Messtechnik

INSTRUCTION MANUAL

IBRit-rf1-usb

PC - Station for wireless Data transmission

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Messtechnik GmbH & Co. KG

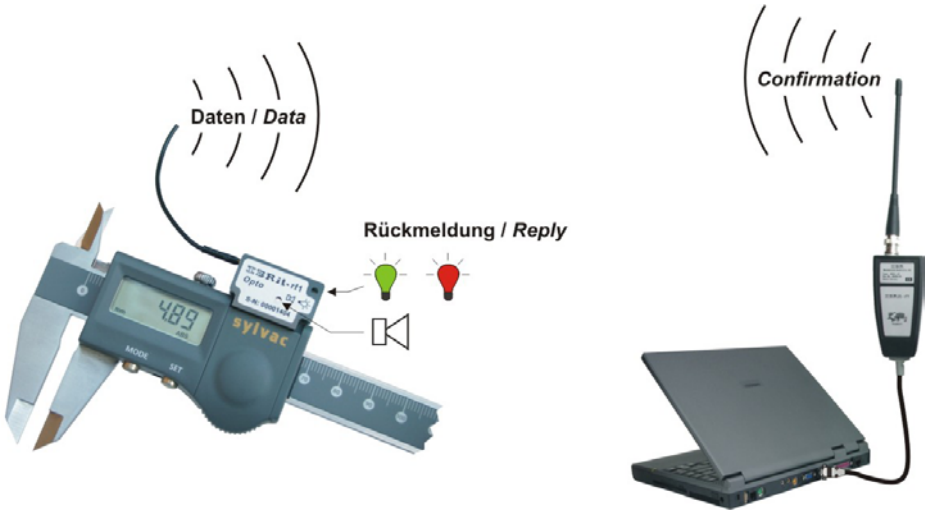
Contents

1. Introduction

1.1 General Information

The IBRit - rf1 radio module series allows the wireless transmission of measured values from gauges to a PC with USB - connector.

On the PC side the wireless communication with the gauges occurs via the radio module **IBRit - rf1 - usb**. The module is connected via a USB-Slot to the PC and allows the communication with 1 ... 120 gauge radio modules.
The assignment of the data from the different gauges occurs by address numbers. The address number and other individual radio module settings for the particular gauge type can be transmitted from the PC to the gauge radio modules and are stored there.
The corresponding PC-Software **IBR_SimKey** is included in the delivery of the **IBRit - rf1 - usb**.
The transmission of a measured value is triggered by pressing the data key on the gauge or radio module. The gauge radio module completes the measuring value by the address number (sender), one communication control word and a double checksum. The special data coding and the direct communication between PC and the radio modules on the gauges guarantee absolute data security.
A transmission error, i.e. caused by a radio interference, is detected by the communication protocol between PC and gauge radio module. The data transmission is automatically repeated within 0,01 ... 0,08 seconds up to 3 times. A successful data transmission is automatically confirmed to the user by a green flashing light and short beep tone on the gauge radio module. If the measuring value could not be received by the PC, then a red LED is flashing and two longer beep tones are informing the user about the error. More information over the different error codes you will find on the page 10.
The maximum transmission distance depends strongly on the environment and can be several meters up to 200 meters.
The output of the received measurement values can be taken place in nearly every software, because the programme **IBR_SimKey** outputs the measurement values over the keyboard buffer.



1.2 Features

- *PC radio station **IBRit-rf1-usb** with USB interface for communication with at maximum 120 gauge radio modules*
- *Gauge radio modules* ***IBRit-rf1-opto*** *for gauges with Opto RS232 interface*
  IBRit-rf1-digi *for gauges with Mitutoyo interface*
  IBRit-rf1-mahr *for gauges with Mahr interface*
  IBRit-rf1-232 *for gauges with RS232 interface*
- *High data security by double and independent check sum*
- *Optical and acoustical transmission confirmation of the gauge radio modules*
- *Distance up to 200 m*

1.3 Technical Data

Mechanical Characteristics

Case	Plastic
Wall holder	Wall holder for plugging in the IBRit-rf1-usb. The wall holder contains two holes for the mounting with screws
Dimensions with antenna W x H x D / Weight	47 x 275 x 30 mm / ca. 175 g

Electrical Characteristics

Power supply	By USB port
Current consumption	max. 40 mA

Measurement data

Transmission frequency	433,926 MHz
Frequency range	± 15 KHz
Modulation type	FSK
Output power @400 Ω	+10 dBm
Sensitivity @400 Ω	-105 dBm
Transmission speed	9600 baud

Environment conditions

Working temperature range	0 ... 50°C
Storage temperature range	-30 ... +60°C
Protection class	IP50 (CEI / IEC 529)

Specific standards

CE conformity	Harmonised standards EN 300 220
FCC	FCC ID : T6T-604001

2. Setting up the system

2.1 Delivered items

PC radio station **IBRit-rf1-usb** with USB–connection cable, antenna, wall holder, manual and CD-ROM with USB-driver.
Please check the delivery on completeness and store the packet.

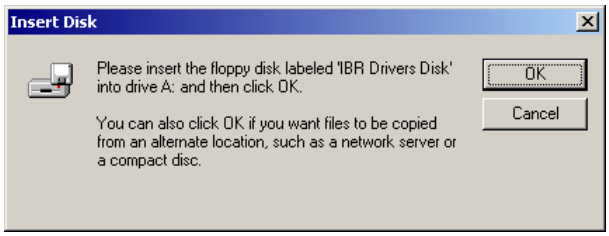
2.2 System condition

PC with USB-port and operating system Windows 98 / ME / 2000 / XP.

2.3 Installation of the USB driver for the IBRit-rf1-usb module

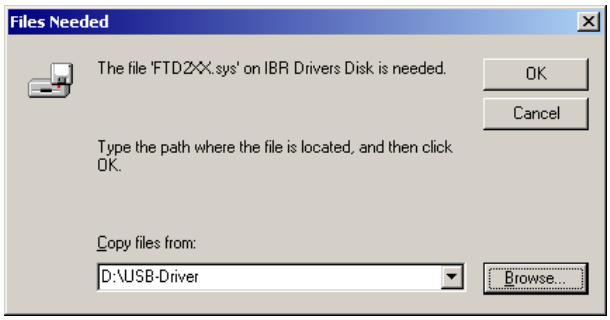
a) Please insert the delivered CD-Rom in the drive of your PC and connect after that the **IBRit-rf1-usb** module to your USB port.

b) The PC automatically detects that a driver must be installed and opens the following window :



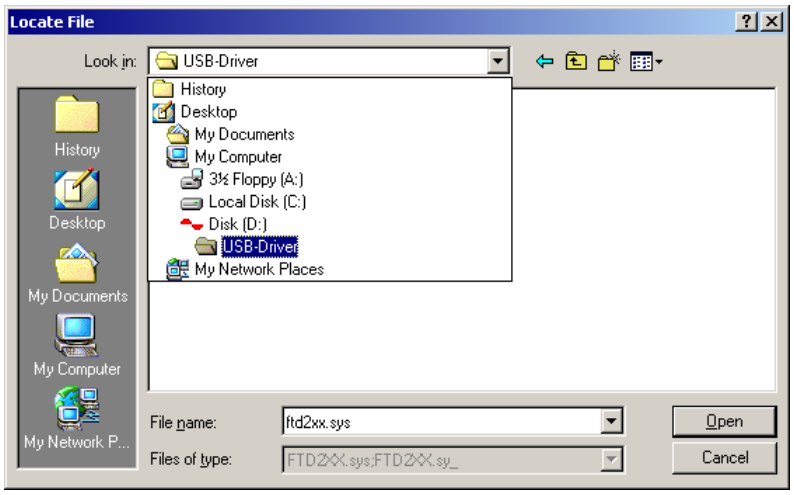
Please confirm with ***OK***

c) A new windows for the input of the driver destination directory and start of installation is opened :



Please click the Button ***Search...***

d) A new window for the searching of the destination directory is opened :



Please select the **USB-Driver** on the CD and confirm by clicking onto the **Open** Button

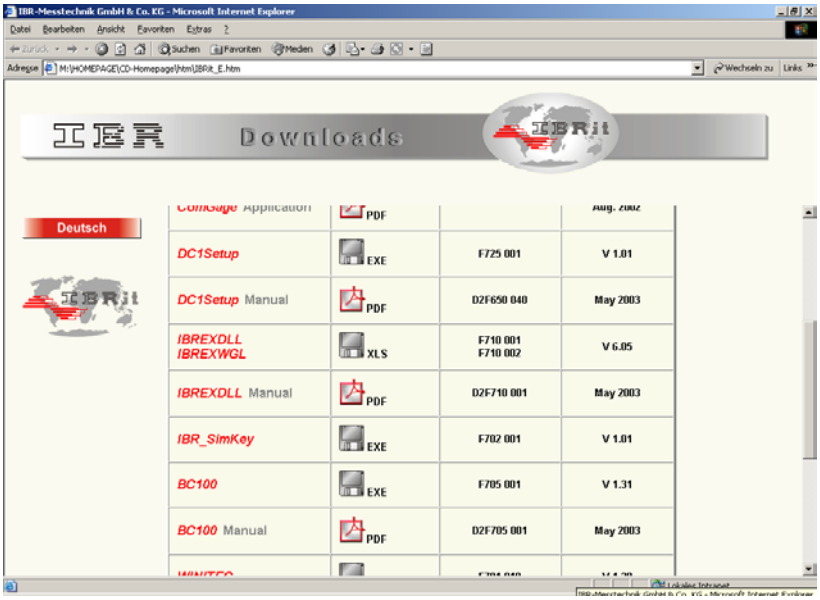
e) Now the window of step d) becomes visible again.
By clicking the ***OK*** Button the installation is started.

2.4 Function test of the IBRit-rf1 radio modules with the programme IBR_SimKey

1. Installation of IBR_SimKey

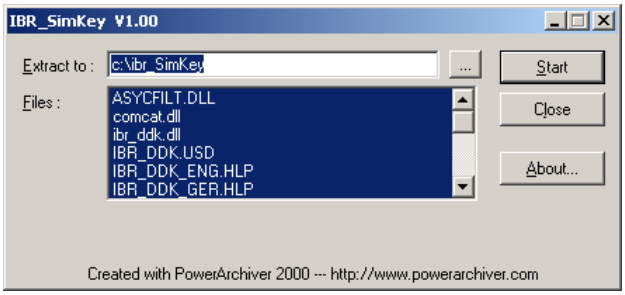
a) Please insert the delivered CD into the CD-Rom drive.

b) The window for selecting the software is opened :



Please click onto the disc symbol of **IBR_SIMKEY** in the selection window.

c) A new window for Installation of the programme **IBR_SIMKEY** is opened.

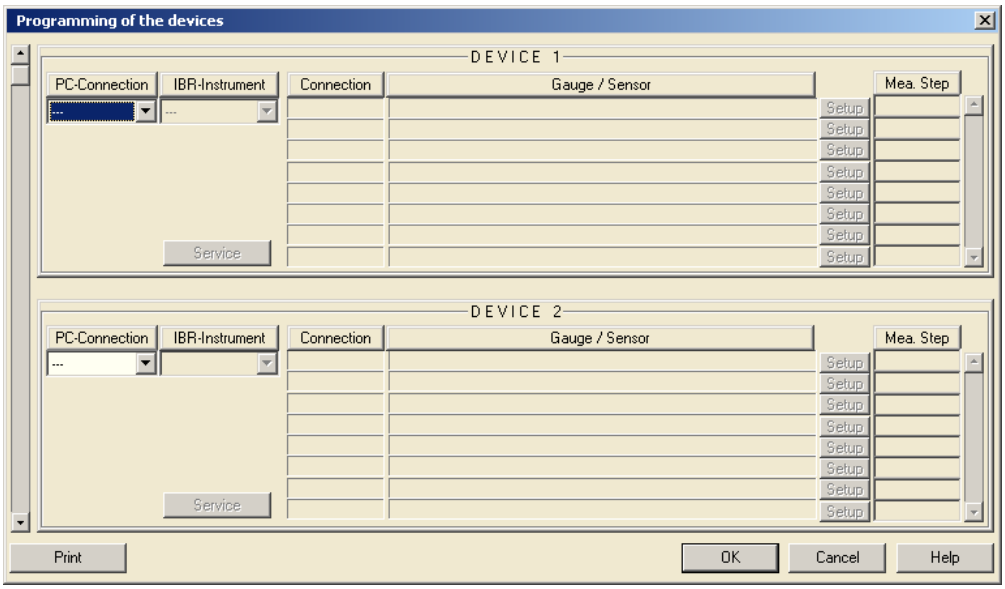


Please start the installation by clicking the **Start** - Button.

2. Starting IBR_SimKey

Please use the Windows Explorer to go into the **IBR_SimKey** folder (z.B. C:\IBR_SimKey) and start the programme **IBR_SimKey.EXE**.

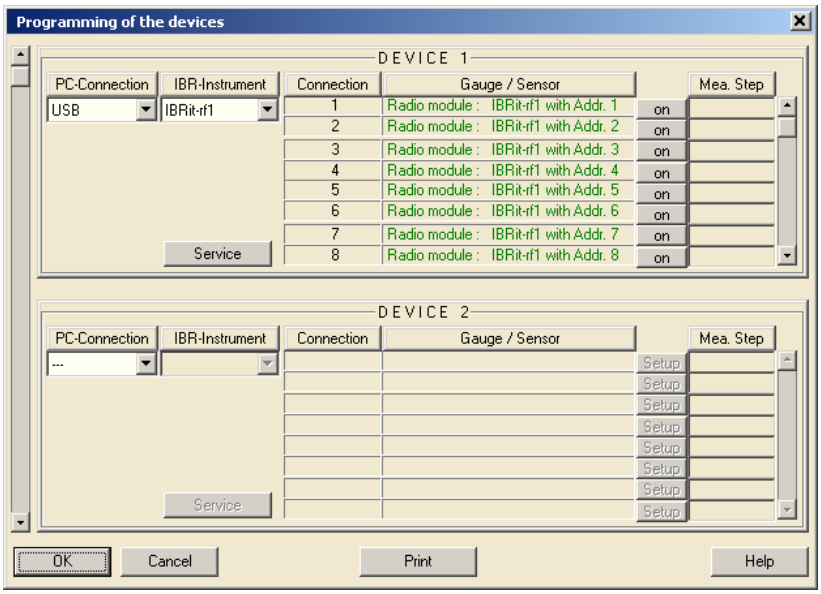
On the first start after the installation the programme IBR_SimKey automatically opens the window for device- and gauge selection.



Pleases select **USB** as **PC-Connection** and after that **IBRit-rf1** as **IBR-Instrument**.

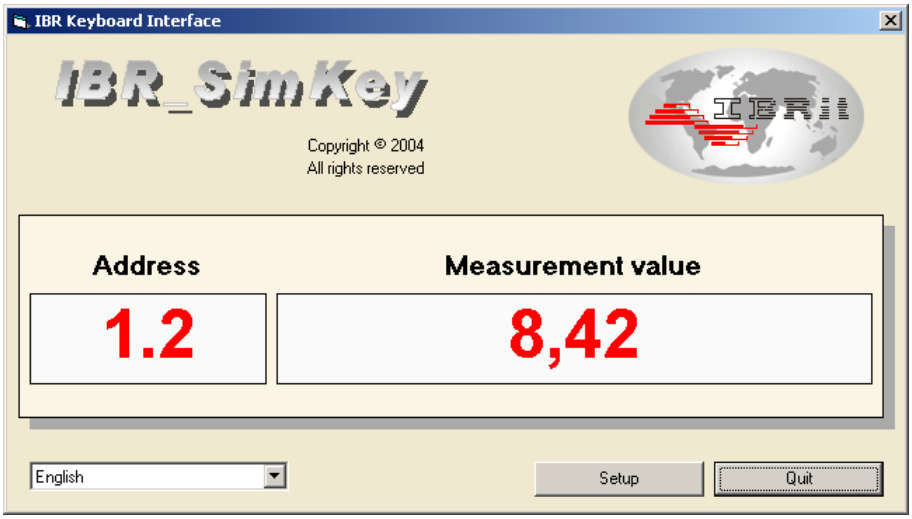
Note : *If after IBRit-rf1 a (*) appears, then the IBRit-rf1 module was not found.*
(i.e. no driver installed, the IBRit-rf1 is used by another software, …)

After the selection of the PC PC-Connection and the IBR-instrument the columns **Connection** and **Gauge / Sensor** are filled.



By clicking on the **on / off** - Buttons in the right area of the window directly the gauge radio modules of the particular PC radio station can be deactivated or activated. This programming possibility allows the parallel operation of several PC radio stations with up to 120 gauge radio modules.
By clicking on the **OK** - Button the settings are stored and the window is closed.

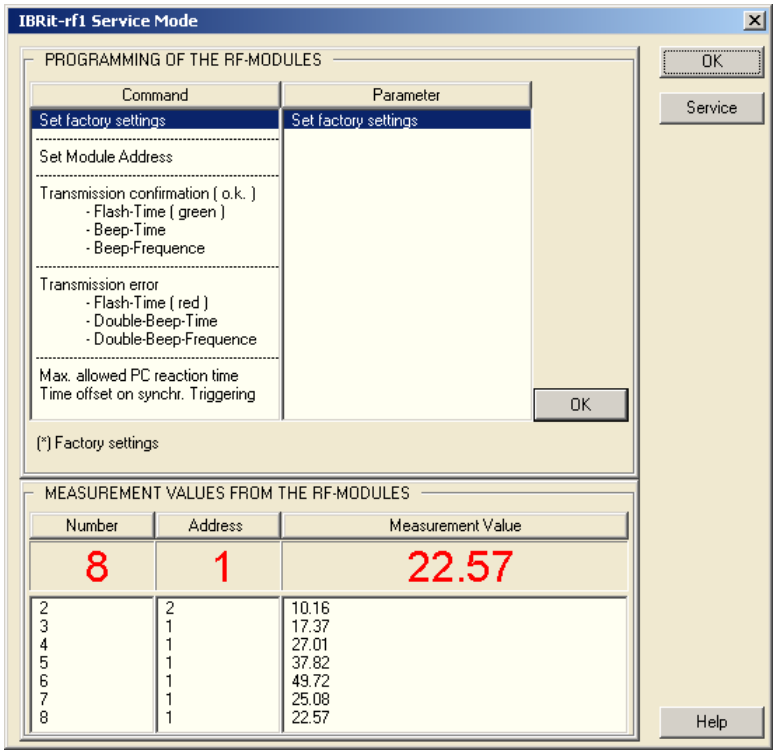
The display window of **IBR_SimKey** is opened and the measurement data transmission can be started.



By pressing the data key of the gauge or gauge module the measurement values are transmitted to the PC.

3. Programming of gauge radio modules with the programme IBR_SimKey

The IBRit-rf1 gauge radio modules can be individually programmed by the programme IBR_SimKey. All settings are stored by the gauge radio modules and are kept existing by a changing of battery.
For programming of gauge radio modules please click in the main window of IBR_SimKey (Window for measurement data display) onto the **Setup** - Button. The window for selecting the connections is opened. Please click in this window onto the **Service** - Button to reach the programming window. In the programming window in the left upper window area you find the command list for programming the gauge radio modules.
For Programming please select the particular command and after that the parameter. With the click on the **OK** - Button the command is set into waiting queue. Please press now on the gauge radio module which should be programmed the data key for transmitting a measurement value. After the measurement value transmission the PC radio module sends the command from the queue to the module. Two short peep tones are confirming the successful programming.



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

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

4. Confirmation signals of the IBRit-rf1 gauge radio modules

The IBRit-rf1 gauge radio modules return for the operator a clearly optical and acoustical confirmation on the programming or measurement value transmission. The operator is immediately informed, whether the transmission was successful or did not occurred
If the transmission was not successful then the flashing code of the LED informs the operator over the error-reason.
The following table explains the confirmation signals :

LED	Beep tones	Confirmation
1 x green	1 x short	**Measurement value was transmitted successfully**
1 x red	2 x short	Error on radio transmission
2 x red	2 x short	Timeout Error on reading the measurement value from the gauge
3 x red	2 x short	Spike on the data line of the Opto RS232
4 x red	2 x short	No Stopbit from the Opto RS232 interface
5 x red	2 x short	Parity – Error from the Opto RS232 interface
6 x red	2 x short	Overflow of the input buffer on the Opto RS232
7 x red	2 x short	Undefined data format from the RS232 interface
8 x red	2 x short	Write error on EEPROM access
9 x red	2 x short	Read error on EEPROM access

Note :
Firstly after the end of a confirmation (ca. 2 sec) a new measurement value can be transmitted !!!

5. Safety Instructions

The present instrument is state-of-the-art design and complies with the current safety standards. It is nevertheless mandatory to observe the following instructions in order to prevent personal injuries or accidental death of staffmembers and other persons.

1. All operators must read the present instructions and this manual very carefully **before starting operation.**
2. The instrument may be used only **in errorless technical condition.** Disruptions which may be a danger to operational safety must be removed immediately.
3. The device may be used only as stated in these instructions. The manual must be kept near at hand at the place of operation.
4. Before connecting the device to the power outlet, make sure that the voltage indicated on the label corresponds to the voltage of the local power net. If this is not the case, the device should under no circumstances be connected to the power outlet.
5. The instrument must be connected to the power supply through a properly grounded safety socket. Extension cables, where required, must comply with the VDE safety standards.
6. Any modification and procedures concerning the instrument are permitted only with the prior written consent of **IBR Messtechnik GmbH & Co. KG** and must be carried out by competent staff. Opening the case or tampering with the device without prior permission will lead to the loss of the guarantee and free the producer from all liabilities. Before opening the instrument, make sure to effectively cut the power supply, e.g. by disconnecting the power cable.
7. Before cleaning, disconnect the instrument from the power supply. No liquids should ever be allowed to leak inside the instrument. Strictly avoid the use of cleaners that attack plastic.
8. Replace faulty fuses only with fuses of identical amperage and current characteristics following the instructions given in this manual.
9. Corporate guidelines and safety regulations enforced by the industrial trade associations for the prevention of industrial accidents must be strictly observed. Make sure to consult the safety officer at your company.
10. Do not operate the instrument in an environment containing explosive gases, because an electric spark can cause an explosion.

6. Declaration of conformity

Thank you very much for your confidence in purchasing this product. We herewith certify that it was manufactured and inspected in our works.

We declare under our sole responsibility that this product is in conformity with technical data as specified in this instruction manual.

On addition, we certify that the measuring equipment used to check this product refers to national master standards. The trace ability of measuring values is guaranteed by our Quality Assurance.

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
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.

7. Guarantee

The quality of this instrument is guaranteed for a period of 12 months from the date of delivery. This guarantee covers all materials and manufacturing defects. Our liability is confined to repair, or should we deem it necessary, replacing or crediting the goods.
The following are not covered by the guarantee :

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

In no case any consequences are covered by the guarantee which are connected either directly or indirectly to the instrument or its use.

Notice : If returning the instrument under guarantee please use the original packaging.

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

D-36166 Haunetal, 24.04.2006

I B R Messtechnik GmbH & Co. KG

A. Schneider
Quality Assurance Manager