



# INSTRUCTION MANUAL

## **IBRit - rf1 - opto** Miniature radio module for wireless data transfer

Document-No. : D2F604 005  
Version : April 2006  
© Copyright : IBR



**Messtechnik GmbH & Co. KG**

## Introduction

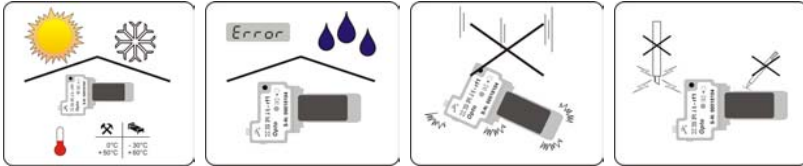
The miniature radio module **IBRit-rf1 - opto** allows the transmission of measured values from gauges with Opto-RS232 ( Duplex ) to a PC. The transmission of measured values is triggered by pressing the data key on the gauge and is optically and acoustically confirmed by the **IBRit-rf1 - opto** radio module. 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 work station.

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

## Contents

	Page
1. Safety Instructions / 2. Delivered Items .....	3
3. Cleaning und Maintenance / 4. Storage .....	3
5. Technical data / 6. Dimensions .....	4
7. Plugging a miniature radio module IBRit - rf1 - opto into a gauge .....	5
8. Changing an antenna on the IBRit - rf1 - opto .....	5
9. Mode selection on hand gauges and measurement data transfer .....	6
10. Battery exchange on the IBRit - rf1 - opto .....	7
11. Meaning of the different flash - codes .....	8
12. Battery - Dischargement by light emission .....	8
13. Programming of IBRit - rf1 - opto radio modules .....	10

## 1. Safety Instructions



### Batteries



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

## 2. Delivered Items

- ◆ Miniature radio module IBRit-rf1 - opto
- ◆ 2 Antennas ( short and long version )
- ◆ 2 Batteries ( in the radio module )
- ◆ Light protection cover
- ◆ Instruction manual

## 3. Cleaning and Maintenance

- ◆ Please clean the case and the circuit board with a soft duster and neutral cleaner. Do not use any chemical products ( like i.e. dilute, petrol, acetone, ... ).
- ◆ Except of exchanging the batteries only the manufacturer is allowed to demount the instrument. On not observing the guarantee is lost.

## 4. Storage

On storing the miniature radio module outside the gauge the circuit board side must be put into the black light protection cover. Otherwise light emission discharges the batteries in the module.  
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	25,1 x 41,69 x 12,15 mm / ca. 8 g

### Electrical characteristics

Battery lifetime	About 100.000 data transfers
Battery type	SR 920 W, SR 69, 371 LD
Frequency	433,926 MHz
Frequency shifting	± 15 KHz
Modulation type	FSK
Output @ 400Ω	+ 10 dBm
Sensitivity @ 400Ω	- 105 dBm
Transmission speed	9600 Baud

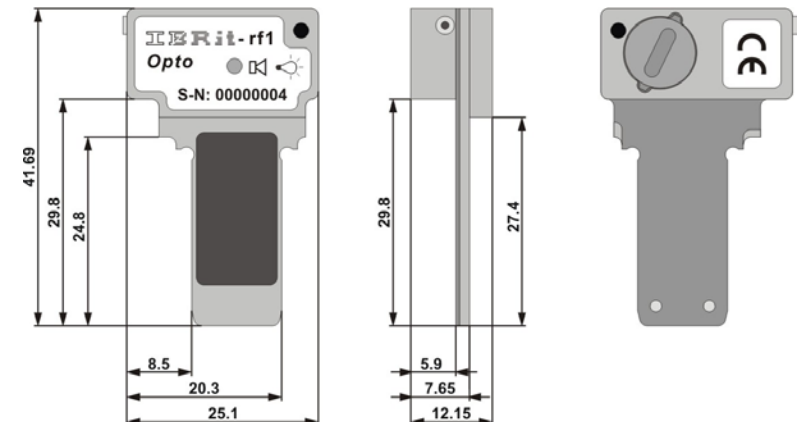
### Environmental conditions

Working temperature range	0 ... 45°C
Storage temperature range	-30 ... +60°C

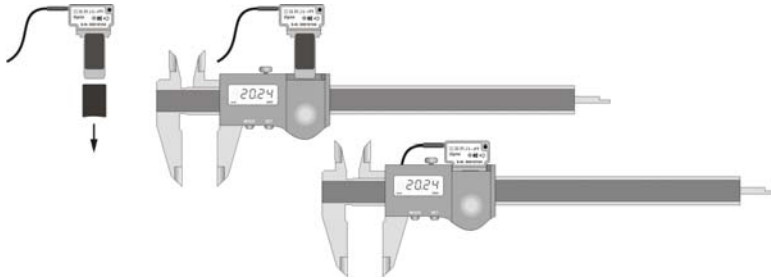
### Specific standards

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

## 6. Dimensions

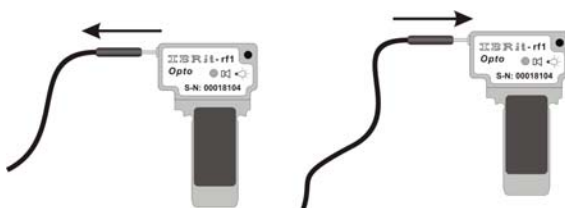


## 7. Plugging a miniature radio module IBRit-rf1-opto into a gauge



- ◆ Please remove the black light protection cover before plugging the radio module into the gauge.
- ◆ **Please mind the distort protection !**  
*The IBRit - rf1 - opto must be rested completed !*
- ◆ The miniature radio module works only with gauges with a **Duplex Opto RS232** - interface

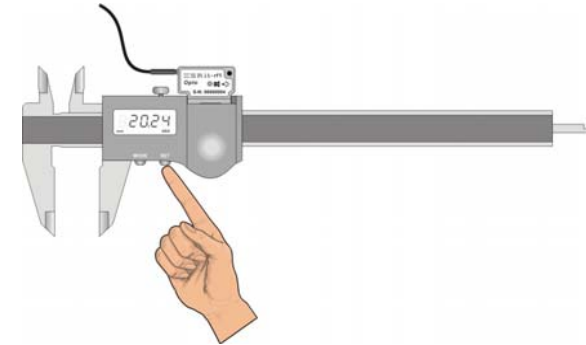
## 8. Changing an antenna on the IBRit-rf1-opto



### Note :

Part of the delivered items of the IBRit-rf1-opto are a short and a long antenna.  
The short antenna is suitable for most applications.  
To reconcile bigger distances or on disturbance fields the long antenna is required.  
Only the long antenna provides the full transmitting and receiving power.

## 9. Mode selection on hand gauges and measurement data transfer



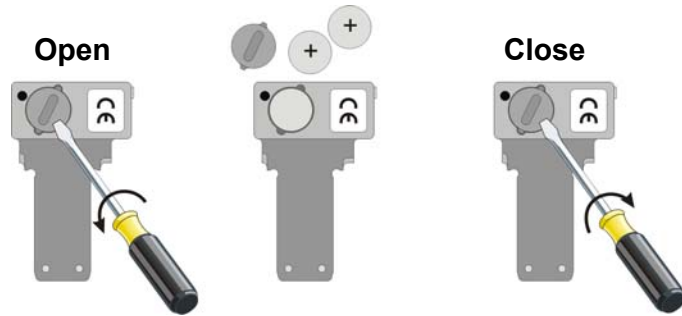
- ◆ On Sylvac gauges for the data transmission the measuring mode **ABS** or **REF** must be selected.  
*For mode selection please see the gauge manual or gauge backside.*
- ◆ The data transmission occurs by pressing the **Data** or **Set** -key on the gauge.

### Note :

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

**More information about error messages you find in the table on page 8.**

## 10. Battery exchange on the IBRit-rf1-opto



**Battery type :** SR 920 W, SR 69, 371 LD

**Released manufacturers :** Maxwell, Duracell, Energizer, Renata

### Note :

- Please remove according to the picture the both batteries and dispose the empty batteries according to the regulations.
- Before inserting the new batteries the capacitors in the miniature radio modules must be completely discharged. For discharging the capacitors please lay the miniature radio module at minimum 5 minutes under a light lamp. The open battery compartment must show in direction of the lamp.
- Please insert the new batteries. Mind that both batteries show with the plus pole to the opening and that the battery contact is not bended.
- After the 2nd Battery is inserted the miniature radio module announces itself with a short tone series. If not please remove the batteries a second time and discharge the radio module long enough before you insert the batteries again.

## 11. Meaning of the different flash - codes

LED	Buzzer	Meaning
1 x green	1 x short	Data transfer successful
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 gauge
3 x red	2 x long	Spike on the data wire of the Opto RS232
4 x red	2 x long	No Stop bit from the Opto RS232 interface
5 x red	2 x long	Parity – error on the Opto RS232 interface
6 x red	2 x long	Overflow of the input buffer on the Opto RS232 interface
7 x red	2 x long	Undefined data format from the Opto RS232 interface
8 x red	2 x long	Writing error on EEPROM access
9 x red	2 x long	Reading error on EEPROM access

### Note :

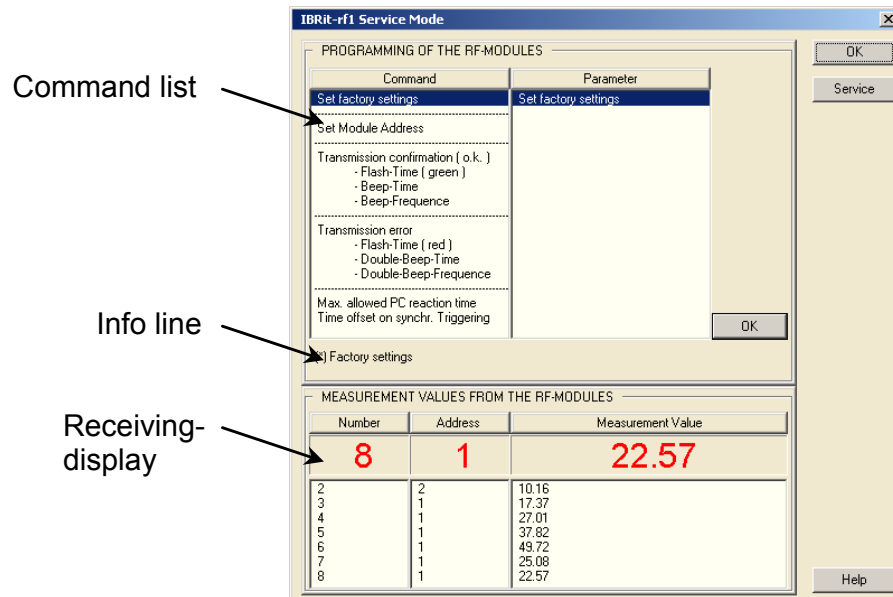
**A measurement value cannot be transmitted until the error message has ended ( about 2 sec. ) !!!**

## 12. Battery - Dischagement by light emission

If the miniature radio module is not plugged into the gauge then the receiver diode of the Opto RS232 – interface can discharge the battery.

!!! A short beep tone in 1 sec interval informs the user about this situation. Please protect the radio module by the black light protection cover.

## Programming window of IBR\_SimKey



### Example : Programming of a new radio module address ( sender )

1. Click on Command : **Set module address**
2. Parameter : Select an address between **1** and **120**
3. Set command into waiting queue : Click onto **OK** - Button
4. Press the Data - Key on that gauge or gauge module which should be programmed
5. Two short beep tones confirm the successful programming

## 13. Programming of the IBRit - rf1 - opto radio modules

The programming of the miniature radio modules occurs with the programme **IBR\_SimKey**. The Software is included in the delivery of the PC radio station **IBRit - rf1 - 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 go in the programme **IBR\_SimKey** into the programming window. Please select after that the command and the parameter. By clicking onto the **OK** - Button the command is set into a waiting queue. Please press now the data key of that radio module or gauge, 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.

### Command overview for programming the miniature radio modules

- **Set module address ( 1...120 )**
- **Transmission confirmation ( o.k. )**
  - Flash time ( green )
  - Beep time
  - Beep frequency
- **Transmission error**
  - Flash time ( red )
  - Double Beep time
  - Double Beep frequency

## 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 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.

## Important Notice :

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.

*Warning : Changes or modifications made to this equipment not expressly approved by IBR may void the FCC authorization to operate this equipment.*

## 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.*

**IBR Messtechnik GmbH & Co. KG**

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.

Printed in Germany

 **Messtechnik GmbH & Co. KG**

Kirchstrasse 20

D-36166 Haunetal

Tel. : 06673-919180

Fax : 06673-919185

Email : [Info@IBRit.com](mailto:Info@IBRit.com)

Web : [www.IBRit.com](http://www.IBRit.com)