

# FlexiFocus™ slides

## User Guide

### Introduction

**Read this Instruction Manual thoroughly before using the product.**

Thank you for purchasing this product.

This manual describes the operation for this product. Read this manual thoroughly before using the product and operate the product in accordance with the instructions in this manual.


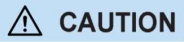

Keep this manual for future reference.

#### IMPORTANT




- If the user or usage location changes, ensure that this manual is always kept together with the product.
- If this manual or a product warning label is lost or damaged, immediately contact your Shimadzu representative to request a replacement.
- To ensure safe operation, read all Safety Instructions before using the product.

### ■ Indications Used in This Manual

Precaution symbols are indicated using the following conventions:

Indication	Meaning
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or possibly death.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor to moderate injury or equipment damage.
 <b>NOTE</b>	Emphasizes additional information that is provided to ensure the proper use of this product.

The following symbols are used in this manual:

Indication	Meaning
 Prohibitions	Indicates an action that must not be performed.
 Instructions	Indicates an action that must be performed.
 <b>Hint</b>	Indicates information provided to improve product performance.

### ■ Safety Instructions

To ensure safe product operation, read these important safety instructions carefully before use and follow all precaution instructions given in this section.

#### ■ Product Applications

##### **WARNING**



Prohibitions

**Do NOT use the product for purposes other than those specified.**

This product is sample slides for MALDI mass spectrometer.

Using it for an unspecified purpose may result in an accident.

This product is manufactured for measuring and industrial purposes, and not suitable for household usage.

**For research use only. Not for use in diagnostic procedures.**

#### ■ Operation

##### **WARNING**



Instructions

• **During sample handling you are potentially exposed to hazardous substances. It is recommended to wear the following Personal Protective Equipment (PPE):**

- **Wear a face mask to prevent inhalation of hazardous substances.**
- **Wear medical type, nitrile gloves (powder free) to avoid contact with hazardous substances and the FlexiFocus slides.**
- **Wear safety goggles to avoid contact with hazardous substances.**

If solvent gets into the eyes, it can result in blindness.

Should solvent get into the eyes, flush immediately with large amounts of water and seek medical attention.



## CAUTION



Instructions

- When handling insert, wear suitable PPE (e.g., gloves) to avoid hand injury.



## Warranty

Shimadzu provides the following warranty for this product.

1. Period	The warranty end date can be found on the outer box.
2. Description	If a product/part damage occurs for reasons attributable to Shimadzu during the warranty period, Shimadzu will repair or replace the product/part free of charge.
3. Limitation of Liability	<ol style="list-style-type: none"><li>1. In no event will Shimadzu be liable for any lost revenue, profit or data, or for special, indirect, consequential, incidental or punitive damages, however caused regardless of the theory of liability, arising out of or related to the use of or inability to use the product, even if Shimadzu has been advised of the possibility of such damage.</li><li>2. In no event will Shimadzu's liability to you, whether in contract, tort (including negligence), or otherwise, exceed the amount you paid for the product.</li></ol>
4. Exceptions	Damages caused by the following are excluded from the warranty, even if they occur during the warranty period. <ol style="list-style-type: none"><li>1. Improper product handling</li><li>2. Repairs or modifications performed by parties other than Shimadzu or Shimadzu designated companies</li><li>3. Product use in combination with hardware or software other than that designated by Shimadzu</li><li>4. Computer viruses leading to device damages and damage to data and software, including the product's basic software</li><li>5. Reasons unrelated to the product itself</li><li>6. Product use in harsh environments, such as those subject to high temperatures or humidity levels, corrosive gases, or strong vibrations</li><li>7. Fires, earthquakes, or any other act of nature, contamination by radioactive or hazardous substances, or any other force majeure event, including wars, riots, and crimes</li></ol>

\* If there is a document such as a warranty provided with the product, or there is a separate contract agreed upon that includes warranty conditions, the provisions of those documents shall apply.

## Disposal Precautions

This product must be disposed of in compliance with the respective national or local government regulations.

## Product details:

The FlexiFocus slide inserts have been developed to facilitate automated analysis using the Shimadzu benchtop MALDI-TOF instruments. These slides are comprised of a metal substrate which has been chemically modified to produce a highly hydrophobic surface. This hydrophobic layer covers the entire slide surface except for small exposed regions in the center of each sample deposition ring. The combination of the exposed metal center and the hydrophobic surrounding help contain the droplet during spotting and subsequent sample drying, ensuring that dried samples are located in the center of each spot position. The focusing of the sample spot to the center of the well is an advantage since it facilitates automated MALDI analysis by preventing off-centered spots, as these tend to produce weaker signals due to misalignment with the laser firing position, resulting in only partial sampling of the spot. The FlexiFocus inserts are available with either 48- or 96- sample positions. The FlexiFocus adaptor has been specifically designed to hold a FlexiFocus insert and position it optimally for analysis in the Shimadzu MALDI-8000 series benchtop MALDI-TOF and MALDImini-1 instruments, or in the MALDI-7090 and AXIMA instruments via the Precision adaptor.

## Kit Contents:

There are 2 separate kits available in the range, including a high-capacity 96 well option. The components in each, can also be ordered separately as refill items:

- FlexiFocus-48 Starter Kit (P/N 224-38626-58) containing:
  - FlexiFocus-48 inserts (48 sample spots), pack of 10 (re-orderable P/N 224-39906-58), x2
  - FlexiFocus adaptor, (re-orderable P/N 224-39909-58), x1
- FlexiFocus-96 Starter Kit (P/N 224-38623-58) containing:
  - FlexiFocus-96 inserts (96 sample spots), pack of 10 (re-orderable P/N 224-39907-58), x2
  - FlexiFocus adaptor, (re-orderable P/N 224-39909-58), x1

## Instructions for use in sample preparation:

The FlexiFocus inserts have been developed as single-use stainless steel MALDI targets. These slides can be used as supplied and do not require cleaning prior to use.



It is strongly recommended that the slides should not be cleaned after use, in an attempt to reuse them. Doing so may compromise the surface characteristics and performance of the product.

For optimum performance, the sample should contain  $\leq 50\%$  organic solvent. Higher amounts of organic solvents may result in non-optimal droplet containment on deposition and drying.

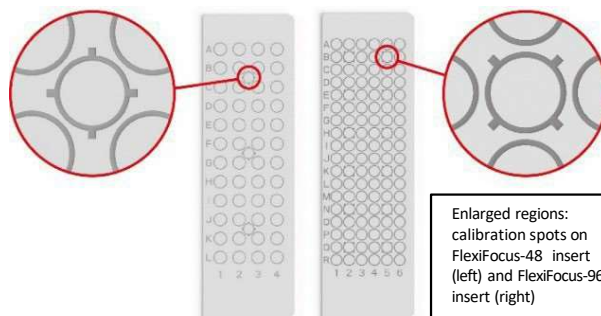
The FlexiFocus inserts are compatible with commonly used MALDI matrices (CHCA, sinapinic acid, DHB, 3-HPA) and organic solvents (acetonitrile, methanol, ethanol, water, trifluoroacetic acid ( $< 0.1\%$  (v/v))). Use HPLC grade or better solvents and deionized water.

Standard dried droplet preparations (equal volumes of sample solution and matrix solution deposited on each position) or matrix pre-layer methods (matrix solution is deposited first and allowed to dry before applying sample solution) may be used when preparing samples for MALDI analysis using the FlexiFocus inserts.



Optimization of your existing sample spotting protocols e.g., by reducing the matrix concentration or matrix volume may be required to achieve the best results. For peptides we typically recommend using CHCA as 0.25 mg/ml in 50/50 0.1% TFA, acetonitrile.

There are separate wells designated on each insert for use as calibration spots - a total of 3 (1 in the middle of each 16 sample spots) on the FlexiFocus-48 insert and a total of 12 (1 in the middle of each 8 sample spots) on the FlexiFocus-96 insert (see figure below). On both types of inserts, the positions for use as calibration spots are differentiated from other positions by small additional features in the etched rings surrounding these positions.



Enlarged regions: calibration spots on FlexiFocus-48 insert (left) and FlexiFocus-96 insert (right)

## Inserting/removing the FlexiFocus insert into/from the adaptor

The FlexiFocus adaptor has been specifically designed to hold a single FlexiFocus insert. The design of the adaptor ensures that the insert can only be positioned in the correct orientation. Magnets embedded in the base of the adaptor hold the insert in place during analysis.

### ■ Inserting the insert into the adaptor

Refer to the 'Storage and handling' section and the demonstration video (see link/ QR code below) regarding handling of the components. Holding the insert carefully by the edges (face upwards), position the short edge against the corresponding inner edge of the adaptor.



#### NOTE

Note the notched corner on the insert and the corresponding notched corner of the adaptor to ensure correct orientation of both parts before attempting to fit the insert.

Slowly lower the insert into the adaptor. Ensure the insert is fully enclosed by the edges of the adaptor and that the insert does not move excessively in any direction. Once the insert has been mounted in the adaptor, avoid inverting the adaptor to minimize the risk of the insert falling out.

### ■ Removing the insert from the adaptor

Refer to the 'Storage and handling' section and the demonstration video (see link/ QR code below) regarding handling of the components. Holding the adaptor by the long edge (face upwards), carefully lift the insert from the non-QR coded short edge and remove the insert from the adaptor.

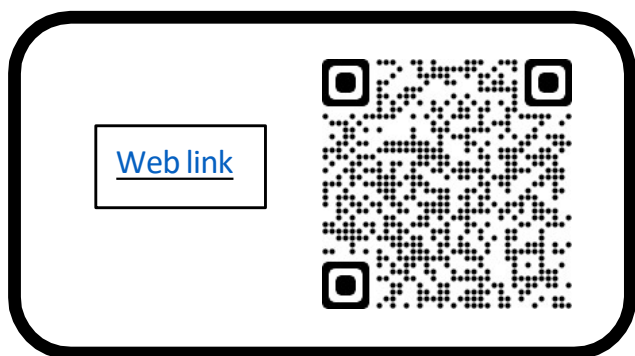


#### NOTE

There is a cut-out in the base of the adaptor along the short end, near row A of samples. This cut-out is used to aid lifting the insert out of the adaptor.

### ■ Demonstration video

See video on how to place/remove the FlexiFocus insert correctly into/from the FlexiFocus adaptor.



## Plate file for use to acquire data

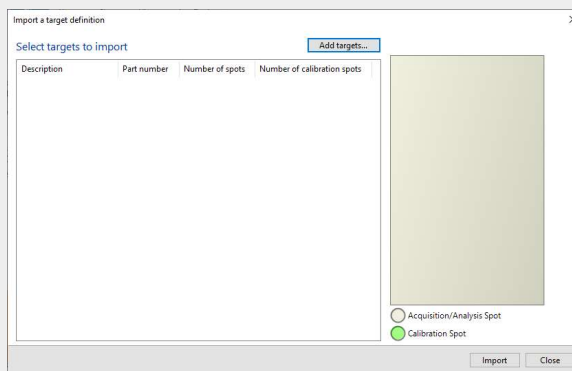
For use on MALDI-8000 benchtop series and MALDI-7090, the plate files need to be imported into MALDI Solutions software where they then become displayed under the 'Target' tab in MALDI Solutions Data Acquisition.

Instructions on how to import plate files are described below. Instructions on how to perform a stage alignment are found in the benchtop MALDI-TOF instrument User Guide (P/N 224-20010-80).

### ■ Importing the plate file:

#### ● For MALDI-8000 benchtop series or MALDI-7090

1. Download the plate file (use link/ QR code from before) to a location on the instrument PC
2. Close Data Acquisition if the program is running. Go to C:\Program Files\Shimadzu Corporation\MALDI Solutions\Programs
3. Double-click 'Kratos.converters.UI.Target'. Connect to the service on your local machine and log in (log in using an administrator account in MALDI Solutions)
4. A dialogue window opens



5. Click Add targets and browse for the custom plate file downloaded in step 1.
6. Click Import. You should see a message indicating that the import was successful.
7. Open Data Acquisition. Go to the 'Target' tab and browse for the imported plate file.

#### ● For AXIMA series

It is not necessary to use the target plate import tool (described above) for use on the AXIMA instruments. Instead, copy the plate files directly into the 'Stage' directory on the instrument PC: C:\Program Files (x86)\Shimadzu Biotech Launchpad\Stage.

### Link to downloadable files

Use QR code (provided on left)

For MALDI-8000 benchtop series :

- Plate file for FlexiFocus-48 insert
  - (P/N 224-39906-58 ((B))
- Plate file for FlexiFocus-96 insert
  - (P/N 224-39907-58 (B))

For MALDI-7090 and AXIMA series \*:

- Plate file for 4 x FlexiFocus-48 insert
  - (P/N 224-40707-01 (B))
- Plate file for 4 x FlexiFocus-96 insert
  - (P/N 224-40706-01 (B))

\*requires Shimadzu Precision adaptor (P/N TO-488R00).



#### NOTE

Always perform plate alignment with MALDI Solutions after selecting a different plate file from the 'Target' tab.

## Requirements and Compatibility

- USB handheld 2D barcode scanner (P/N 224-41045-58):

A USB handheld 2D barcode scanner is required to work with the QR codes on the FlexiFocus slide labels. The plug and play handheld scanner, when connected to the MALDI-8000 benchtop series instrument PC, allows sample tracking when using the add-on MALDI Solutions software of SampleStation™ and AuraSolution™. See instructions (P/N 224-41045-58) on how to set up the device.



### NOTE

Compatibility of the FlexiFocus slide labels with the instrument integrated barcode reader will only occur in later versions of the MALDI-8000 benchtop series (please contact your local Shimadzu support for confirmation).

- MALDI Solutions:

To import the FlexiFocus plate files for use, MALDI Solutions version 2.9 or later is required for the MALDI-8000 series, and version 2.7 or later for MALDI-7090.

- MALDI-8000 benchtop series:

The FlexiMass™ style format of the adaptor for the FlexiFocus slide inserts provide compatibility with the Shimadzu benchtop MALDI-TOF instruments.

- MALDI-7090, AXIMA series and MALDImini-1:

The Shimadzu Precision 4-slot adaptor (P/N TO-488R00) - which loads 4 FlexiFocus slides at a time (each with separate adaptor) - provides compatibility with MALDI-7090 and the AXIMA series. MALDImini-1 is compatible with only FlexiFocus-48 slides, using MALDImini Console software version 1.0.3 or later.

## Storage and handling

Store unopened FlexiFocus inserts in their original packaging at room temperature and protect from direct sunlight. Once opened, wait 15 mins before use and protect the slide surface from contamination. Store away from direct sunlight, at storage temperature 1-30 °C. It is recommended to wear nitrile gloves when handling the FlexiFocus inserts and adaptor to minimize the risk of contamination e.g., with fingermarks.



### NOTE

- Handle the inserts by the edges or at the labelled end of the slide. Do not touch the slide surface in the areas where samples may be deposited.
- The inserts and adaptor are made of thin metal. Avoid excessive pressure which may deform or bend the parts.
- There are magnets in the base of the adaptor used for attaching the inserts. In order to preserve the functionality of the magnets and the integrity of the adhesives used on the magnets, do not fire the MALDI laser directly on the adaptor without an insert present, do not autoclave the adaptor and do not sonicate the adaptor.

- Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor.
- Any errors or omissions which may have occurred in this manual despite the utmost care taken in its production will be corrected as soon as possible, although not necessarily immediately after detection.
- All rights are reserved, including those to reproduce this manual or parts thereof in any form without permission from Shimadzu Corporation. QR code is registered trademark of Denso Wave. Third-party trademarks and trade names may be used in this publication to refer to either the entities or their products/services, whether or not they are used with trademark symbol "TM" or "®".

## Cleaning the adaptor

The adaptor is supplied chemically clean and does not require cleaning on first use. However, it is recommended to periodically clean the adaptor to remove any fingermarks/contamination which may be present on the adaptor with use.

### Cleaning procedure:

1. Remove any inserts from the adaptor.
2. Wipe with methanol using a Kim wipe or similar material.



### NOTE

Other compatible organic solvents are acetonitrile, ethanol, propanol and acetone.

Do not sonicate

## Re-ordering information

To re-order new kits or additional components contained within this kit, please contact your local Shimadzu Sales/Service center and quote the part numbers listed in the table below. Product brochure material are also available.

Part	Description	Comment
224-38626-58	FlexiFocus-48 well Starter Kit containing adaptor and 20 inserts	*1
224-38623-58	FlexiFocus-96 well Starter Kit containing adaptor and 20 inserts	*1
224-39906-58	FlexiFocus-48 well insert, pack of 10	*2
224-39907-58	FlexiFocus-96 well insert, pack of 10	*2
224-39909-58	FlexiFocus Adaptor, x1	*2
224-41045-58	USB Handheld 2D barcode scanner	*3
TO-488R00	FlexiMass Precision 4-slot adaptor	*4

\*1, Starter kit

\*2, Refill item/ consumable/ spare item

\*3, For use with SampleStation and AuraSolution software

\*4, For MALDI-7090 and AXIMA series