Sample Registration Unit

● Bruker Sample Registration Unit

User Manual

Version 002

Innovation with Integrity

NMR

This manual was written by

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For further technical assistance on the Sample Registration Unit unit, please do not hesitate to contact your nearest BRUKER dealer or contact us directly at:

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Table of Contents

1 About

1.1 This Manual

This manual is intended to be a reference guide for operators and service technicians. It provides detailed information about the user level maintenance and service and overall use of the Bruker device.

The figures shown in this manual are designed to be general and informative and may not represent the specific Bruker model, component or software/firmware version you are working with. Options and accessories may or may not be illustrated in each figure.

Carefully read all relevant chapters before working on the device!

This manual describes parts and procedures relevant to the device version it is delivered with. For older hardware, please refer to the manual supplied at the time.

1.2 Policy Statement

It is the policy of Bruker to improve products as new techniques and components become available. Bruker reserves the right to change specifications at any time.

Every effort has been made to avoid errors in text and figure presentation in this publication. In order to produce useful and appropriate documentation, we welcome your comments on this publication. Support engineers are advised to regularly check with Bruker for updated information.

Bruker is committed to providing customers with inventive, high quality products and services that are environmentally sound.

1.3 Symbols and Conventions

Safety instructions in this manual are marked with symbols. The safety instructions are introduced using indicative words which express the extent of the hazard.

In order to avoid accidents, personal injury or damage to property, always observe safety instructions and proceed with care.

> ⚠ **DANGER**
>
> This combination of symbol and signal word indicates an immediately hazardous situation which could result in death or serious injury unless avoided.

About

⚠️ **WARNING**

This combination of symbol and signal word indicates a potentially hazardous situation which could result in death or serious injury unless avoided.

⚠️ **CAUTION**

This combination of symbol and signal word indicates a possibly hazardous situation which could result in minor or slight injury unless avoided.

NOTICE

This combination of symbol and signal word indicates a possibly hazardous situation which could result in damage to property or the environment unless avoided.

i This symbol highlights useful tips and recommendations as well as information designed to ensure efficient and smooth operation.

2   Introduction

The Sample Registration Unit is used for assembling NMR tubes with spinners, and for registration of sample barcodes in SampleTRACK or another LIMS system, in one easy work step.

Figure 2.1   The Sample Registration Unit

2.1   Concept

The Sample Registration Unit is connected to the USB port of a host computer where SampleTRACK Client, SampleTRACK Easy Dialog, or another LIMS is installed. It reads the sample barcode label and copies the Tube ID, for example, into the manual preparation Tube ID field of SampleTRACK. This eliminates the need to type the information in manually.

The unit can be used to:

- assembly an NMR tube with a spinner,
- adjust up to three different sample depths,
- register the sample.

All of these functions can be performed in a single pass. The unit makes the separate usage of the sample tube adjustment device obsolete.

Figure 2.2   Sample Tube Adjustment Device

2.2   Limitation of Liability

All specifications and instructions in this manual have been compiled taking account of applicable standards and regulations, the current state of technology and the experience and insights Bruker has gained over the years.

The manufacturer accepts no liability for damage due to:

• Failure to observe this manual.

• Improper use.

• Deployment of untrained personnel.

• Unauthorized modifications.

• Technical modifications.

• Use of unauthorized spare parts.

The actual scope of supply may differ from the explanations and depictions in this manual in the case of special designs, take-up of additional ordering options, or as a result of the latest technical modifications.

The undertakings agreed in the supply contract, as well as the manufacturer's Terms and Conditions and Terms of Delivery, and the legal regulations applicable at the time of conclusion of the contract shall apply.

2.3   Before You Begin

This user manual contains information and safety information that are necessary for the safe operation of the device.

Any user maintenance and repairs are to be accomplished using the information in this manual.

Consider all safety references!

Information for ordering spare parts is available in the spare parts section or from the Bruker Service Center (see "Contact" on page 63).

2.4 Minimum Qualifications for Operating Personnel

Type of Task	Personnel	Training and Experience
Transportation	No special requirements.	No special requirements.
Installation	Appropriately certified and experienced personnel, familiar with use of computers and automation in general	Technically skilled, with a good knowledge of the application field.
Routine Use		Laboratory technicians or equivalent. Training is usually done in-house. Familiar with Microsoft Windows® environment.
Daily Maintenance		
Setup and optimization of program		Experienced laboratory technician. High degree of knowledge of the relevant application field.
Preventive Maintenance		Technically skilled with a basic understanding of the application.
Servicing	Bruker certified personnel only.	Background and experience in electronics/mechanics with computer knowledge.

Table 2.1   Overview Installation and Operation Requirements for Personnel

2.5 The Bruker Service

Our customer service division is available to provide technical information. See "Contact" on page 63 for contact details.

In addition, our employees are always interested in acquiring new information and experience gained from practical application; such information and experience may help improve our products.

2.6 Transport to Manufacturer

When the device must be returned to the manufacturer for a major repair, use the original packaging for transportation.

- See "Packaging" on page 22.

Include a good description of the problem.

Introduction

3 Safety

This section provides an overview of all the main safety aspects involved in ensuring optimal personnel protection and safe and smooth operation.

Non-compliance with the action guidelines and safety instructions contained in this manual may result in serious hazards.

3.1 Intended Use

The device has been designed and constructed solely for the intended use described here.

The Bruker Sample Registration Unit must only be connected to an USB port of a host computer and be used for assembling, identifying and registering NMR samples and transferring the registration information to a laboratory management system.

Intended use also includes compliance with all specifications in this manual.

Any use which exceeds or differs from the intended use shall be considered improper use.

No claims of any kind for damage will be entertained if such claims result from improper use.

3.2 Owner's Responsibility

Owner

The term 'owner' refers to the person who himself operates the device for trade or commercial purposes, or who surrenders the device to a third party for use/application, and who bears the legal product liability for protecting the user, the personnel or third parties during the operation.

Owner's Obligations

The device is used in the industrial sector, universities and research laboratories. The owner of the device must therefore comply with statutory occupational safety requirements.

In addition to the safety instructions in this manual, the safety, accident prevention and environmental protection regulations governing the operating area of the device must be observed.

In this regard, the following requirements should be particularly observed:

- The owner must obtain information about the applicable occupational safety regulations, and - in the context of a risk assessment - must determine any additional dan-

gers resulting from the specific working conditions at the usage location of the device. The owner must then implement this information in a set of operating instructions governing operation of the device.

- During the complete operating time of the device, the owner must assess whether the operating instructions issued comply with the current status of regulations, and must update the operating instructions if necessary.

- The owner must clearly lay down and specify responsibilities with respect to installation, operation, troubleshooting, maintenance and cleaning.

- The owner must ensure that all personnel dealing with the device have read and understood this manual. In addition, the owner must provide personnel with training and hazards information at regular intervals.

- The owner must provide the personnel with the necessary protective equipment.

- The owner must warrant that the device is operated by trained and authorised personnel as well as all other work, as transportation, mounting, start-up, the installation, maintenance, cleaning, service, repair and shutdown, that is carried out on the device.

- All personnel who work with, or in the close proximity of the device, need to be informed of all safety issues and emergency procedures as outlined in this user manual.

- The owner must document the information about all safety issues and emergency procedures in a laboratory SOP (Standard Operating Procedure). Routine briefings and briefings for new personnel must take place.

- The owner must ensure that new personnel must be supervised by experienced personnel. It is highly recommended to implement a company training program for new personnel on all aspects of product safety and operation.

- The owner must ensure that personnel is regularly informed of the potential hazards within the laboratory. This is all personnel that work in the area, but in particular laboratory personnel and external personnel such as cleaning and service personnel.

- The owner is responsible for taking measures to avoid inherent risks in the handling of dangerous substances, preventing industrial disease, and providing medical first aid in emergencies.

- The owner is responsible for providing facilities according to the local regulations for the prevention of industrial accidents and generally accepted safety regulations according to the rules of occupational medicine.

- All substances needed for operating and cleaning the device samples, solvents, cleaning agents, gases, etc. have to be handled with care and disposed of appropriately. All hints and warnings on storage containers must be read and adhered to.

- The owner must ensure that the work area is sufficiently illuminated to avoid reading errors and faulty operation.

Furthermore, the owner is responsible for ensuring that the device is always in a technically faultless condition. Therefore, the following applies:

- The owner must ensure that the maintenance intervals described in this manual are observed.

- The owner must ensure that all safety devices are regularly checked to ensure full functionality and completeness.

3.3 Personnel Requirements

3.3.1 Qualifications

i Note: Only trained Bruker personnel are allowed to retrofit and repair the device! For adjusting and dismantling see the chapter "Maintenance and Cleaning" on page 35.

This manual specifies the personnel qualifications required for the different areas of work, listed below:

Laboratory Personnel

Laboratory personnel are health care professionals, technicians, and assistants staffing a research or health care facility where specimens are grown, tested, or evaluated and the results of such measures are recorded. Laboratory personnel are able to carry out assigned work and to recognize and prevent possible dangers self-reliant due to their professional training, knowledge and experience as well as profound knowledge of applicable regulations.

The workforce must only consist of persons who can be expected to carry out their work reliably. Persons with impaired reactions due to, for example, the consumption of drugs, alcohol, or medication are prohibited from carrying out work on the device.

When selecting personnel, the age-related and occupation-related regulations governing the usage location must be observed.

3.3.2 Unauthorized Persons

<table>
<tr><td colspan="2" style="background:orange">⚠ **WARNING**</td></tr>
<tr><td rowspan="2">⚠</td><td>**Risk to life for unauthorized personnel due to hazards in the danger and working zone!**</td></tr>
<tr><td>Unauthorized personnel who do not meet the requirements described in this manual will not be familiar with the dangers in the working zone. Therefore, unauthorized persons face the risk of serious injury or death.

▶ Unauthorized persons must be kept away from the danger and working zone.

▶ If in doubt, address the persons in question and ask them to leave the danger and working zone.

▶ Cease work while unauthorized persons are in the danger and working zone.</td></tr>
</table>

3.3.3 Instruction

Personnel must receive regular instruction from the owner. The instruction must be documented to facilitate improved verification.

Date	Name	Type of Instruction	Instruction Provided By	Signature

3.4 Personal Protective Equipment

Personal protective equipment is used to protect the personnel from dangers which could affect their safety or health while working.

The personnel must wear personal protective equipment while carrying out the different operations at and with the device.

This equipment will be defined by the head of laboratory. Always comply with the instructions governing personal protective equipment posted in the work area.

4 Technical Data

4.1 Dimensions

Data	Value	Unit
Weight with scanner and cables	3	Kg
Length	270	mm
Width	180	mm
Height	260	mm

Table 4.1   Dimensions

4.2 Connection Values

Electrical

The Sample Registration Unit is powered by the USB cable of the PC.

Data	Value	Unit
Voltage input	5	V DC
Power consumption (scanning)	360	mA
Power consumption (standby)	128	mA
Power consumption (inrush)	500	mA

Table 4.2   Electrical Connection Values

ESD Tolerance:	15 kV to any external surface
Agency compliance:	FCC Class A, CE EMC Class A, CE Low Voltage Directive, IEC60825-1 LED Safety: Class 1, UL, cUL listed, TÜV Certified to EN60950, C-TICK, NOM

Technical Data

4.3 Operating Conditions

Environment

Data	Value	Unit
Temperature range (operating)	0 to 50	°C
Temperature range (storage)	-40 to +60	°C
Relative humidity at 31 °C, maximum	< 95	%

Table 4.3   Operating Environment

4.4 Output Format

The barcode reader is programmed to send a prefix before the barcode text and at the end a suffix. The complete string consists of three parts:

• **Prefix** - A control character **Alt T**.

• **Barcode text** - The tube ID text on the barcode collar, see the figure below.

• **Suffix** - A control character **Carriage Return**.

Barcode Text
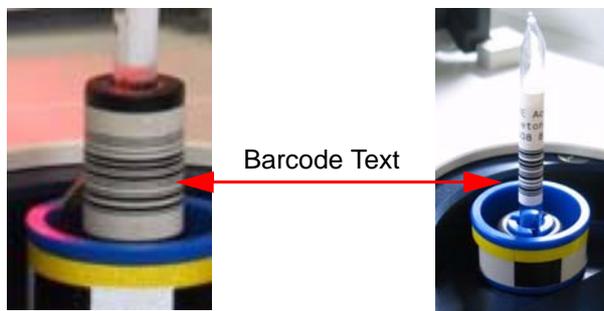
Figure 4.1   Barcode Collar and Labeled Tube

4.4.1 Valid Codes (Factory Settings)

Code	Length	Comment
2/5 Interleaved	**4, 6, 8, 10, 12, 14, 16 digits** Odd number of digits will be converted to even number of digits adding a null at the beginning.	No checksum
Code 128	**4, 6, 8, 10, 12, 14, 16 digits** Odd number of digits will be converted to even number of digits adding a null at the beginning.	1 digit checksum (specified)
2D Data Matrix		Size: 8x18 dots Minimum dot size: 0.01´´ (0.254 mm)

Table 4.4   Valid Barcode Types and Lengths

4.5 Rating Plate

The rating plate is located at the rear side and includes the following information:

- Model, Part Number

- Input voltage

- Power consumption

- CE approval

- Manufacturer

- S/N: Serial Number

- Engineering Change Level
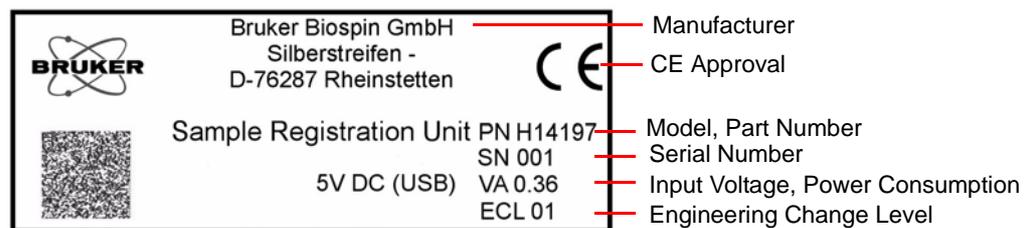
Figure 4.2   Rating Plate

Z31954_00_02

5 Transport, Packaging and Storage

5.1 Symbols on the Packaging

The following symbols are affixed to the packaging material. Always observe the symbols during transport and handling.

Top

The arrow tips on the sign mark the top of the package. They must always point upwards; otherwise the content may be damaged.

Fragile

Marks packages with fragile or sensitive contents.

Handle the package with care; do not allow the package to fall and do not allow it to be impacted.

Protect Against Moisture

Protect packages against moisture and keep dry.

Permitted Stacking Load

Indicates packages which are partially stackable.

Do not exceed the maximum load-bearing capacity specified on the symbol in order to avoid damaging or destroying the content.

5.2 Inspection at Delivery

Upon receipt, immediately inspect the delivery for completeness and transport damage. Proceed as follows in the event of externally apparent transport damage:

- Do not accept the delivery, or only accept it subject to reservation.

- Note the extent of the damage on the transport documentation or the shipper's delivery note.

- Initiate complaint procedures.

i Issue a complaint in respect to each defect immediately following detection. Damage compensation claims can only be asserted within the applicable complaint deadlines.

5.3 Packaging

The individual packages are packaged in accordance with anticipated transport conditions. Only environmentally friendly materials have been used in the packaging.

The packaging is intended to protect the individual components from transport damage, corrosion and other damage prior to assembly. Therefore do not destroy the packaging and only remove it shortly before assembly.

Handling Packaging Materials

Dispose of packaging material in accordance with the relevant applicable legal requirements and local regulations.

5.4 Storage

Storage of the Packages

Store the packages under the following conditions:

- Do not store outdoors.

- Store in dry and dust-free conditions.

- Do not expose to aggressive media.

- Protect against direct sunlight.

- Avoid mechanical shocks.

- Storage temperature: -40 to +60 °C.

- Relative humidity: max. 95%.

If stored for longer than 3 months, regularly check the general condition of all parts and the packaging. If necessary, top-up or replace preservatives.

6 Installation and Quick Start

6.1 General

The following parts are required to install the Bruker Sample Registration Unit:

- Sample Registration Unit, P/N H14197, including

  - Barcode reader cable: RJ50, 10P10C "WESTERN", 1 meter, P/N 88465

  - USB cable: USB A to USB B, 4.5 meter, P/N 85338

  - Barcode reader: P/N H14184

- A host computer (not included), with one of the following Microsoft® Windows systems installed:

  - Windows XP®

  - Windows Vista®

  - Windows 2000®

  - Windows 7®

1	Sample Registration Unit	**3**	Barcode Reader
2	USB Cable	**4**	Barcode Reader Cable

Figure 6.1   Sample Registration Unit Components

i   Note: Only use the scanner provided with the sample registration unit. The scanner is configured to work correctly with the unit. Any other barcode reader may not work or may damage the system or the barcode reader!

6.2   Installation

NOTICE
Material damage hazard due to incorrect cable usage.
Your PC and/or the barcode reader can be damaged!
▶   **Do NOT pull out the barcode reader cable** when the USB cable is connected to your PC! This can cause a system crash.
▶   Do not use USB extension cables. If you use longer cables than the one delivered, your barcode reader will not work!
▶   Disconnect the USB cable from PC before you change the barcode reader.
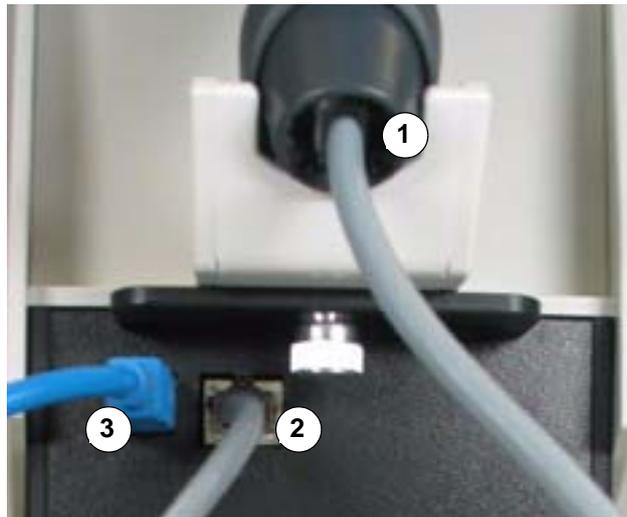
1	Barcode Reader Cable (Barcode Reader)	**3**	USB Cable (to PC)
2	Barcode Reader Cable (Scanner)		

Figure 6.2   Sample Registration Unit Cable Connections - Rear View

The following steps must be followed to correctly install the sample registration unit:

1. Plug the barcode reader cable into the barcode reader, Figure 6.2 (1).

2. Plug the other end of the barcode reader cable into the female connector labeled with "SCANNER" at the rear of the unit, Figure 6.2 (2).

3. Plug the small (USB B) end of the USB cable into the female connector labeled with "USB" at the rear of the unit, Figure 6.2 (3).

4. Connect the larger (USB A) end of the USB cable to an USB port on your PC.

➥ The internal illumination Figure 6.3 and the start button LED Figure 6.3 will light see Figure 6.3:
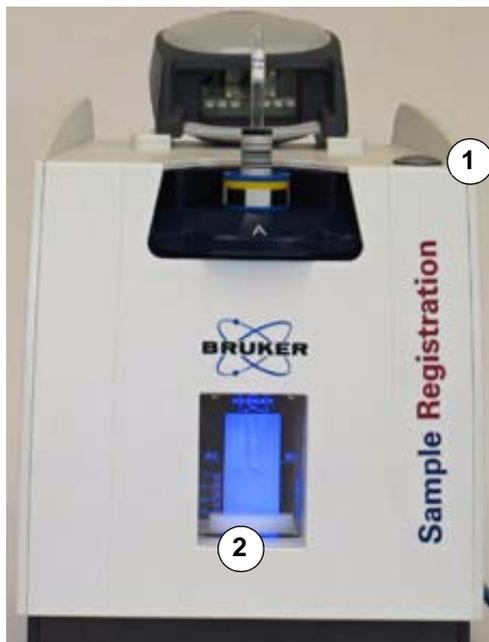
1. Start Button LED
2. Internal Illumination

Figure 6.3   Sample Registration Unit Ready for Use - Front View

➥ After a few seconds the barcode reader will provide an audible signal indicating the unit is operational.

ℹ Note: Microsoft® Windows® may take a few seconds to recognize the new device when connecting the unit for the first time. If the unit does not work, refer to "Windows USB Recognition" on page 58.

The scanner is factory preset for use with a US English keyboard. When using a non-US English keyboard refer to the programming section "Keyboard Country" on page 50.

3. For a quick test open Microsoft Notepad and scan the barcode in the figure below.

1ZAØ

➥ After scanning the barcode a barcode string will appear in the editor window, respond as follows:

Text String	Probable Setting	Response
1ZA0	English (USA)	This is the correct response, the scanner is ready for use.
1YA0	German (Germany)	Go to "Keyboard Country" on page 50 and scan „Germany" and „Save".
&WQà	French (France)	Go to "Keyboard Country" on page 50 and scan „France" and „Save".

If any other string is displayed, refer to "Keyboard Country" on page 50 and "Sample Registration Unit Problems" on page 57. For a complete test and the display of the control characters see "Barcode Reader Test" on page 62.

7 Operation

7.1 Safety

WARNING
Danger of injury from improper operation!
Improper operation can result in serious injury and significant damage to property.
▶ Carry out all operating steps in accordance with the specifications and instructions in this manual.
▶ Before starting work, ensure that
- all covers and safety devices are installed and functioning properly.
- no persons are in the danger zone.

7.2 General Operating Guidelines

The sample registration unit allows assembly of Bruker standard NMR samples without the need of the "Sample Tube Adjustment Device".

7.3 Specific Operating Guidelines

i Note: Remove any sample from the rotary disk before you change the position to avoid any leaking of hazardous substances. For cleaning see "Maintenance and Cleaning" on page 35.

Select the desired position of the rotary disk by rotating it until it locks in place. You will hear an audible click.

Figure 7.1   Selecting the Desired Position of the Rotary Disk

i Note: the sample registration unit provides 4 positions A, B, C, and D. Position A, B, and C have adjustable ranges for the sample depth. The position D is currently not used.

7.4 Sample Depth Factory Settings and Adjustable Ranges

Sample depth is defined as the distance between the magnetic center (MC) in the probe and the bottom of the sample tube.

The MC should be in the middle of the filling level of the sample tube.
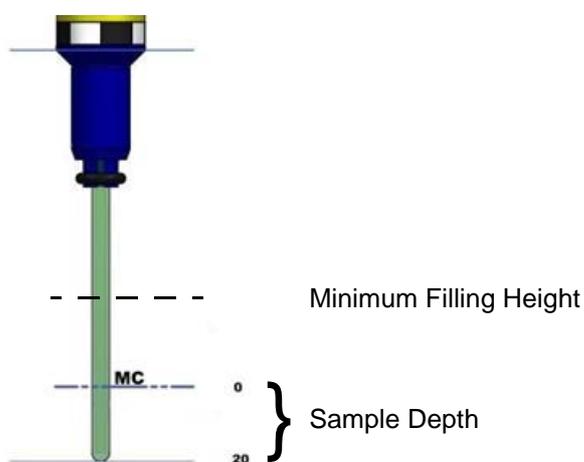
Figure 7.2   Example: Sample Tube with Sample Depth 20 mm

The positions A, B, and C can have different sample depths between 5 and 25 mm. Position D is not adjustable.

Table 7.1 below lists factory settings and the adjustable ranges for the sample depth:

Position	Tube Ø	Function	Sample Depth Adjustable Range	Sample Depth Factory Settings
A	5 - 15mm	Variable adjustment of the sample depth 20 mm. Barcode reading.	5 - 25 mm	20 mm Typical depth for 5 mm probes.
B	5 - 15 mm	Variable adjustment of the sample depth. Barcode reading.	5 - 25 mm	12 mm Typical depth for 2.5 mm probes.
C	5 - 15 mm	Variable adjustment of sample depth. Barcode reading.	5 - 25 mm	5 mm Set to minimum depth. Adjust to your needs.
D	5 mm	Unused.		

Table 7.1   Sample Depth Factory Settings and Adjustment Ranges

7.4.1   Sample Depth Scale

The scale of the sample registration unit is similar to the scale of the sample tube adjustment device. In the figure below, the sample depth (immersion depth) is adjusted to 20 mm.
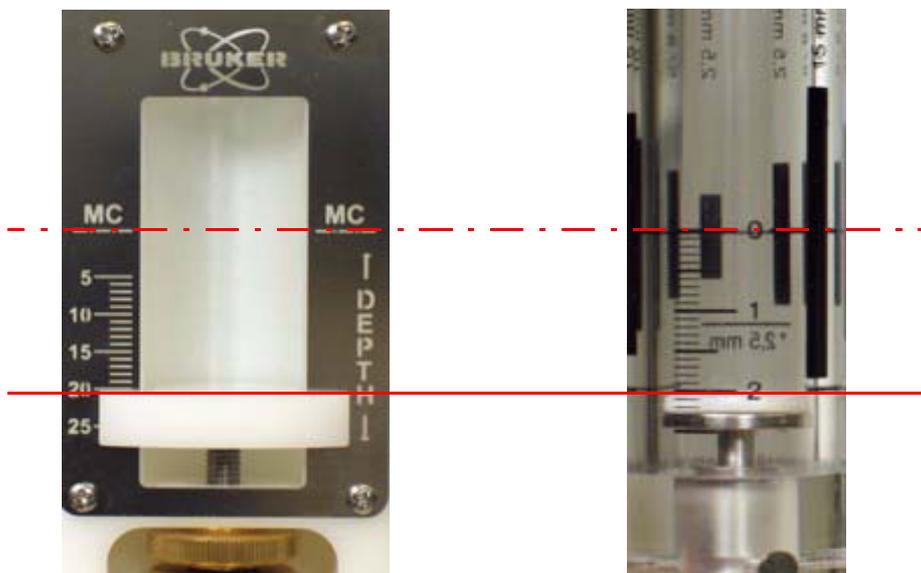
Figure 7.3   Sample Registration Unit (left) and Sample Tube Adjustment Device (right) Scales

7.4.2   Sample Depth Adjustment

The mechanics for the sample depth adjustment are not accessible from outside. Before adjusting the sample depth the cover must be removed.

Figure 7.4   Loosening the Knurled Screws

1. Remove the cover as described in "Opening the Unit" on page 35.

2. Loosen the knurled screws by holding the upper screw tightly and turning the lower screw to the left.
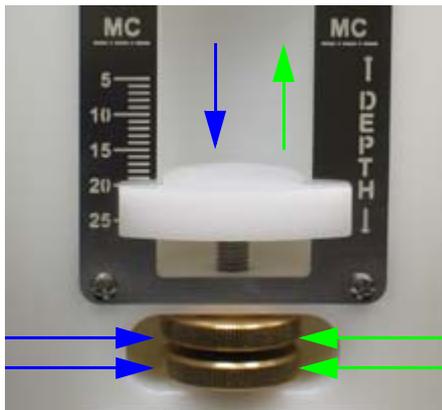
Figure 7.5   Adjusting the Sample Depth

3. Adjust the desired sample depth by turning both screws in the same direction:

➡ Turning both screws left will raise the slide.

➡ Turning both screws right lowers the slide.

4. Tighten the knurled screws by holding the upper screw tightly and turning the **lower screw** to the right.

5. Insert and adjust a sample tube and verify the depth.

7.5   Assembling NMR Samples

This section describes how to assemble NMR samples in the rotary disk positions A, B, or C. Position D is not explained here, since it is reserved for later use:

7.5.1   Assembling Standard Samples: Position A, B, or C
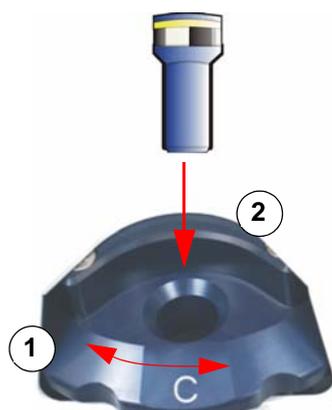
1. Rotate the rotary disk to the correct position.

2. Insert the spinner into the selected position A, B, or C.

Figure 7.6   Inserting the Spinner
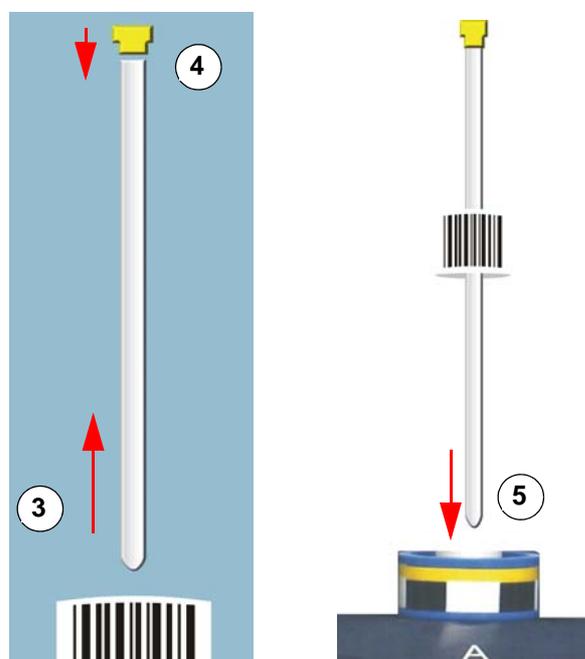
3. Place the barcode collar over the sample tube.

4. Place the cap on the sample tube.

5. Carefully insert the tube into the spinner as far as it will go.

Figure 7.7   Assembling NMR Samples

⚠️**DANGER**

Danger of injury from glass tube breakage!

Broken glass tubes may cause minor injuries or material damage, but may also result in a life threatening situation if hazardous substances are used.

▶ If a glass tube breaks, refer to the corresponding precautions and cleaning/disinfection instructions based on the materials that are used.

▶ Wear protective equipment.

▶ Perform all tasks with glass tubes carefully.

▶ Cover the sample tube with a cap to prevent injuries from rough edges.

▶ Strictly observe the correct sample adjustment.

▶ Never turn the device upside down or on it's side.

The **laboratory supervisor** must:

▶ Establish and enforce standard sample handling and cleaning procedures.

▶ Establish and enforce the use of protective clothing and equipment.

▶ Train laboratory personnel.

▶ Prepare an emergency plan.

NOTICE

Material damage hazard from material contact with NMR solvents!

Material damage may result when the device comes in contact with NMR solvents.

▶ Follow instructions provided in the manual for correct handling of solvents.

▶ If surface damage should occur, contact Bruker for repair of damaged parts.

▶ Cover the sample tube with a cap to prevent evaporation.

7.5.2 MATCH Samples

The sample registration unit is **not suitable** for adjusting the sample height of MATCH samples. For assembling MATCH samples see the manual MATCH™ Multiple Adjustable Tube Clamp Holder (UM), P/N H9846.

7.6 Sample Registration with SampleTrack

1. Select the insert position A, B, or C on the rotary disk

2. Assemble and insert the sample tube as described in "Assembling NMR Samples" on page 31.

3. Open the SampleTrack Easy Dialog or the SampleTrack Manual Preparation Window.

4. Press the START button.

➡ The Tube ID will be copied into the Tube ID field of the SampleTrack program.

Figure 7.8   Sample Order Information Window (EasyDialog)

7.7 Sample Registration with SampleTrack Excel Import

i Note: For working without the SampleTrack Easy Dialog the standard prefix **ALT T** must be removed, see "Clear All Prefixes" on page 48.

1. Select the insert position A, B, or C on the rotary disk.

2. Assemble and insert the sample tube as described in "Assembling NMR Samples" on page 31.

3. Open the appropriate Microsoft® Excel® sheet.

4. Press the START button.

➡ The Sample ID or other information will be copied into the appropriate field of the SampleTrack program.

Figure 7.9   Sample Order Information Excel Import

7.7.1 Hand-held Barcode Scanner

The barcode label may also be read using a hand-held barcode reader:

Figure 7.10 Hand-held Barcode Scanner

1. Hold the scanner and the sample in your hand and squeeze the switch on the handle of the scanner.

8 Maintenance and Cleaning

8.1 Safety

<table>
<tr><td colspan="2">⚠ **DANGER**</td></tr>
<tr><td rowspan="2">⚠</td><td>

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▶ Perform all tasks with glass tubes carefully.

▶ Cover the sample tube with a cap to prevent injuries from rough edges.

▶ Strictly observe the correct sample adjustment.

▶ Never turn the device upside down or on it's side.

The **laboratory supervisor** must:

▶ Establish and enforce standard sample handling and cleaning procedures.

▶ Establish and enforce the use of protective clothing and equipment.

▶ Train laboratory personnel.

▶ Prepare an emergency plan.

</td></tr>
</table>

8.2 Opening the Unit
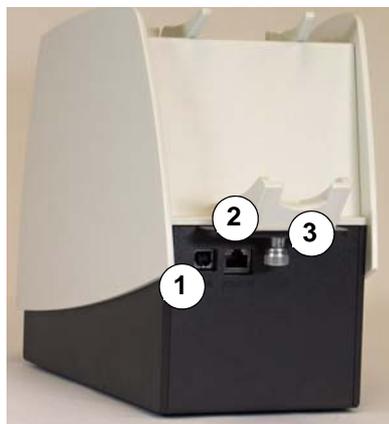
1. Disconnect the USB cable.

2. Disconnect the scanner cable.

3. Open the knurled screw at the rear side of the unit.

Figure 8.1   Screw at the Rear Side of the Unit

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i Note: When a sample breaks, only tilt the cover, do NOT tilt the whole unit!

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4. Tilt the cover forward.

5. Carefully lift the cover out of the base.

6. Remove the cover.
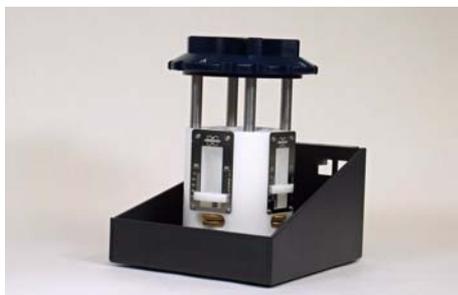
7. The base with removed cover.

8.3   Closing the Unit

1. Put the cover over the base.
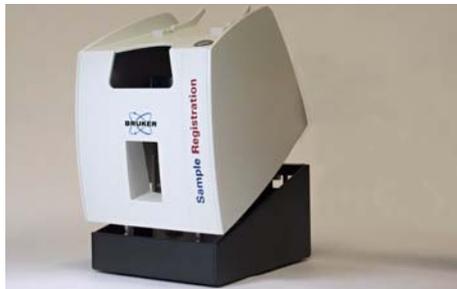
2. Insert the cover forks into the slots in front of the base.
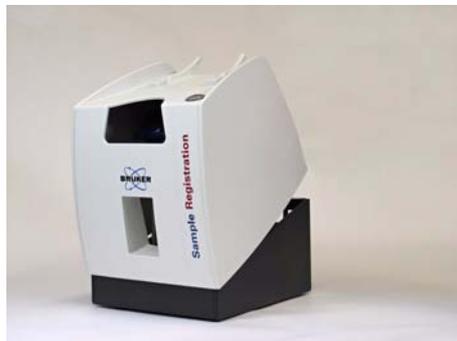
3. Lower the cover.

4. Close the screw at the rear side of the unit.

8.4 Cleaning the Unit After a Sample Fracture

NOTICE
Material damage hazard from material contact with NMR solvents!
Material damage may result when the device comes in contact with NMR solvents.
▶ Follow instructions provided in the manual for correct handling of solvents.
▶ If surface damage should occur, contact Bruker for repair of damaged parts.
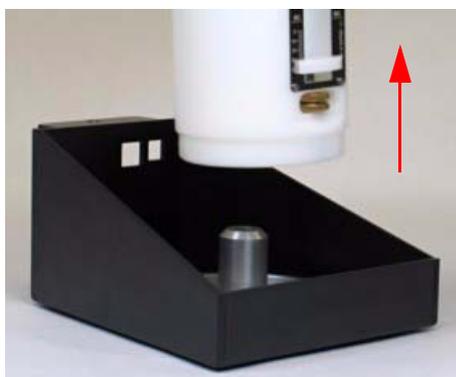
1. Remove the cables and cover as described in "Opening the Unit" on page 35.

2. Lift the cylinder and remove it. **Do not tilt the base!**

➡ The liquid is caught in a drip tray.

3. Remove the four screws at the bottom of the unit. **Do not tilt the base when removing the screws.**

4. Remove the drip tray.

5. Clean the contaminated parts using a sample wash system.

6. When you rebuild the unit do not forget to replace the O-Ring seal.

8.5 Turning the Internal illumination On and Off
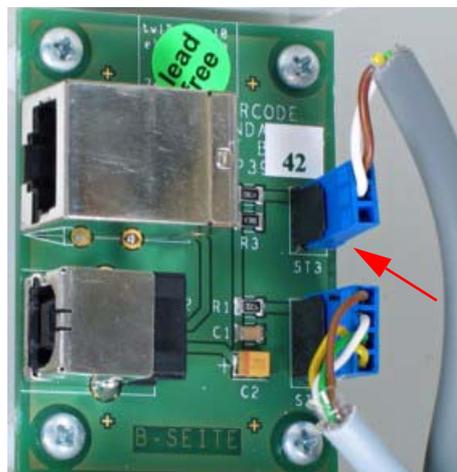
1. Remove the cables and cover as described in "Opening the Unit" on page 35.

2. Unplug the ST3 connector to switch the internal illumination off.

3. Insert the ST3 connector to switch the internal illumination on.

9 Programming Barcodes

9.1 Factory Settings

The barcode scanner is pre-configured at the factory with default settings. When you need to change the configuration of the barcode reader, you must scan the indicated barcodes provided in this chapter. If more then one barcode needs to be scanned, go in the order from **left to right** and **top to bottom**.

i Attention: Do not scan any of the barcodes in this chapter to test the unit. Scanning the barcodes in the chapter will change the setting of the barcode reader!

9.1.1 USB PC Keyboard Emulation

To operate the sample registration unit, the **USB PC Keyboard Emulation** code must first be scanned to transmit data via the USB connection to the PC.

Figure 9.1   USB PC Keyboard Emulation

9.1.2   Add Prefix Alt-T

Add Prefix

Define Barcode type (all=99)

9

9

Press Alt (03)

0

3

T (54)

5

4

Release Alt (04)

0

4

Save

Save

Figure 9.2   Barcodes/Add Prefix Alt-T

9.1.3 Add Suffix [CR]

Add CR Suffix
All Symbologies

Figure 9.3   Barcodes/Add Suffix CR

9.1.4 Code Activation

To help avoid errors only the standard barcode types are activated.

Valid barcode types and barcode length

Code	Length	Comment
2/5 Interleaved	**4, 6, 8, 10, 12, 14, 16 digits** Odd number of digits will be converted to even number of digits adding a null at the beginning.	No checksum
Code 128	**4, 6, 8, 10, 12, 14, 16 digits** Odd number of digits will be converted to even number of digits adding a null at the beginning.	1 digit checksum (specified)
2D Data Matrix		Size: 8x18 dots minimum dot size: 0.01´´ (0.254mm)

Table 9.1   Code Activation

9.1.5 All Symbologies Off

To activate only individual codes:

1. Deactivate all symbols with **All Symbologies Off** and **Save**.

2. Activate the individual code and **Save**.

Figure 9.4   All Symbologies Off

The next sections cover the individual barcode settings of Code 2/5 Interleaved, Code 128 and Data Matrix. Scan the codes from left to right and then top to bottom.

9.1.6 Code 2/5 Interleaved Settings

· On

Code 2/5: No Check Digit

· No Check Digit

Code 2/5: Code Length 4-16 Digits

Minimum Message Length

0

4

Save

Maximum Message Length

1

6

Save

Figure 9.5   Barcodes/Code 2 of 5 Interleaved

9.1.7   Code 128 Settings

On

Save

Code128: Code Length 4-16 Digits

Minimum Message Length

0

4

Save

Maximum Message Length

1

6

Save

Figure 9.6   Code 128

9.1.8   Data Matrix Settings

* On

Data Matrix Code Length 4-16 Digits

Minimum Message Length

0

4

Save

Maximum Message Length

1

6

Save

Figure 9.7   Data Matrix

9.2 More useful Programming Barcodes

9.2.1 Clear All Prefixes

Figure 9.8 Clear all Prefixes

This code must be scanned, when the Sample Registration Unit is used without the SampleTrack Easy Dialog.

9.2.2 Save

Figure 9.9 Save

Use code to save the data.

9.2.3 Discarding Changes

Figure 9.10 Discarding Changes

Use this code to discard changes without saving and restart your programming procedure.

9.2.4 All Symbologies On

Enables all barcode types.

Figure 9.11 All Symbologies On

9.2.5 Beeper On/off

The default is **On**.

Figure 9.12 Beeper On and Off

9.2.6 Beeper Volume

The default is **Medium**.

9.2.7 Keyboard Country

The scanner is factory preset with the default **Keyboard USA**. If your PC keyboard is set to a German, French or UK English keyboard you can change the scanner language by scanning the country barcode, followed by the „Save" barcode. If your PC keyboard is a different language than one listed below, contact Bruker Service to obtain the appropriate barcode.

Default: USA

* United States	Save
Germany/Austria	Save
U.K.	Save
France	Save

Figure 9.13 Keyboard Country

9.2.8 Resetting the Standard Product Defaults

---

i Note: After a factory reset the scanner will not work correctly with the sample registration unit. The "USB PC Keyboard Emulation" code must be scanned to transmit data via the USB connection, see "USB PC Keyboard Emulation" on page 41. All other settings necessary for working with the sample registration unit must be programmed.

Standard Product Default Settings

To restore the standard product default settings, scan the Standard Product Default Settings barcode.

Figure 9.14 Resetting the standard product defaults

10 Test Barcodes

This chapter contains barcodes that can be used to test the barcode reader. To do so, hold the hand-held scanner and the sample in your hand and squeeze the switch on the handle of the scanner.

10.1 Recognized Test Codes

2/5 Interleaved Code

Interleaved 2 of 5, 4 digits

2149

Interleaved 2 of 5, 5 digits (will be converted to 6 digits with a null at the beginning)

31452

Interleaved 2 of 5, 6 digits

514787

Interleaved 2 of 5, 7 digits (will be converted to 8 digits with a null at the beginning)

4874569

Figure 10.1 Test Codes 2 of 5 Interleaved

Interleaved 2 of 5, 10 digits

Interleaved 2 of 5

1234567890

Code 128

Code128, 8 digits

Code 128

Code 128

2D Data Matrix Code

2D Data Matrix Code quadratic, 10 digits

0000000000

Figure 10.2 Test Codes Interleaved 2 of 5, Code 128 and 2D Data Matrix

2D Data Matrix Code quadratic, 11 digits

Data Matrix

Test Symbol

2D Data Matrix Code rectangular, 10 digits

1234567890

2D Data Matrix Code rectangular, 6 Digits

EMPTZR

Figure 10.3 Test Codes 2D Data Matrix

10.2 Codes Not Recognized

The following barcodes are not recognized by the barcode reader:

EAN-13

9 780330 290951

UPC-A

0 123456 7890

Codabar

A13579B

Code 39

BC321

Matrix 2 of 5

6543210

Code 93

123456-9$

Straight 2 of 5 Industrial

123456

Figure 10.4 Codes Not Recognized

11 Troubleshooting

The barcode reader automatically performs self-tests whenever you turn it on. If your barcode reader is not functioning properly, review the following troubleshooting guide and try to isolate the problem.

11.1 Sample Registration Unit Problems

Is the power on?

Is the barcode scanner's red and green illumination line **on** while pressing the start switch?

If the red and green illumination line is not illuminated, check if:

1. All cables are connected properly, see "Installation" on page 24**.**

2. The host system power is on.

Are incorrect characters displayed (for example Y instead of Z)?

The scanner may have an incorrect keyboard country settings.

1. Check the section "Keyboard Country" on page 50 to adjust the correct keyboard layout.

Is the barcode scanner having trouble reading the symbols?

If the barcode scanner is not reading symbols well:

1. Check if the symbols are smeared, rough, scratched, or exhibiting voids.

2. Check if the symbols are enabled.

➡ Refer to the section "Keyboard Country" on page 50 to adjust the correct keyboard layout.

Is the barcode displayed but not entered?

When the barcode is displayed on the host device correctly but you still have to press a key to enter it (the Enter/Return key or the Tab key, for example) you will need to program a suffix. Programming a suffix enables the barcode reader to output the barcode data plus the keyword you need (such as "CR" to enter the data into your application. Refer to "Add Suffix [CR]" on page 43**.**

The barcode does not appear in the Manual Preparation Tube ID field of SampleTrack EasyDialog.

You need to program a prefix (Alt-T). Programming a prefix enables the barcode reader to output the barcode data plus the keyword you need (such as "ALT-T" to enter the data into your application. Refer to "Add Prefix Alt-T" on page 42.

The barcode reader does not read the barcode at all.

1. Scan the "USB PC Keyboard Emulation" barcode, see "USB PC Keyboard Emulation" on page 41.

2. Scan the test barcodes in the section "Recognized Test Codes" on page 53.

➥ If the barcode reader reads the sample barcodes, check if the sample barcode is readable.

3. Verify that your barcode symbology is enabled, see "Code Activation" on page 43.

➥ If the barcode reader still can not read the sample barcodes, scan "All Symbologies On" on page 49.

11.2 Windows USB Recognition

Windows 7

If your scanner does not work correctly, check if Microsoft Windows recognizes it:

1. Press **Start** -> **Device Manager** and click **Hardware and Sound**.
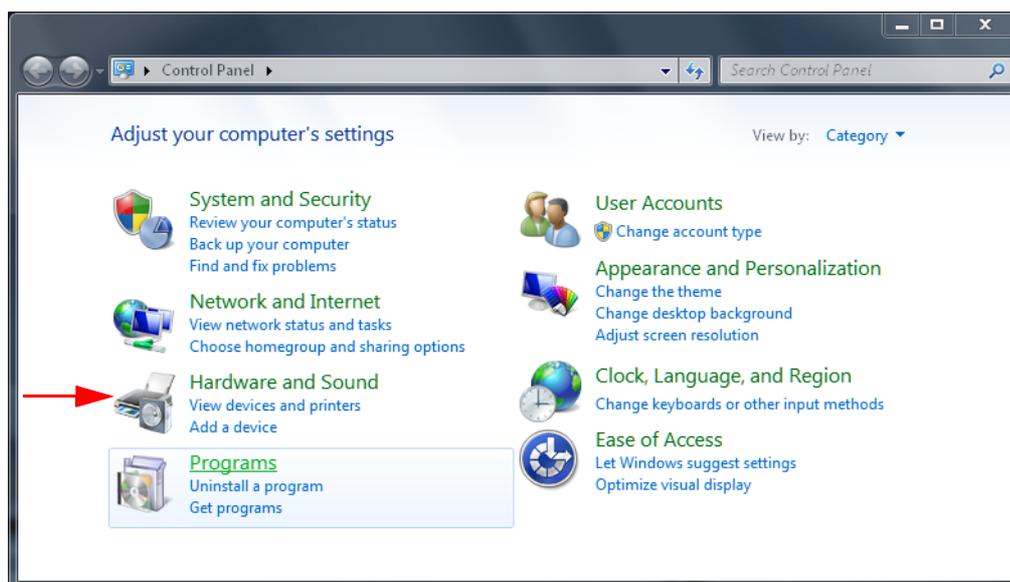
Figure 11.1 Windows 7 Device Manager - Hardware and Sound
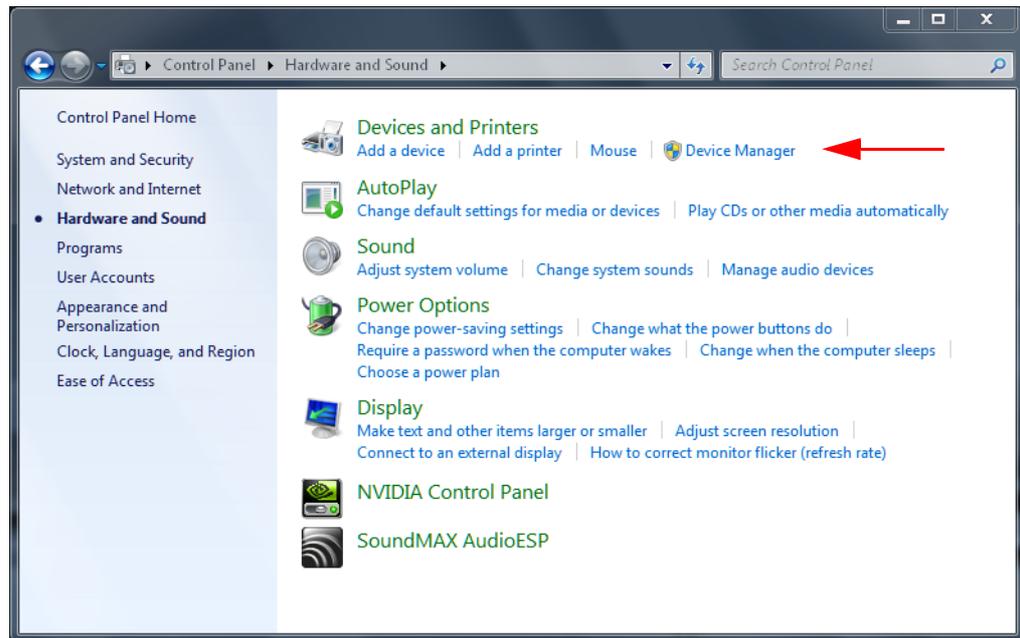
Figure 11.2   Device Manager

2.   Click on **Device Manager**.
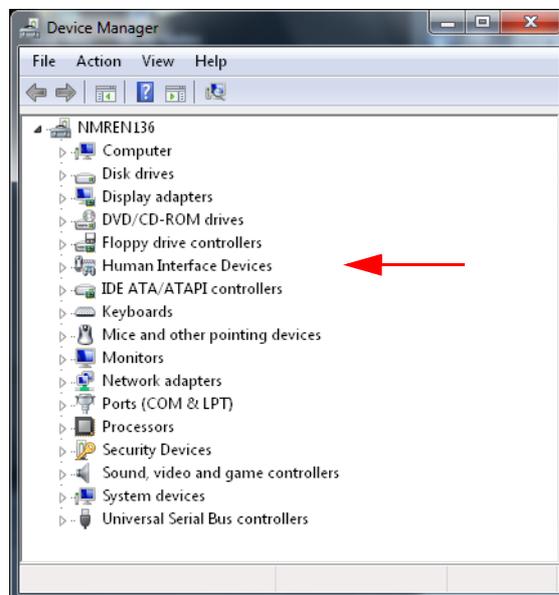
Figure 11.3   Human Interface Devices

3.   Click on **Human Interface Devices**.
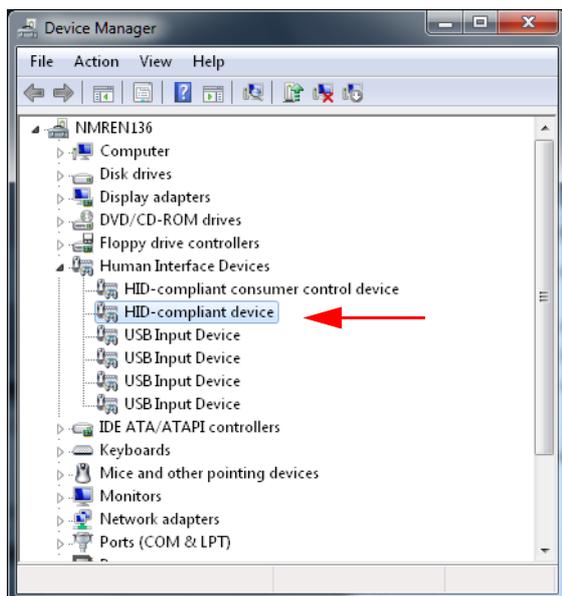
Figure 11.4 HID Compliant Device

4. Click on **HID Compliant Device**.
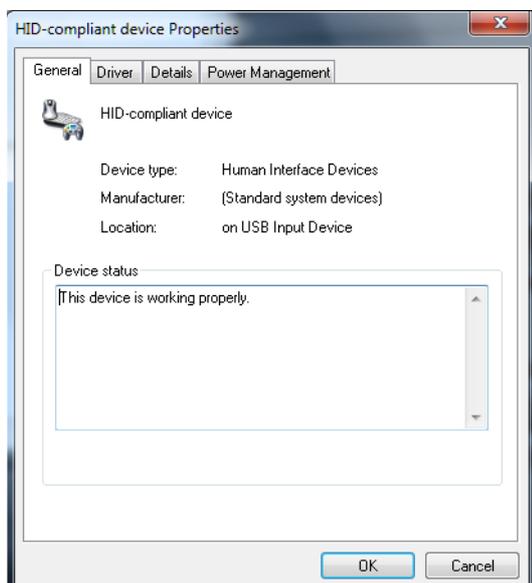
Figure 11.5 HID Compliant Device - Tab General

☞ The device status message „This device is working properly" must appear. If not, refer to the section "Sample Registration Unit Problems" on page 57 or contact Bruker NMR service.

5. Press **OK** to confirm the selection.

Windows XP/ Windows Vista

1. Open the **Control Panel** and the **Device Manager**.
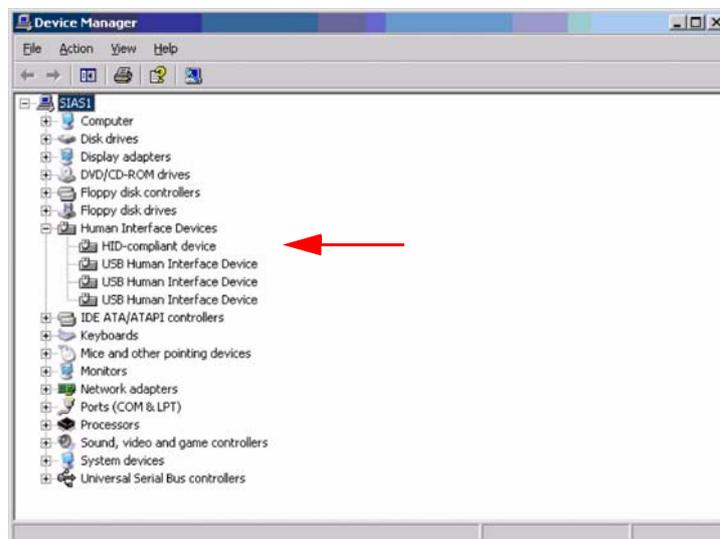
Figure 11.6   Human Interface Devices and HID-compliant Device

2. Click on **Human Interface Devices** and **HID-compliant device**.

Figure 11.7   HID-Compliant Device Properties WINXP

➧ The device status message „This device is working properly" must appear. If not, refer to the section "Sample Registration Unit Problems" on page 57 or contact Bruker NMR service.

3. Press **OK** to confirm the selection.

Windows 2000

1. Press **Start** -> **Settings** -> **Control Panel** -> **Keyboard**

➥ The properties of the keyboard are displayed.

2. Double click on "**Hardware**".

3. Select **HID-Keyboard**.

➥ The device status message „This device is working properly" must appear. If not, refer to the section "Sample Registration Unit Problems" on page 57 or contact Bruker NMR service.

4. Press **OK** to confirm the selection.

11.3   Barcode Reader Test

Before testing the barcode reader be sure that all connections are established as described in "Installation" on page 24.

1. Start Microsoft Word.

➥ Word can interpret and display the control characters sent by the barcode reader.

2. Activate the display of control characters in Word.
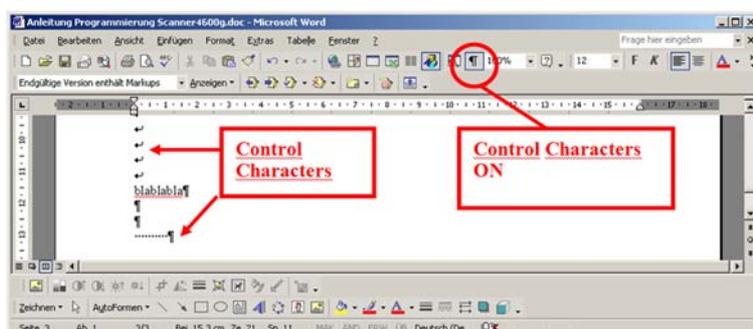
Figure 11.8   Activate Control Characters

3. Scan a barcode manually, e.g. a test barcode from "Recognized Test Codes" on page 53.

➥ The barcode string must appear as clear text in the editor window. If not, refer to "Sample Registration Unit Problems" on page 57.

i Note: The scanner is programmed with the default US English keyboard. If your country keyboard setting differs from the US keyboard, the text will be displayed incorrectly. Refer to "Keyboard Country" on page 50 to change the keyboard setting.

12 Contact

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NMR Hotlines

Contact our NMR service centers.

Bruker BioSpin NMR provide dedicated hotlines and service centers, so that our specialists can respond as quickly as possible to all your service requests, applications questions, software or technical needs.

Please select the NMR service center or hotline you wish to contact from our list available at:

http://www.bruker-biospin.com/hotlines_nmr.html

Contact

Appendix A

A.1   Warning Signs

Warning Signs

A.2 Figures

Figures

A.3 Tables

Tables

A.4 Glossary

ESD
Electrostatic Discharge

LIMS
Laboratory Information Management System

MATCH
Multiple Adjustable Tube Clamp Holder

MC
Magnetic Center

NMR
Nuclear Magnetic Resonance

PC
Personal Computer

Glossary

A.5 Index

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