INSTRUCTION MANUAL

ISM - ISi

Miniature radio module for
wireless data transfer for
IMS probes

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IBR
Messtechnik GmbH & Co. KG

Introduction

The miniature radio module **ISM - ISi** allows the transmission of measured values from ISM probes to a PC.
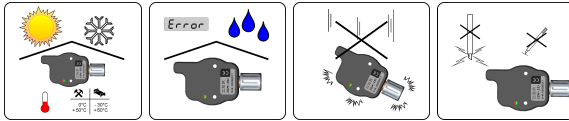The miniature radio modules are individually and wirelessly programmable by a PC programme and store these settings.
By programmable module addresses up to 120 radio modules can work parallel with a PC radio station (ISM - usb).

For optimal usage of the radio module we advise to read the manual intently.

Contents

1. Safety Instructions

Batteries
- Are not rechargeable
- Do not throw them into fire
- Correct disposing of them

2. Delivered Items
- Miniature radio module ISM - ISi
- 1 Battery CR2032
- Instruction manual

3. Cleaning and Maintenance
- Please clean the case with a soft duster and neutral cleaner.
  Do not use any chemical products (like i.e. dilute, petrol, acetone, …), they can destroy the case.

- Except of exchanging the batteries only the manufacturer is allowed to demount the instrument. On not observing the guarantee is lost.

4. Storage

Please store the miniature radio module only on dry and clean places.

5. Technical Data

Mechanical characteristics

Case	Plastic
Dimension W x H x D / Weight	26 x 47,65 x 9,55 mm / ca. 8 g

Electrical characteristics

Battery lifetime	Approx. 1.000.000 data transfers
Battery type	CR2032
Frequency	433,926 MHz
Frequency shifting	± 15 KHz
Modulation type	FSK
Output @ 400Ω	+ 10 dBm
Sensitivity @ 400Ω	- 105 dBm
Transmission speed	9600 Baud, 230400 Baud

Environmental conditions

Working temperature range	0 ... 50°C
Storage temperature range	-30 ... +60°C

Specific standards

CE conformity	Harmonised standards EN 300 220
FCC	FCC ID : T6T-604005

6. Dimensions
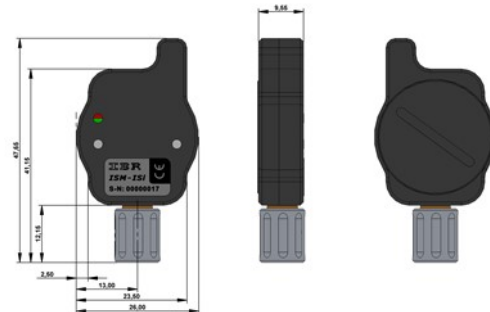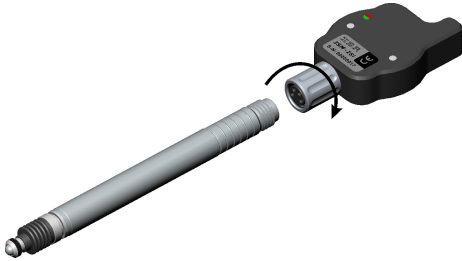
♦ Insert the IMS probe into the connector of the ISM - ISi.
♦ Turn the union nut by hand until radio module and probe are firmly attached.

The ISM-ISi should always be set to 230400 baud (factory setting) to be able to use the ISM permanent mode.

Additional information can be found in the manual of the PC radio station ISM-usb.

There are two different modes for data transmission with the ISM - ISi :

Mode 1 : - Data transfer by data button (see picture)
　　　　　 - LEDs are constantly off
　　　　　 - Used mainly for programming
　　　　　 - After short pressing of the data button a value is transferred
　　　　　 - Red / green LEDs show if value is received by the PC or not

Note :
A green flashing light and a short beep tone confirm a successful data transmission. When the PC radio station is not connected or when the Software is not started, the radio module outputs an error message with a red flashing light and two long beep - tones.

Mode 2 : - Permanent data output on value change
　　　　　 - Green LED shows mode 2 by blinking all 5 seconds
　　　　　 - Standard measuring mode
　　　　　 - The beeper has no function in this mode

For changing between the modes the button must be pressed for 2 seconds. The green LED confirms the mode change by lighting till the button is released.

9. Battery exchange on the ISM - ISi

Open   **Close**
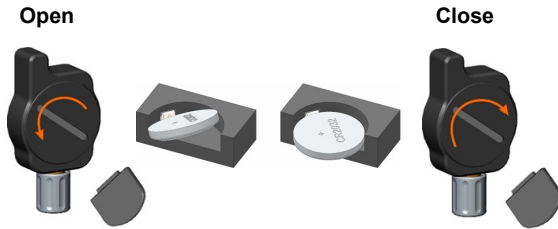
Battery type : CR2032
**Released manufacturers :   Maxwell, Duracell, Energizer,
                            Renata**

Note :

a) *Please remove the empty battery according to the picture and dispose of it according to the regulations.*

b) *Before inserting the new batteries the miniature radio module must reset. For this, please press the data key of the miniature radio module several times before inserting new batteries. (By this, the capacitors in the radio module are discharged, but the stored settings are not deleted!)*

c) *Please insert the new battery. Mind that the battery points with the plus pole to the opening and that the battery contact is not bended.*

d) *After the Battery is inserted the miniature radio module announces itself with a short tone series. If not, please remove the battery a second time and discharge the radio module long enough before inserting the battery again.*

10. Meaning of the different flash - codes

LED	Buzzer	Meaning
1 x green	1 x short	**Data transfer successful**
3 x green	2 x short	Data transfer successful, command correct received and stored
1 x red	2 x long	Error on the radio transfer
2 x red	2 x long	Timeout error by reading the measurement value from the probe / sensor
3 x red	2 x long	Spike on the data wire of the ISi interface
4 x red	2 x long	No Stop bit from the ISi interface
5 x red	2 x long	Parity – error on the ISi interface
6 x red	2 x long	Overflow of the input buffer on the ISi interface
7 x red	2 x long	Undefined data format from the ISi interface
8 x red	2 x long	Writing error on EEPROM access
9 x red	2 x long	Reading error on EEPROM access

Note :
A measurement value cannot be transmitted until the error message has ended (about 2 sec.) !!!

11. Programming of the ISM - ISi radio modules

The programming of the miniature radio modules occurs with the programme **IBR_SimKey** (at least version V2.30). The Software is included in the delivery of the PC radio station **ISM - usb**.
All settings are stored in the miniature radio modules and are also stored on changing the batteries. For programming the miniature radio modules please start the programme **IBR_SimKey** and open the programming window.
Please select the command and the parameter.
By clicking the **OK** button the command is set into a waiting queue. Now, please press the data key of the radio module, which should be programmed for transmitting a measuring value. On the end of the measuring value transmission the PC radio station sends the command out of the waiting queue to the module. Two short beep tones confirm the correct programming.

A command overview for programming the miniature radio modules can be found in the instruction manual of the PC radio station ISM – usb.

If you do not have this manual at hand, you can use the following link to download it from our homepage :
https://www.ibr.com/download/ISM-usbFCC_E.pdf

Please note that the factory setting for the ISM-ISi is a RF data rate of 230400 baud and that the receiver has to be set to this RF data rate, too.

Programming window of IBR_SimKey

Command list

Info line

Receiving-display
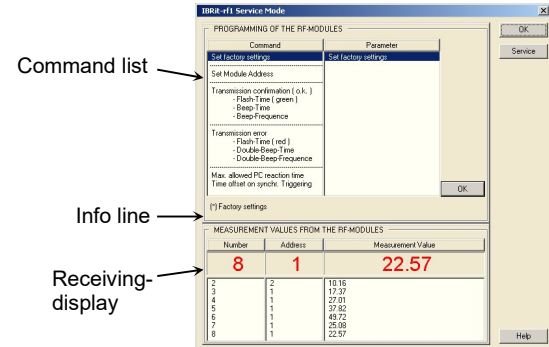
Example :   Programme a new radio module address

1. Click on Command :   **Set module address** and select as parameter an address between **1** and **500**

2. Set command into waiting queue : Click onto **OK** - Button

3. Press the Data - Key on the gauge or the radio module which shall be programmed, two short beep tones confirm the successful programming

12. Factory Reset

To return the radio module to the factory settings, press the button for 5 sec. until the LEDs start blinking red and green, then again 3 times shortly.
All settings are now reset and the radio module is set to address 500.

Declaration of conformity

Thank you very much for your confidence in purchasing this product. We certify herewith that the product was manufactured and inspected in our works. We declare under our sole responsibility that this product is conform with technical data specified in this instruction manual. *On addition, we certify that the measuring equipment used to check this product is calibrated by authorized companies in regular intervals.*

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions. This device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful inter-ference 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.

Important Notice :

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.

Guarantee

The quality of this instrument is guaranteed for a period of 12 month from the date of the delivery. This guarantee covers all materials and manufacturing defects. Our liability is confined to repair, or should we deem it is necessary, replacing or crediting the goods.

The batteries and following points are not covered by the guarantee :

♦ *Disregard of operating instructions,*
♦ *Damages due to incorrect handling,*
♦ *Tampering by unauthorised staff,*
♦ *Attempts by any unauthorised person to repair the instruments.*

In no case any consequential damage is covered by the guarantee which is connected either directly or indirectly to the instrument or its usage.

Notice :   On returning the instrument under guarantee the original
              packaging must be use.

Should you detect an irregularity of any kind, please contact one of our authorised distributors or our service department.

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We must reserve us the right to make changes on our products, especially because of technical improvements and further developments. So all Figures, Numbers, … in the manual are without guarantee.