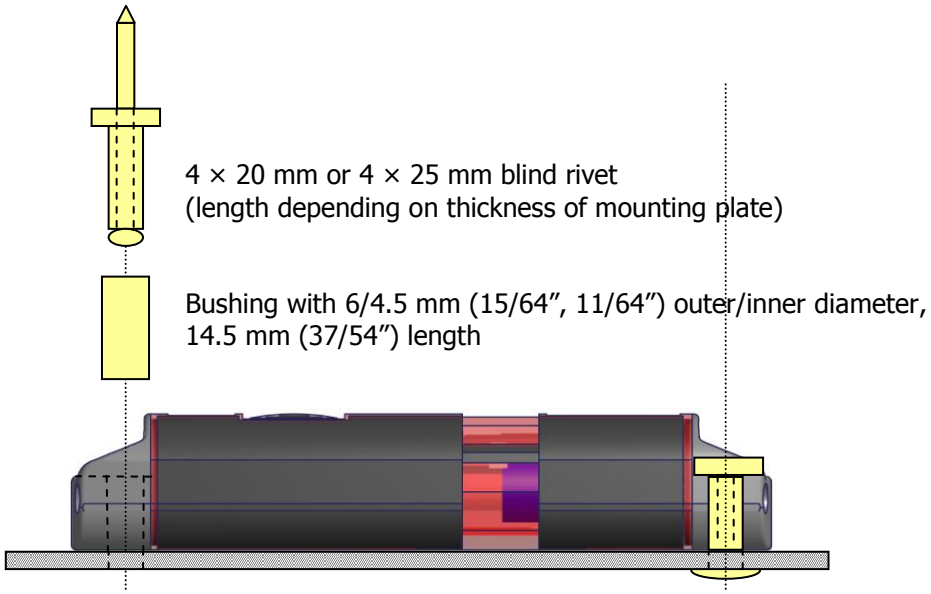
1.2 Cable Straps

The Tag can be mounted either with cable straps using the 2 slits at each end or using rivets or screws as described in the following 2 subchapters.



Slits for mounting with cable straps

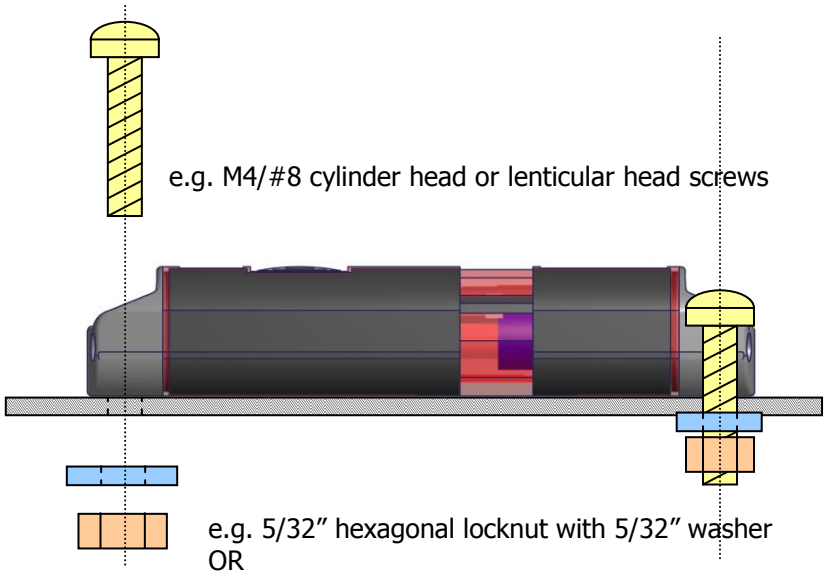
1.3 Rivets



Important Information

1. A temperature of at least +10 °C (+50 °F) must be maintained during riveting to prevent the casing from cracking.
2. A bushing is recommended to protect the plastic around the mounting hole from being damaged when tightening the rivet.
3. Always position the rivet gun straight down on the rivet site and all the way to the rivet socket.
4. Tag casing may become damaged through improper handling of the rivet gun (slanted positioning of the gun to access the rivet socket). If there is a chance this might occur, it is better to use a blind rivet with a large head (Refer to UN9924) or insert a 5/32” washer. This has the effect of distributing the pressure over a larger surface area during riveting. Use of a washer has the added effect of positioning the rivet slightly higher in the depression, so that one can better access the rivet socket with the rivet gun.
5. Metal surfaces in direct proximity to the tag can reduce the tag’s range of function. Tags should not be mounted in metal recesses or corners.
6. After mounting, the tag’s function should be tested with appropriate device and software.

1.4 Screws



Important Information

1. Only screws with cylindrical heads are suitable for mounting the tag. We do not advise using counter-sunk screws. If for some reason this should be necessary, then use only with a suitable counter-sunk cushioning disc (refer to UN 1277).
2. Secure the screws with self-locking nuts, spring washers or Nord-lock washers (refer to UN 7014). Should mounting be completed with self tapping screws, loosening may occur over time.
3. If the tag is mounted outdoors or in a damp environment, all mounting parts need to be made of stainless steel or other non-rusting material.
4. A temperature of at least +10 °C (+50 °F) must be maintained during mounting to prevent the casing from cracking.
5. Recommended maximum torque
   M4/ #8 (with bushing): 2 Nm
   M5/#10 (w/o bushing): 3 Nm
   M6/#14 (w/o bushing): 3 Nm
   If the torque is any greater, the screw may over tighten, or the casing might break.
6. Metal surfaces in direct proximity to the tag may reduce the tag's range of function. Tags should not be mounted in metal recesses or corners.
7. After mounting, the tag's function should be tested with appropriate devices and software.

2 Configuration of the tag

The i-B350L S 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 S.

In addition to the Broadcast mode the i-B350L S 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

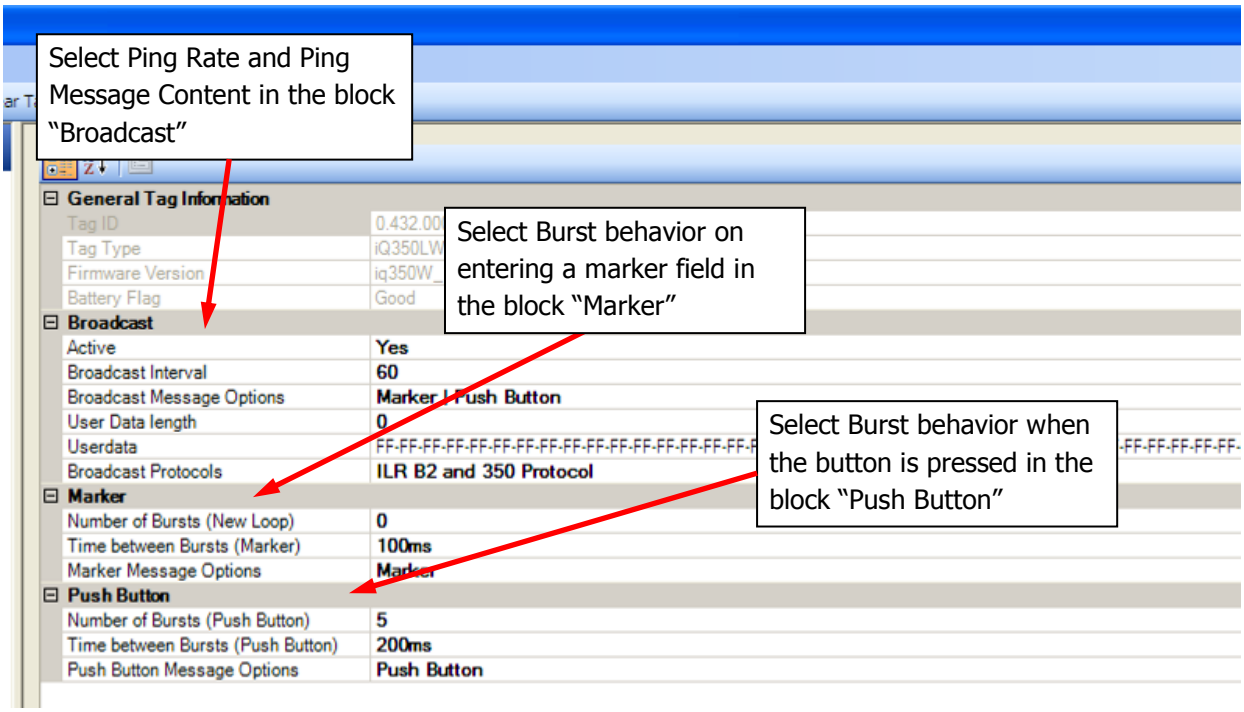
Tools Needed

- PC running on MS Windows with the ILR Tag Configuration for ILR 350 series tags
- Connected to an i-PROG M350L to configure the tags

The ILR Tag Configuration software tool is described in detail in this manual:

- ILR 350 Tag Configuration Plug-In Manual

Overview on the Configuration Software



2.1 Ping Rate

Note: This settings 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.

2.2 Bursts when passing a Position Marker

Note: This settings 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.

2.3 Bursts triggered by the Push Button

- Number of Bursts (Push Button): 0 = no bursts, max. 15 bursts
- Time between Bursts (Push Button): This sets a timeslot inside which the tag sends out a 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 100, 200, 300, 400, 500, 600, and 700 ms. Please read the details in the following subchapter "Information on Burst Settings".
- Push Button Message Options: Pushing the button triggers a burst. This parameter determines the contents of the burst messages.

2.4 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
- Marker | Push Button | User Data => max. 32 Bytes Bytes of user data

- Push Button | User Data => max. 43 Bytes of user data
- Push Button | User Data | Marker => max. 32 Bytes of user data

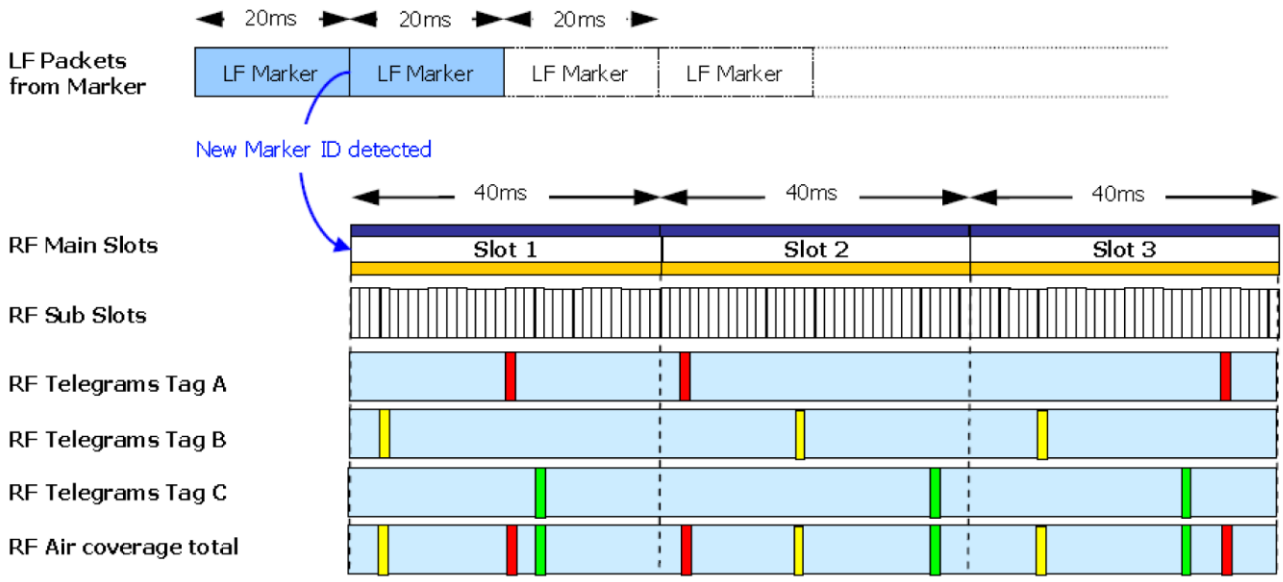
2.5 Information on Burst Settings

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.

3 Maintenance

3.1 General

When installed correctly the ILR 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 maintenance necessary.

3.2 Regular Cleaning of The Surface

Remove dust with a brush or compressed air. If there are fatty or oily substances use a soft cloth moistened with a mild rinsing agent.

Warning

Do not clean the tag in a dishwasher. Do not sandblast the tag. Do not use high pressure water jet or steam cleaner. Do not use cleaning products containing chemical additives.

3.3 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 malfunction at a specific unit?

3.4 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
Millenium Park 2
6890 Lustenau
AUSTRIA

4 Technical Data

Operating Data

Operating frequency ILR-RFID	868 MHz (EU) or 920 MHz (NA), further frequencies on request
Maximum transmission power	< 1mW (EU / NA)
Compatibility	i-PORT M 350, i-CARD CF-350
Standards/Certification	FCC Part 15 (US), ETSI EN 300 220 (EU)

Communication Data Long-Range RFID (ILR, Beacon Technology)

Read range broadcast	Up to 500 m (1600 feet) free air*
Operation mode	Transmits marker information in at regular intervals
Repetition rate (ping rate)	0,5 – 300 seconds, adjustable in steps of 0,5 seconds
Data rate broadcast	115.2 kbits/s

* The communication range depends on the antenna type, the antenna cable runs and the environmental conditions.

Communication Data Inductive Loop (Marker)

Read range	Up to several meters
Operating frequency	125 kHz (world-wide approved)
Operation mode	Receives marker ID number and transmits marker information several times

Electrical

Power source	Lithium battery, non replaceable
Battery monitoring	Yes

Data

Data retention	>10 years without power
Write cycles	100,000 writes to a tag
Memory size	10,000 Bytes user definable
Identification code	48 bit fixed ID

Environmental Conditions

Operating temperature	–40 °C to +85 °C (–40 ºF to +185 ºF)
Humidity	10 % to 95 % relative humidity @ 30 °C
Shock	50 G, 3 times DIN IEC 68-2-27 Multiple drops to concrete from 1 m (3 ft)
Vibration	3 G, 20 sine wave cycles, 5 Hz to 150 Hz, DIN IEC 68-2-6 5 G, noise 5 Hz to 1000 Hz, 30 minutes, DIN IEC 68-2-64

Physical

Dimensions	137 × 37.5 × 26.5 mm (5.4 × 1.48 × 1.04 in.)
Enclosure	Plastic
Weight	50 g (1.75 ounces)
Enclosure rating	IP 65