IDENTEC SOLUTIONS

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iMARK EC (IDS1014)

Hardware User Manual

CONTENTS

DOCUMENT HISTORY

Num	Filename	Version	Author	Date
1	M_EN_iMARK_EC_V10	1.0	MOM	21.03.2024
2	M_EN_iMARK_EC_V11 (update RF exposure compliance - Page 4)	1.1	MOM	11.09.2024

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Radio Frequency Compliance Statement

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

MODEL:		IDS1014 iMARK EC
Region/Country	Organization	Marking
EUROPE:	EU	CE
USA:	FCC	OO4-IDS1014
CANADA:	ISED	3538A-IDS1014 HVIN with external coil (EC): IDS1014

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 Declaration of Conformity according to RED Directive

IDENTEC SOLUTIONS AG hereby declares that the device iMARK EC is in conformity with the essential requirements of Directive 2014/53/EU. The declaration of conformity can be found at: www.identecsolutions.com

USA Certification

FCC Part 15 compliance statement
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.

Canada Certification

Licence-Exempt Radio Apparatus (ISED)
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Appareils radio exempts de licence (ISED)
L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radio Frequency (RF) Exposure Compliance of Radiocommunication apparatus

To satisfy FCC and IC RF Exposure requirements for mobile devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Conformité à l'exposition aux champs RF des équipements radio

Pour satisfaire aux exigences FCC et IC concernant l'exposition aux champs RF pour les appareils mobile, une distance de séparation de 20 cm ou plus doit être maintenu entre l'antenne de ce dispositif et les personnes pendant le fonctionnement. Pour assurer la conformité, il est déconseillé d'utiliser cet équipement à une distance inférieure. Cet émetteur ne doit pas être co-situé ou fonctionner conjointement avec une autre antenne ou un autre émetteur.

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

WARNING - 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.

Never open the unit – nothing inside for user interaction or maintenance.

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 equipment can be installed in restricted areas.

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 iMARK EC was designed, tested, and supplied in perfect condition, according to document EN62368-1 (2014+A11/2017)

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. The unit does not have any internal setting elements or displays.

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.

1.0 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 iMARK EC. This document is intended only for mechanical and electrical installation of these units.

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.

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 IDENTEC SOLUTIONS should also be informed to facilitate the repair or exchange of the system.

Product Contents (deliverables):

- iMARK EC and connectors
- Hardware User Manual

2.0 INTRODUCTION

2.1. iMARK EC

IDENTEC SOLUTIONS' iMARK EC is a robust Zone-Location Marker device designed for large external loop fields.

The Housing contains:

- 3 Status LEDs (see Section 3.1)
- a connector for a 24V power supply
- a connector for connection of an external LF loop

For a detailed description of the mechanical information, please refer to Section 4.1.

The iMARK EC is used as a standalone device and can be configured over Identec' s UHF ILR system. See Section 3.2 for more details.

Following is a description of the wireless technologies that are available within the iMARK EC Device.

2.1.1. UHF INTERFACE

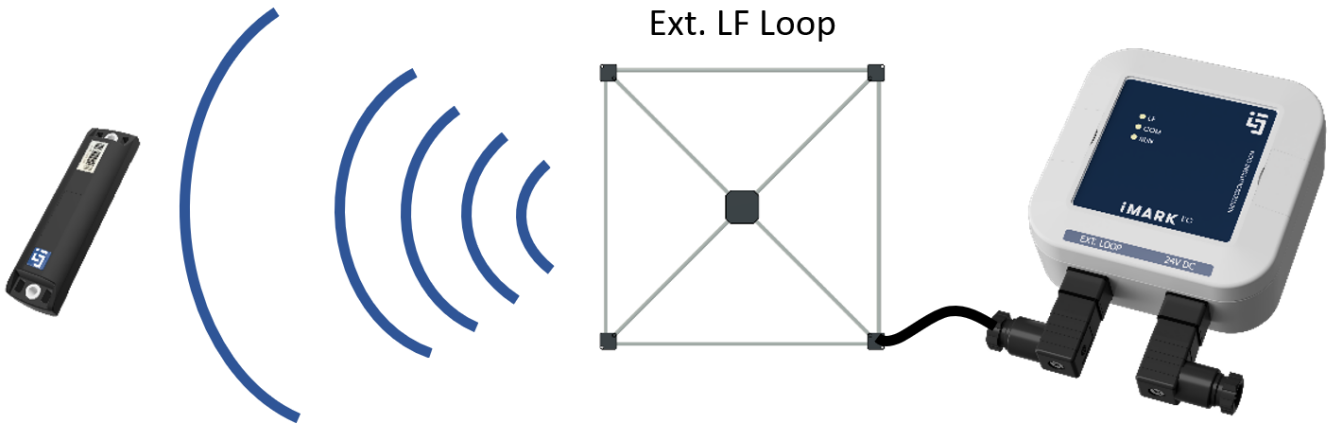
The UHF interface is a wireless communication interface using the UHF ISM frequency band and IDENTEC's protocols.

The iMARK EC has an internal UHF antenna, it acts like a tag and can communicate up to a range of 500 meters with IDENTEC's readers.

2.1.2. LF INTERFACE

The LF Interface uses IDENTEC's Location Marker technology. Zone location of IDENTEC's tags at Low Frequency can be achieved with a configurable field range, depending on the external loop and the internal settings.

All technical data which is provided in this manual is based on the iMARK's normal operation mode which is Manchester coded LF modulation. Due to backward compatibility reasons the iMARK also supports NRZ (Non Return to Zero) LF coding. In this operation mode, the range and the reliability are slightly reduced compared with the Manchester coded LF modulation.



2.2. SYSTEM COMPONENTS - TAGS

Identec offers a wide range of tags that can be used with the iMARK EC. The tags can be used in Zone location applications using IDENTEC's LFboost technology and provides long range communication with readers up to 500 m (1640 ft), using advanced UHF radio frequency technology.

iQ355 Tags

Using advanced UHF radio frequency technology, iQ355 tags transmit and receive data at distances of up to 250 m (820 feet). In addition, they can be configured to beacon data at a configurable ping rate to a range of up to 500 m (1640 ft).

These active RFID tags are particularly suited for:

- Access Control
- Identification
- Tracking and Tracing
- Zone localization

i-Q350 Tags

Using advanced UHF radio frequency technology, i-Q350 tags transmit and receive data at distances of up to 250 m (820 feet). In addition, they can be configured to beacon data at a configurable ping rate to a range of up to 500 m (1640 ft).

These active RFID tags are particularly suited for:

- Identification
- Tracking and Tracing
- Localization
- Environmental Data Sensing

i-B350 Tags

IDENTEC SOLUTIONS' i-B350 tags are designed to be cost effective and easy to implement, while offering maximum flexibility. The beacon ILR® Tags continually send out their ID at pre-programmed intervals. They do not need to be interrogated in order for them to send their information—they do it automatically.

These active RFID tags are particularly suited for:

- Access control
- Tracking of Vehicles and Containers
- Online inventory
- Localization of assets at specific areas

All Tag types are available with the following options:

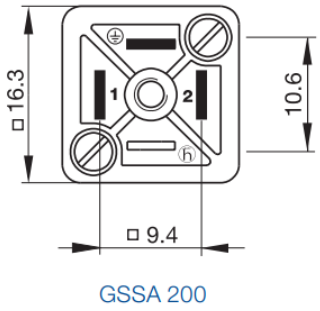
- *Marker technology* for locating goods, vehicles, etc. The Marker technology allows selective locating of a transponder, for example in adjacent car tracks or gate applications. Here the inductive Marker field informs the ILR® Tag about its current location.
- *Temperature sensor and logging*: These types contain an internal sensor for temperature monitoring in order to measure and log the temperature of goods in definable intervals. They are also available with external sensors.
- *LED* for visual recognition, such as, for example, for "pick by light" applications. The light is visible from almost every direction.

2.3. CONNECTORS & CONFIGURATION

EXT. LOOP	2 wire connection for an External LF loop
24V DC	2 wire connection for 24V DC power supply

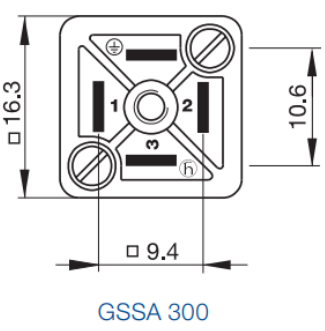
2.3.1. CONNECTOR PINOUTS

24V DC Connector (GSSA 200):



24V DC (+ / 24V)	**PIN 1**
0V DC (- / GND)	**PIN** ⏚

EXT. LOOP Connector (GSSA 300):

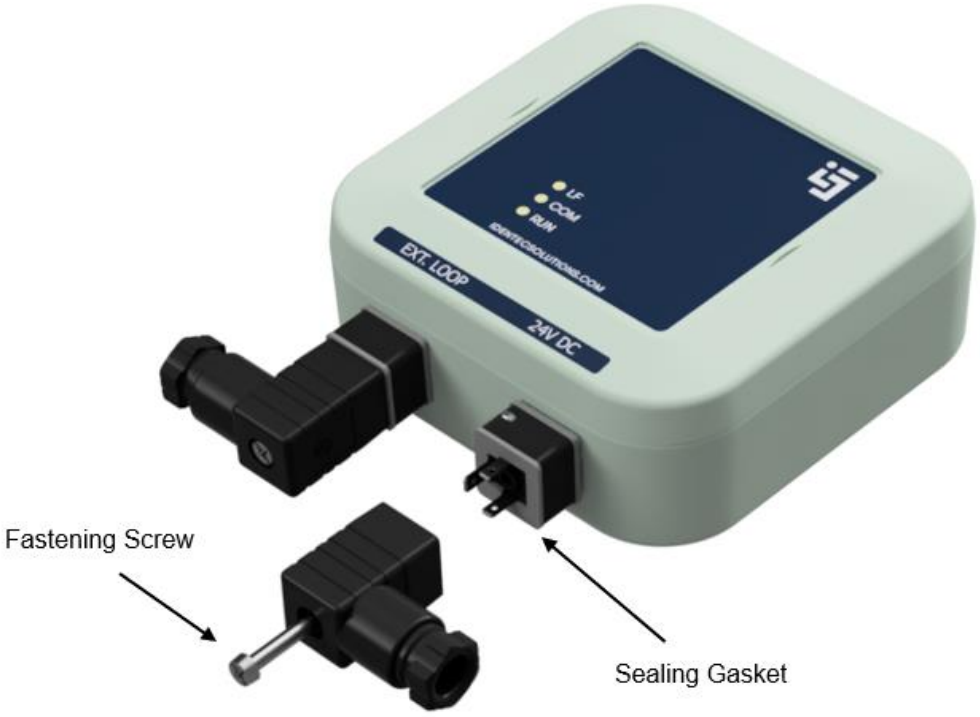


External loop wire 1	**PIN 2**
External loop wire 2	**PIN 3**

2.3.2. CONNECTOR SEALING

When connecting either of the external plugs to the male connector on the housing, make sure the supplied **sealing gasket** is in between, to ensure water tightness.

Also, after carefully fitting the plug to the connector, make sure the **fastening screw** is tightened:



3.0 CONFIGURATION

The configuration of the iMARK EC is managed via the host software.

Available Identec Solutions Software

- Setup Scout
- i-Share
- GetValuesiMARKSR

Please refer to the relevant software User Manuals for details on specific software usage.

The settings below can be different, depending on the type and size of the external loop

**** IMPORTANT: MAXIMUM POWER AND NUMBER OF SLOTS MUST BE CALCULATED FOR CUSTOM LOOPS, SO NOT TO EXCEED MAXIMUM TEMPERATURE (see tables below)****

The following settings can be seen/changed in the host software:

I. Tag Information
- Here you can see:
  - ***Tag Type***
  - ***serial number***
  - ***Firmware***
  - ***Supply Voltage***
  - ***Signal Strength***

II. Broadcast
- ***Active****:* Activate UHF broadcast mode [set to NO by default, for shipping purposes]
- ***Broadcast Interval****:* Set UHF broadcast interval of choice (e.g. 60 Seconds)

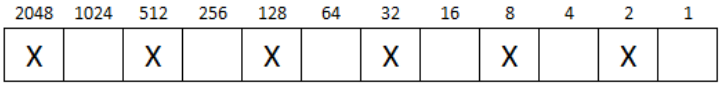
III. LF
- ***Loop ID*****:** This can be set by the user to identify the Marker in a system. Do not use the same ID twice!
- ***LF Output Power*****:** Set the LF output power percentage, ultimately sets the range of the Marker*

* The absolute range strongly depends on the environmental conditions (especially metal surfaces) and also the tag orientation. This information should be used as a guide only and range should be customized for specific customer site.

The following limitations are relevant for the given power settings (limited by firmware):

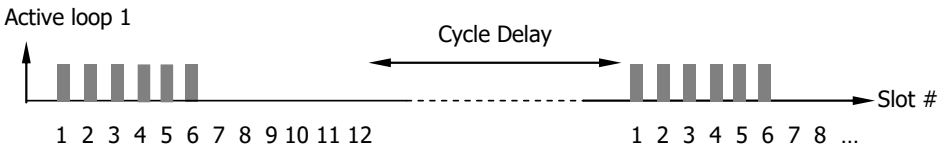
Total LF Power (%)	Max. No. of slots
0 <= 50 %	6
51 <= 100 %	2

- ***Slot Configuration**:* The slots configuration value is set via a decimal value of the binary bitmask for the slot configuration required. There are 12 slots, any of them can be used, with the above limitations.
- E.g. if 6 evenly spaced slots are required, the following value can be calculated:



2048 + 512 + 128 + 32 + 8 + 2 = **2730** (decimal entry)

- ***Cycle Delay*:** the delay between cycles of 12 slots. Can be increased or decreased as required, depending on user/marker requirements



3.1. EXTERNAL COIL INFORMATION

When using an external coil, LF loop power and slot settings are limited as per the table above.

The following table is a guideline when designing external coils:

The table is based on a 0,5mm² wire area. For other wire diameter, please contact IDS.

Coil Circumference (m)	Coil Area (m^2)	No. of turns	Comment
< 2	0.25	Contact IDS	Use iPOINT or iMARK SC
< 6	1	3	Use Frame or Combi antenna
< 12	5	2	
> 12	Max. 30	Contact IDS	Avoid – not allowed under FCC

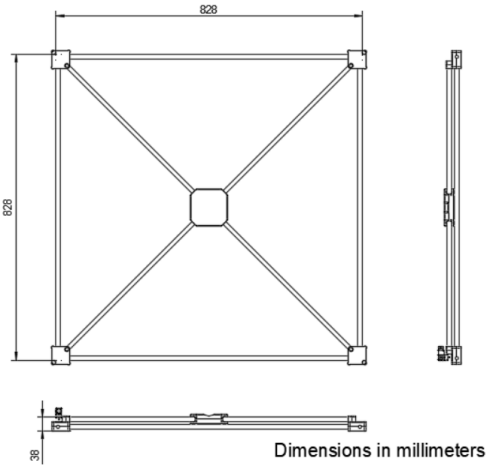
Attention: The maximum coil area is limited to 5m by 1m (circumference 12m, area 5m²).

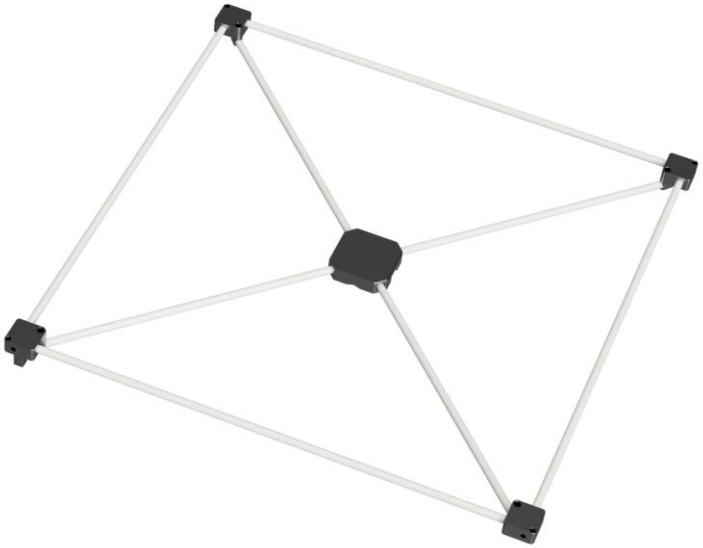
3.1.1 Types of External Antennas

- Custom external LF antennas can user defined by customer, see above guidelines for limitations.
- Alternatively, Identec can offer the following external antenna kits

Frame Antenna:

- *Standard size*: 80 x 80cm
- *Field Range*: up to 15m
- Order Code: 446873

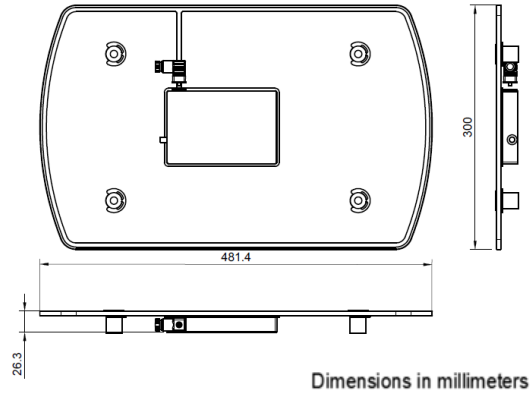


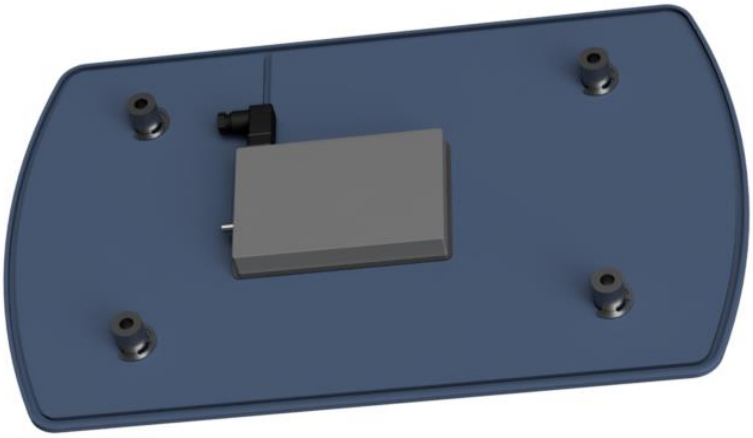


Combi Antenna:

- Standard Size: 48 x 30 cm
- Field Range: xxx m
- Order Code: *447268 (EU)*[1)]

  455326 (NA) [1)]





1) EU and NA are only valid when used together with iPORT devices.

3.2. STATUS LEDS

LF:

This is the LF Communication LED.

- **Blinks green** LF message is sent.
- **Blinks red** Loop error
  (e.g. loop broken or loop current too low).

COM:

This is the UHF Command LED.

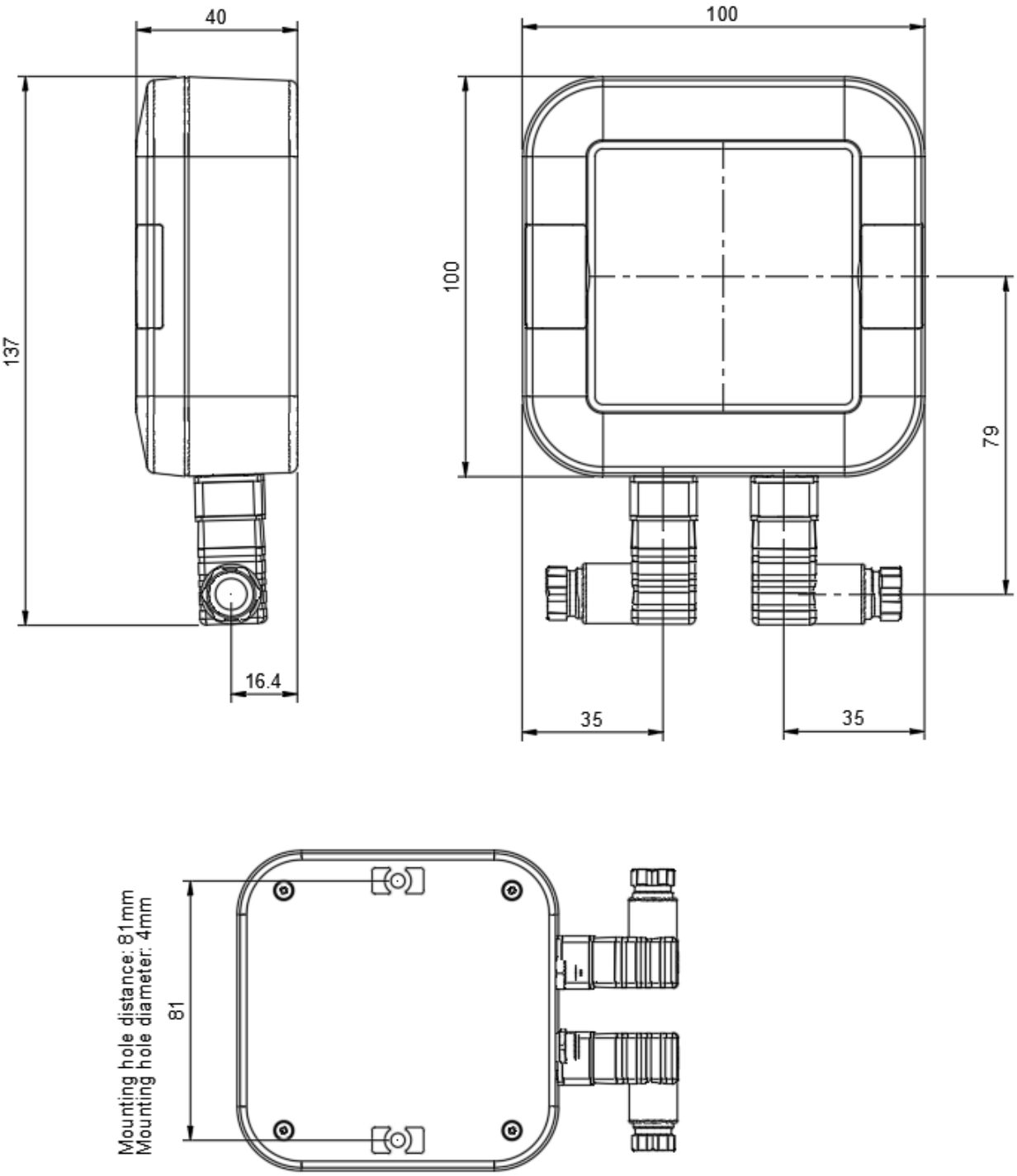
- **Blinks green** UHF command is received
- **Blinks orange** UHF command is transmitted
- **Blinks red** communication error

RUN:

This is the general device run LED

- **Blinks green** Device is powered.
- **Blinks red** Hardware error

4.0 MECHANICAL INFORMATION AND INSTALLATION



Housing Dimensions

5.0 TROUBLESHOOTING AND MAINTAINANCE

This chapter covers how faults can be recognized and rectified.

When planning the total system, do 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 the cables damaged in any way?
- Are all screws still tight?
- Is there a sudden malfunction at a specific unit?

5.1. MAINTENANCE

When installed correctly the iMARK EC 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

If the device needs cleaning, 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.

5.2. SPARE PARTS

Recommended spare parts stock

To minimize the downtime in the event of a malfunction, it is recommended to have certain spare parts on stock. For larger systems, doubling of the recommended stock quantity is recommended.

It is advised to have several spare iMARK EC in stock, corresponding to approx. 0.5 – 1 % of the total number of sensors.

Examination and repair of exchanged parts

The iMARK EC and other devices are complex electronic power units on which the customer can carry out only very limited repairs. Normally the repairs are carried out at IDENTEC SOLUTIONS or possibly at a distributor. Before a part is sent in for repair a short examination should be conducted.

5.3. 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:

IDENTEC SOLUTIONS AG
Millennium Park 2
6890 Lustenau
AUSTRIA

6.0 TECHNICAL SPECIFICATIONS

Communication – Broadcast & Response UHF	
Operation Mode	Bidirectional communication of user data via UHF
Read Range	Up to 100 m (300ft) [1]
Compatibility	i-PORT, iPOINT
Operating Frequency	UHF ISM Band: 868 MHz (EU) or 920 MHz (NA) [2]
Transmit Power	<1 mW
Communication – LF Marker	
Operation Mode	Sends Marker ID at a pre-defined interval
Exciter Range	Dependent on type of external coil
Compatibility	LF enabled tags
Operating Frequency	125 kHz
Performance	
Diagnostics	Remote surveillance via UHF interface, status LEDs
Marker ID	16-bit programmable
Electrical	
Power Supply	24V DC +/-5%
Power consumption	Max. 6W
Connector (Power)	Hirschmann GDS 207 (3-pin / 2+PE)
Connector (Ext. Loop)	Hirschmann GDS 307 (4-pin / 3+PE)
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 (3 ft), 5 times EN 60068-2-29: 50G on all 3 axis, 3 times per axis
Vibrations	EN 60068-2-6: 5G, 20s in wave cycles per axis, 5-500 Hz EN 60068-2-64: noise 5 to 1,000 Hz, 90 minutes per axis
Standards / Certifications	
Europe	**CE** (EN 300 220-1, -3; EN 301 489-1,-3; EN 62368-1)
North America	**FCC** Part 15 Subpart B
Canada	**ISED** RSS210
Mechanical Data	
Dimensions	100 x 100 x 40 mm (3.9 x 3.9 x 1.6 in.)
Dimensions (inc. connectors)	137 x 100 x 40 mm (5.4 x 3.9 x 1.6 in.)
Enclosure Material	Plastic (PC-ASA)
Enclosure Rating	IP65
Weight	223g (7.9 Oz) (no connectors or cables)
Ordering Information	
IDS1014 iMARK EC	456300

[1] The communication range depends on environmental conditions and national regulation limits

[2] Other country Frequencies are available, please contact IDENTEC SOLUTIONS

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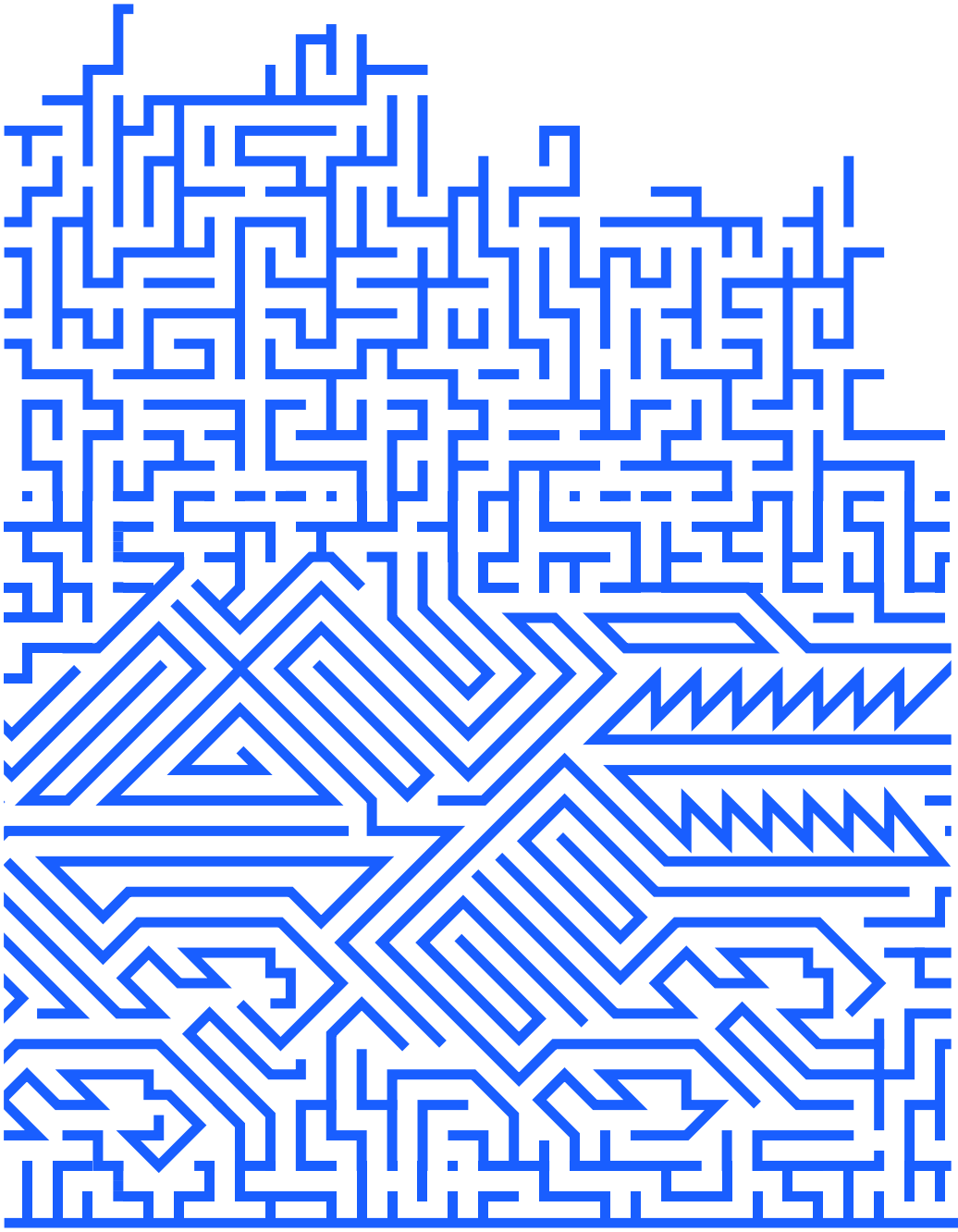

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iMARK IC (IDS1015)

Hardware User Manual

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Radio Frequency Compliance Statement

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

MODEL:		IDS1014 iMARK IC
Region/Country	Organization	Marking
EUROPE:	EU	CE
USA:	FCC	OO4-IDS1014
CANADA:	ISED	3538A-IDS1014 HVIN with internal coil (IC): IDS1015

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 Declaration of Conformity according to RED Directive

IDENTEC SOLUTIONS AG hereby declares that the device iMARK IC is in conformity with the essential requirements of Directive 2014/53/EU. The declaration of conformity can be found at: www.identecsolutions.com

USA Certification

FCC Part 15 compliance statement
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.

Canada Certification

Licence-Exempt Radio Apparatus (ISED)
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Appareils radio exempts de licence (ISED)
L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radio Frequency (RF) Exposure Compliance of Radiocommunication apparatus

To satisfy FCC and IC RF Exposure requirements for mobile devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Conformité à l'exposition aux champs RF des équipements radio

Pour satisfaire aux exigences FCC et IC concernant l'exposition aux champs RF pour les appareils mobile, une distance de séparation de 20 cm ou plus doit être maintenu entre l'antenne de ce dispositif et les personnes pendant le fonctionnement. Pour assurer la conformité, il est déconseillé d'utiliser cet équipement à une distance inférieure. Cet émetteur ne doit pas être co-situé ou fonctionner conjointement avec une autre antenne ou un autre émetteur.

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

WARNING - 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.

Never open the unit – nothing inside for user interaction or maintenance.

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 equipment can be installed in restricted areas.

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 iMARK IC was designed, tested, and supplied in perfect condition, according to document EN62368-1 (2014+A11/2017)

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. The unit does not have any internal setting elements or displays.

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.

1.0 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 iMARK IC. This document is intended only for mechanical and electrical installation of these units.

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.

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 IDENTEC SOLUTIONS should also be informed to facilitate the repair or exchange of the system.

Product Contents (deliverables):

- iMARK IC and connectors
- Hardware User Manual

2.0 INTRODUCTION

2.1. iMARK IC

IDENTEC SOLUTIONS' iMARK IC is a robust Zone-Location Marker device designed for proximity loop fields.

The Housing contains:

- 3 Status LEDs (see Section 3.1)
- a connector for a 24V power supply

For a detailed description of the mechanical information, please refer to Section 4.1.

The iMARK IC is used as a standalone device and can be configured over Identec' s UHF ILR system. See Section 3.2 for more details.

Following is a description of the wireless technologies that are available within the iMARK IC Device.

2.1.1. UHF INTERFACE

The UHF interface is a wireless communication interface using the UHF ISM frequency band and IDENTEC's protocols.

The iMARK IC has an internal UHF antenna, it acts like a tag and can communicate up to a range of 500 meters with IDENTEC's readers.

2.1.2. LF INTERFACE

The LF Interface uses IDENTEC's Location Marker technology. Zone location of IDENTEC's tags at Low Frequency can be achieved with a configurable field range, depending on the internal settings.

All technical data which is provided in this manual is based on the iMARK's normal operation mode which is Manchester coded LF modulation. Due to backward compatibility reasons the iMARK also supports NRZ (Non Return to Zero) LF coding. In this operation mode, the range and the reliability are slightly reduced compared with the Manchester coded LF modulation.

2.2. SYSTEM COMPONENTS - TAGS

Identec offers a wide range of tags that can be used with the iMARK IC. The tags can be used in Zone location applications using IDENTEC's LFboost technology and provides long range communication with readers up to 500 m (1640 ft), using advanced UHF radio frequency technology.

iQ355 Tags

Using advanced UHF radio frequency technology, iQ355 tags transmit and receive data at distances of up to 250 m (820 feet). In addition, they can be configured to beacon data at a configurable ping rate to a range of up to 500 m (1640 ft).

These active RFID tags are particularly suited for:

- Access Control
- Identification
- Tracking and Tracing
- Zone localization

i-Q350 Tags

Using advanced UHF radio frequency technology, i-Q350 tags transmit and receive data at distances of up to 250 m (820 feet). In addition, they can be configured to beacon data at a configurable ping rate to a range of up to 500 m (1640 ft).

These active RFID tags are particularly suited for:

- Identification
- Tracking and Tracing
- Localization
- Environmental Data Sensing

i-B350 Tags

IDENTEC SOLUTIONS' i-B350 tags are designed to be cost effective and easy to implement, while offering maximum flexibility. The beacon ILR® Tags continually send out their ID at pre-programmed intervals. They do not need to be interrogated in order for them to send their information—they do it automatically.

These active RFID tags are particularly suited for:

- Access control
- Tracking of Vehicles and Containers
- Online inventory
- Localization of assets at specific areas

All Tag types are available with the following options:

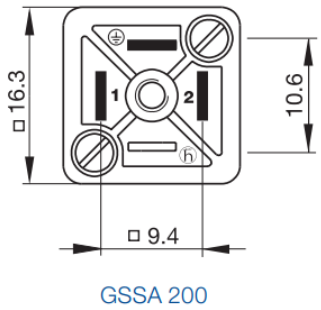
- *Marker technology* for locating goods, vehicles, etc. The Marker technology allows selective locating of a transponder, for example in adjacent car tracks or gate applications. Here the inductive Marker field informs the ILR® Tag about its current location.
- *Temperature sensor and logging*: These types contain an internal sensor for temperature monitoring in order to measure and log the temperature of goods in definable intervals. They are also available with external sensors.
- *LED* for visual recognition, such as, for example, for "pick by light" applications. The light is visible from almost every direction.

2.3. CONNECTORS & CONFIGURATION

24V DC	2 wire connection for 24V DC power supply

2.3.1. CONNECTOR PINOUTS

24V DC Connector (GSSA 200):

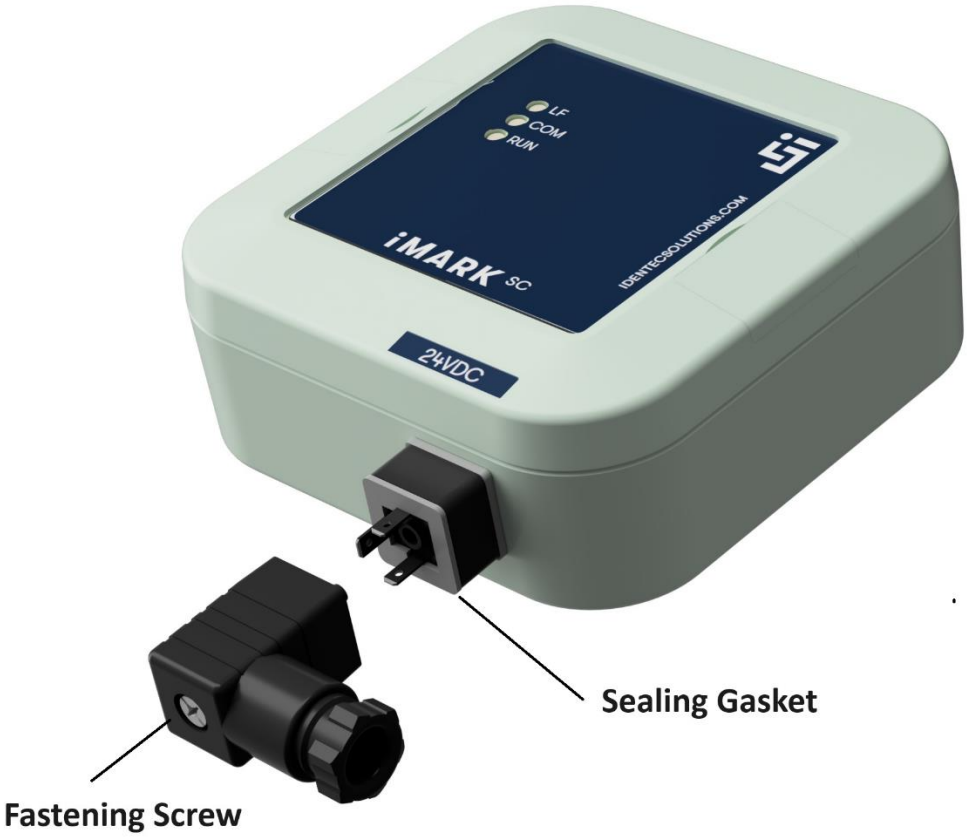


24V DC (+ / 24V)	**PIN 1**
0V DC (- / GND)	**PIN** ⏚

2.3.2. CONNECTOR SEALING

When connecting the external plug to the male connector on the housing, make sure the supplied **sealing gasket** is in between, to ensure water tightness.

Also, after carefully fitting the plug to the connector, make sure the **fastening screw** is tightened:



3.0 CONFIGURATION

The configuration of the iMARK IC is managed via the host software.

Available Identec Solutions Software

- Setup Scout
- i-Share
- GetValuesiMARKSR

Please refer to the relevant software User Manuals for details on specific software usage.

The following settings can be seen/changed in the host software:

I. Tag Information
- Here you can see:
  - ***Tag Type***
  - ***serial number***
  - ***Firmware***
  - ***Supply Voltage***
  - ***Signal Strength***

II. Broadcast
- ***Active****:* Activate UHF broadcast mode [set to NO by default, for shipping purposes]
- ***Broadcast Interval****:* Set UHF broadcast interval of choice (e.g. 60 Seconds)

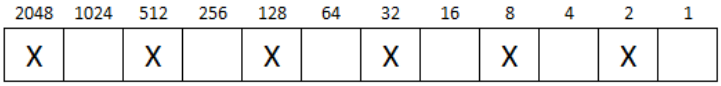
III. LF
- ***Loop ID*****:** This can be set by the user to identify the Marker in a system. Do not use the same ID twice!
- ***LF Output Power*****:** Set the LF output power percentage, ultimately sets the range of the Marker*

* The absolute range strongly depends on the environmental conditions (especially metal surfaces) and also the tag orientation. This information should be used as a guide only and range should be customized for specific customer site.

The following limitations are relevant for the given power settings (limited by firmware):

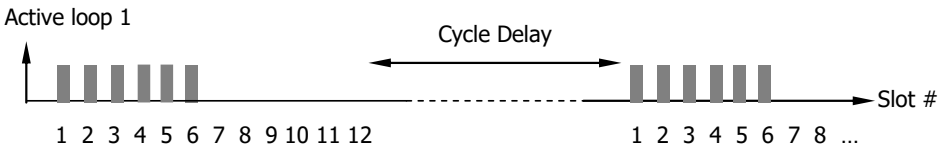
Total LF Power (%)	**Max. No. of slots**
0 <= 50 %	6
51 <= 100 %	2

- ***Slot Configuration****:* The slots configuration value is set via a decimal value of the binary bitmask for the slot configuration required. There are 12 slots, any of them can be used, with the above limitations.
- E.g. if 6 evenly spaced slots are required, the following value can be calculated:



2048 + 512 + 128 + 32 + 8 + 2 = **2730** (decimal entry)

- ***Cycle Delay*****:** the delay between cycles of 12 slots. Can be increased or decreased as required, depending on user/marker requirements



3.1. STATUS LEDS

LF:

This is the LF Communication LED.

- **Blinks green** LF message is sent.
- **Blinks red** Loop error
  (e.g. loop broken or loop current too low).

COM:

This is the UHF Command LED.

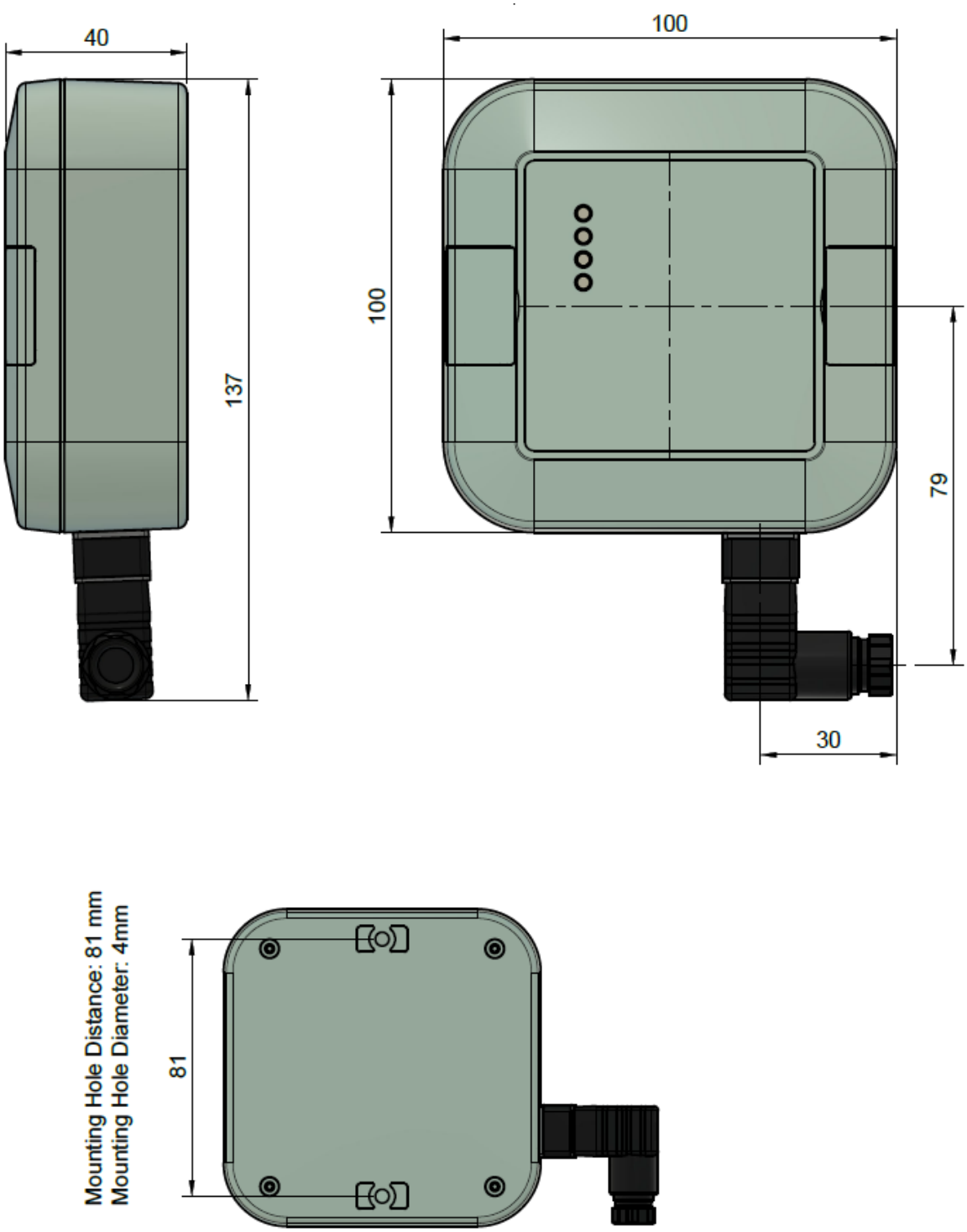
- **Blinks green** UHF command is received
- **Blinks orange** UHF command is transmitted
- **Blinks red** communication error

RUN:

This is the general device run LED

- **Blinks green** Device is powered.
- **Blinks red** Hardware error

4.0 MECHANICAL INFORMATION AND INSTALLATION



Housing Dimensions

5.0 TROUBLESHOOTING AND MAINTAINANCE

This chapter covers how faults can be recognized and rectified.

When planning the total system, do 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 the cables damaged in any way?
- Are all screws still tight?
- Is there a sudden malfunction at a specific unit?

5.1. MAINTENANCE

When installed correctly the iMARK IC 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

If the device needs cleaning, 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.

5.2. SPARE PARTS

Recommended spare parts stock

To minimize the downtime in the event of a malfunction, it is recommended to have certain spare parts on stock. For larger systems, doubling of the recommended stock quantity is recommended.

It is advised to have several spare iMARK IC in stock, corresponding to approx. 0.5 – 1 % of the total number of sensors.

Examination and repair of exchanged parts

The iMARK IC and other devices are complex electronic power units on which the customer can carry out only very limited repairs. Normally the repairs are carried out at IDENTEC SOLUTIONS or possibly at a distributor. Before a part is sent in for repair a short examination should be conducted.

5.3. 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:

IDENTEC SOLUTIONS AG
Millennium Park 2
6890 Lustenau
AUSTRIA

6.0 TECHNICAL SPECIFICATIONS

Communication – Broadcast & Response UHF	
Operation Mode	Bidirectional communication of user data via UHF
Read Range	Up to 100 m (300ft) [1]
Compatibility	i-PORT, iPOINT
Operating Frequency	UHF ISM Band: 868 MHz (EU) or 920 MHz (NA) [2]
Transmit Power	<1 mW
Communication – LF Marker	
Operation Mode	Sends Marker ID at a pre-defined interval
Exciter Range	5m
Compatibility	LF enabled tags
Operating Frequency	125 kHz
Performance	
Diagnostics	Remote surveillance via UHF interface, status LEDs
Marker ID	16-bit programmable
Electrical	
Power Supply	24V DC +/-5%
Power consumption	Max. 6W
Connector (Power)	Hirschmann GDS 207 (3-pin / 2+PE)
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 (3 ft), 5 times EN 60068-2-29: 50G on all 3 axis, 3 times per axis
Vibrations	EN 60068-2-6: 5G, 20s in wave cycles per axis, 5-500 Hz EN 60068-2-64: noise 5 to 1,000 Hz, 90 minutes per axis
Standards / Certifications	
Europe	**CE** (EN 300 220-1, -3; EN 301 489-1,-3; EN 62368-1)
North America	**FCC** Part 15 Subpart B
Canada	**ISED** RSS210
Mechanical Data	
Dimensions	100 x 100 x 40 mm (3.9 x 3.9 x 1.6 in.)
Dimensions (inc. connectors)	137 x 100 x 40 mm (5.4 x 3.9 x 1.6 in.)
Enclosure Material	Plastic (PC-ASA)
Enclosure Rating	IP65
Weight	223g (7.9 Oz) (no connectors or cables)
Ordering Information	
IDS1015 iMARK IC	456300

[1] The communication range depends on environmental conditions and national regulation limits

[2] Other country Frequencies are available, please contact IDENTEC SOLUTIONS

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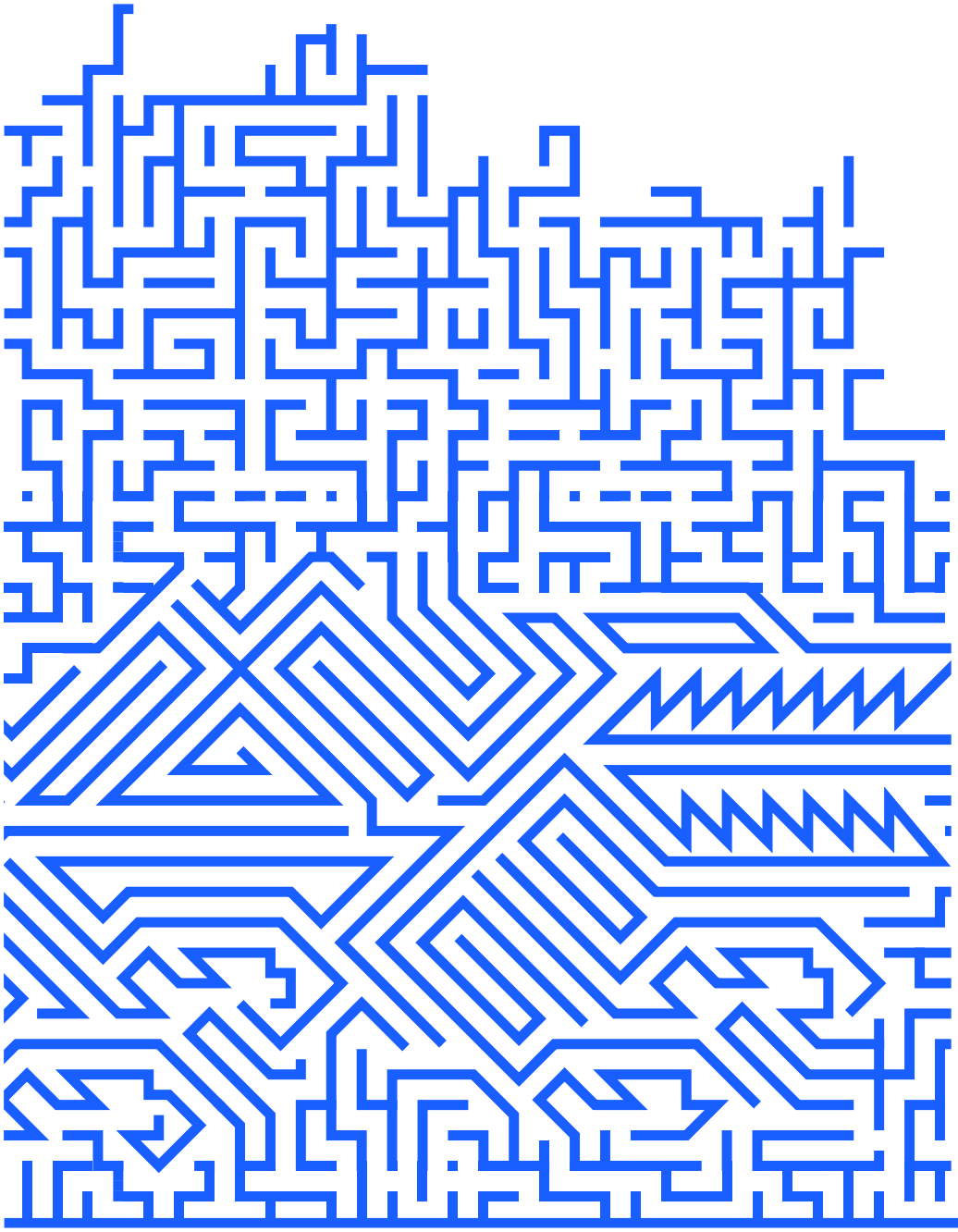

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