



Sample Automation

● the minispec mq and mq-one Series

A woman with blonde hair tied back, wearing a white lab coat over a light blue top, stands smiling next to a Bruker minispec mq-one SFC Analyzer. She is holding a pair of glasses in her right hand. The machine is white and blue, with a glass safety enclosure. It has a sample tray with several vials and a robotic arm mechanism. The Bruker logo is visible on the machine.

A new sample automation system dedicated to minispec applications

● Sample Automation for the minispec mq and mq-one Series

This new easy to use, cost-effective system brings sample automation to routine minispec applications, including complex Solid Fat Content (SFC) analysis.

Now, thanks to quick sample exchange times that maximize throughput and increased reliability in minispec measurements, productivity is significantly boosted.

the minispec Sample Automation system is available as a standalone accessory to existing minispec systems from the mq and mq-one Series, or as a packaged system with a new minispec spectrometer.

Key Advantages

1. Single supplier solution: minispec and Sample Automation system both provided by Bruker BioSpin
2. SFC Sample Automation system automatically and accurately controls tempering times delivering results in strictest accordance to SFC International Standard Methods.
3. Automation for all other major Time Domain-Nuclear Magnetic Resonance (TD-NMR) minispec applications including the following sample preparation steps:
 - Sample pre-tempering (cooling and/or heating)
 - Automatic weighing of samples
4. Service and support by Bruker BioSpin or local representative

● the **minispec Sample Automation** **Offers a New Dimension in Options**

Sample Automation Set-up

- x-y-z sample changer mounted on a robust platform that can hold minispec, racks, tempering devices and balance (optional, depending on application)
- TÜV approved and to conforms to European, (with and without safety housing) American and Canadian regulations
- Optional (but recommended) safety barrier including sliding doors and locks. This option furthermore features an emergency stop button.



Quick and Convenient Sample Insertion

- Input and output racks with sensors that detect tray status (software supported)
- Special versions of trays adapted for the SFC application
- The software can handle the two trays as combined or separate input/output blocks.



Tempering Options/Further Assemblies

- Heating and cooling devices based on Peltier Technology
- SFC tempering blocks: $\pm 0.1^\circ\text{C}$ precision
- Heating only devices available
- Max. temperature range: 0 ... 100°C
- Handles with up to 6 measurement temperatures (optional)
- Tempering devices are also available without sample changer
- Automatic weighing of samples (optional)



● Automating Solid Fat Content (SFC)

Maximized productivity from the world leader in SFC measurements

By automating tempering times theminispec Sample Automation system ensures highly accurate sample temperatures delivering results in strictest accordance with SFC International Standard Methods.

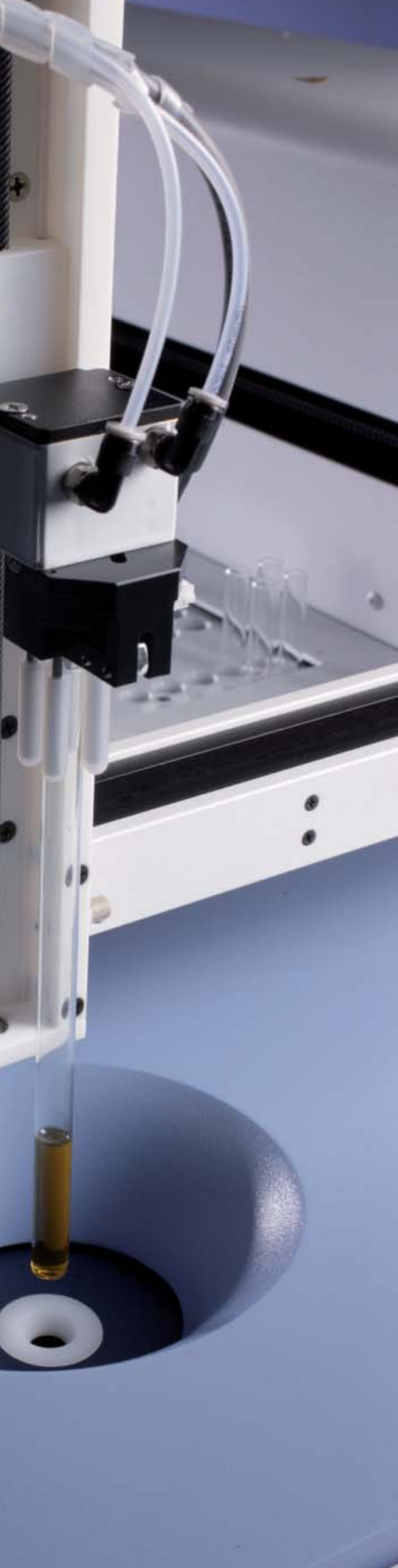
Automated SFC Measurements Include:

- Crystallization kinetics and curve plotting (SFC versus time)
- Visual display of the melting curves of products
- Derived parameters such as slip melting point and dropping point can be calculated using TD-NMR SFC values
- Automatically calculated averages
- Fast SFC measurement option with automatic data correction

Sample Automation for SFC Features:

- New software package integrates Bruker's innovative experience with SFC Automation knowledge of collaboration partner comicon GmbH, Hamburg, Germany
- Two input racks for 10 mm tubes with 60 tube positions each
- Waste position for easy disposal of post-analysis sample tubes
- Three tempering blocks of 60 positions for 100°C/80°C, 60°C and 0°C
- Six tempering blocks of 10 positions each for heating and cooling
- Block cooling by modern Peltier Technology, including purge option
- SFC calibration sample positions: 0%, ca. 30% and ca. 70% SFC included in the SFC automation system
- Fully automatic Daily Check functionality





● Automating Your TD-NMR Applications

the minispec Sample Automation solution brings quick, efficient sample exchange and control to your lab

Typical automated applications include:

Food:

- Total oil / fat content in chocolate
- Oil and moisture content in seeds, residues and press cake



(Petro-) Chemical/Polymer:

- Hydrogen content in hydrocarbons such as jet fuel, diesel, etc
- Spin finish on fibres
- Xylene solubles or density in polymers (PP, PE)
- Oil content in sulfur

Healthcare/Pharma:

- Contactless check weighing in pharmaceuticals
- Fluorine content in toothpaste

R&D:

- Contrast agent analysis

Based on the multitude of features and software options a complete range of the minispec Sample Automation solutions is available, for example:

Hydrogen Content Sample Automation

- Sample changer with safety barrier and emergency stop (optional)
- Input and output racks for insertion and removal of 18 mm sample tubes
- Integrated balance for automatic sample weighing
- Tempering device: heating only



● **Increasing TD-NMR Efficiency With the New** **the minispec Sample Automation Software**

the minispec Sample Automation software is a feature-packed easy-to-use solution that provides significant flexibility, usability and the performance required to maximize your lab efficiency by automating your TD-NMR minispec applications.

Its practical software design and dedicated feature options include:

- Existing customer TD-NMR methods are easily added and implemented
- Different TD-NMR methods can all run simultaneously
- Sample priorities can be assigned
- Choice of rack combinations with in-position/out-of-position sensor
- Error management highlights errors by adding colors to the results

the minispec Sample Automation Software

- Automated Daily Check function ensures consistent operation
- Automatic plotting of bath temperatures
- Accurate monitoring of tempering times and temperatures with out-of-limit warnings
- All common International Standard Methods are supported
- Graphical display of data with calculation options and error handling
- PC controlled: Windows 7 / 32 or 64 bit Software

1. Tube				2. Tube			
Temperature	Time (min)	Delay (min)	Parameter	Temperature	Time (min)	Delay (min)	Parameter
80.0°C	5	0	-	80.0°C	5	0	-
60.0°C	10	0	-	60.0°C	10	0	-
0.0°C	60	0	-	0.0°C	60	0	-
10.0°C	30	0	-	20.0°C	30	0	-
Measurement	-	-	SFC_RESULT	Measurement	-	-	SFC_RESULT
Result	-	-	N_TEMP(2)=[SFC_RESULT(-1)]	Result	-	-	N_TEMP(2)

Clear method control: all temperature steps are clearly defined and tempering steps can always be added, modified or deleted. The various SFC measurement temperatures / tubes are pre-defined, too.

Date	1. value	2. value	3. value
03.04.2013 13:29	0.08	30.80	72.59
03.04.2013 13:24	-0.36	30.35	72.19
03.04.2013 13:22	-0.12	30.97	72.26
03.04.2013 13:17	0.47	30.57	72.37
03.04.2013 13:13	0.28	30.70	72.36
03.04.2013 13:06	-0.41	30.33	72.15
03.04.2013 13:05	0.21	31.13	72.41
03.04.2013 13:04	0.46	30.94	72.28
03.04.2013 13:00	-0.43	30.84	71.87
03.04.2013 12:51	0.45	30.66	72.01
03.04.2013 12:47	0.20	30.89	71.87
03.04.2013 12:44	-0.25	30.79	72.54
03.04.2013 12:39	-0.02	31.01	72.09

The software archives all former Daily Check results. Green arrays indicates that SFC results were acquired correctly.

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60.0°C	10	0	-	60.0°C	10	0	-
0.0°C	60	0	-	0.0°C	60	0	-
10.0°C	30	0	-	20.0°C	30	0	-
Measurement	-	-	SFC_RESULT	Measurement	-	-	SFC_RESULT
Result	-	-	N_TEMP(2)=[SFC_RESULT(-1)]	Result	-	-	N_TEMP(2)

Setup of various application methods. All International Standard Methods are pre-defined. Customer specific methods can easily be added / modified. The defining of methods is very flexible. SFC as well as non-SFC methods can be added. The system can run different methods in parallel.

Bruker

- A Market Leader in Life Science and Analytical Systems.



For more than 50 years Bruker has dedicated itself to the development and construction of powerful measurement instruments, paving the way for our customers' progress in research and industry. Today we are the world's leading provider of analysis technologies. Over 6,000 employees worldwide constantly strive to satisfy our customers' needs and to extend the limits of scientific, industrial and medical analysis.

Technology that supports

These exceptional technical capabilities enable our customers to decrease time, budget and performance limitations in favor of enhanced work results. Bruker's personalized full service does the rest to support the users by granting optimal working performance and allowing them to concentrate on their core business.

Unique NMR heritage

Founded by NMR pioneer Prof. Günther Laukien, Bruker's tradition is deeply linked to that of NMR spectroscopy. In the 1960s the enterprise was the first to commercially build NMR spectrometers, making them first accessible to a wide range of scientists and later also to industries. Bruker thus laid the foundation for modern material development as well as significant medical progress based on NMR.

Always the right solution

Still today Bruker maintains its unique technical expertise as well as its stated goal to provide the best solution for every analytical task. Our portfolio covers the whole spectrum of advanced measurement technologies – not only in its breadth but also in its depth: Our products range from the handiest devices for everyday tasks all the way up to the highest end of research systems.

Our standing commitment

What all this results in for us is not only an excellent reputation among our customers, but also the great feeling of playing an important role in something no smaller than the progress of natural science and human welfare. Therefore, we consistently endeavor to continue along our path as the number one partner in scientific and industrial analysis worldwide.

Bruker Advanced Customer Services

Bruker's comprehensive services ensure your success through performance, expertise and reliability. Bruker offers comprehensive support in every discipline including Information and Communication, Consumables and Spares, Support and Upgrades, as well as Education and Training. Our global organization runs offices in every major area of the world providing sales, applications, and engineering support for all our products. Whatever you need, wherever you need it – we are there for you!



Technical data

Dimensions:	1.1m x 0.85m x 1.1m (width x depth x height)
Weights:	
Autosampler plus Base (no barrier)	26 kg
Tempering Bath for SFC / 3 Temperatures	31 kg
Tempering Bath for SFC / 6 Temperatures	29 kg
Input Voltage:	110V / 230V
Tempering Baths Accuracy (SFC):	0.1 °C
System Requirements:	minispec mq series or minispec mq-one
Available Tube Diameters (non-SFC):	7.5, 10, 18, 25, 40, 51 (mm)
Racks and Sensors (supplied):	1 x Input Rack 1 x Output Rack
SFC System Characteristics:	
Waste Position	Included (for SFC Operation)
Loading Capacity / Throughput	60 tubes/batch
SFC Temperatures	6 with 10 positions each
Safety barrier (optional, recommended)	Including sliding doors with locks and emergency stop button