

Installation Manual

SICRIT® MS Interface SZ2

for Shimadzu LC-MS instruments



Release November 2024

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This manual must be stored carefully and must be at hand to any user of the described system.

In addition to this guide, Plasmion GmbH provides manuals for installation and operation of the SICRIT® Ion Source and additional modules for coupling with chromatography etc.

Please check for updated versions of manuals on www.plasmion.com.



Attention!

Please read and understand this manual before operating the described system. In case you discover obvious errors or contradictions for your product, contact the manufacturer before operating the system.

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The technology and application of the system described in this manual is covered by patents and patent applications and is used under license.

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Safety Instructions

The following safety labels on the product and within this manual indicate safety risks and necessary precautions that arise during installation or from operating the products.





	<p>[Attention!], marks possible dangers to your safety and health.</p>
	<p>[Dangerous Voltage!], indicates parts and situations where there is the risk of exposure to dangerous electrical voltages.</p>
	<p>[Attention Hot Surface!], indicates potentially hot surfaces that might cause burning injuries if touched without protective gear.</p>
	<p>[Note], marks important information or advice, not related to safety issues.</p>

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1. Intended Use of the SICRIT® MS Interfaces

The system described is intended for use only in laboratory and/or R&D environment. If the system is used in a way not specified by the manufacturer, misused, or modified causing an infringement of the safety measures, Plasmion GmbH refuses any liability for consecutive damage in any form.

1.1 The SICRIT® Technology

Soft Ionization by Chemical Reaction In Transfer (SICRIT®) is a flow through ionization technique to be coupled with mass or ion mobility spectrometers. Inside the ion source a cold plasma is used for ionization of the analytes passing through. This enables direct gas phase measurements as well as coupling with chromatographic systems such as GC or HPLC. The latter requires additional coupling modules.

1.2 The SICRIT® MS Interface SZ2 for Shimadzu LC-MS instruments

The SICRIT® Interface SZ2 replaces the standard ionization interface (ESI, APCI, DUIS) and enables the coupling of the SICRIT® Ion source to the MS (Fig. 1). The SZ2 Interface consists of:

- a source housing (a) with a plastic safety cover that enables the MS to recognize the SICRIT® Ion source and protects the user during MS operation (Art.-Nr. 26-010),
- an ion source adapter set including a heatblock (b, Art.-Nr. 16-016) and an ion source adapter (c, Art. Nr. 06-0015) for connection to the SICRIT® Ion source. The set also includes o-rings (1.5 x 1.0 mm).

The interface enables the general connection of the SICRIT® Ion source to your Shimadzu MS. It also enables the mechanical connection of additional SICRIT® modules for coupling methods e.g. LC-SICRIT®-MS, GC-SICRIT®-MS (please check for available products at plasmion.com).

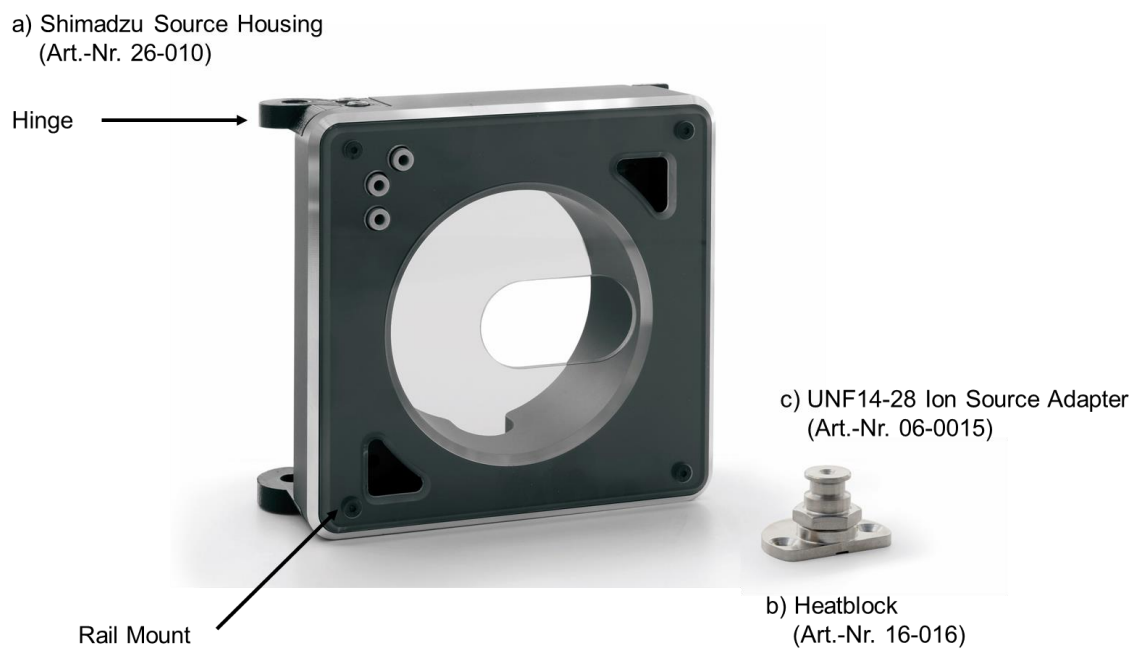




Figure 1: Components of the SICRIT® MS Interface SZ2.

2. Installation of the SICRIT® MS Interface SZ2 to the MS Instrument

2.1 Steps before installation of the SICRIT® MS Interface SZ2

Before the interface can be installed, the standard ionization interface (ESI, APCI, or DUIS) must be removed. Please follow the specific descriptions in your instrument’s manual.

	<p>Attention!</p> <p>Plasmion GmbH does not hold responsibility for potential damage that result from non-compliance to the manuals of the MS-manufacturer when removing the housing or other parts of the MS.</p>
	<p>Attention!</p> <p>Some parts of the MS interface can be very hot and cause burnings or injuries. Before performing the installation, let the system cool down, wear protective gear and refer to the instructions given in the respective MS manual.</p>

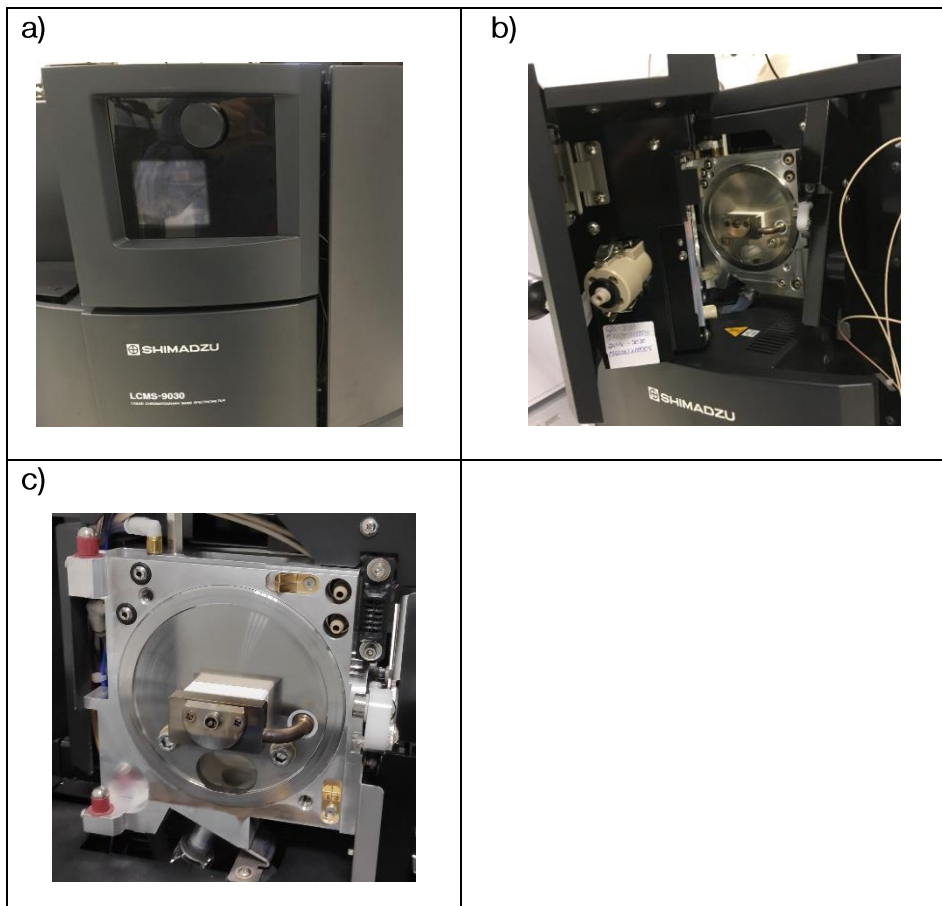


Figure 2 Opening the interface cover (a), opening the unit door (b), heater flange with sampling cone and heat block (c). Pictures show ESI source of 9030 QTOF instruments.

- Turn-off the high voltage, the heater, and the gas supplies in LabSolutions software
- Open the front door (see Fig. 2 b)
- Unlock the ionization unit by pulling the knob towards you and open the unit door.
- Lift the unit upward to remove it.
- Unscrew the sample cone from the heat block

2.2 Installation of the SICRIT® SZ2 Ion source adapter

For the operation of the SICRIT® Ion source the spray unit must be connected directly with the SICRIT® Ion source adapter assembly by the following steps:

- Screw on the SICRIT® heatblock onto the inlet

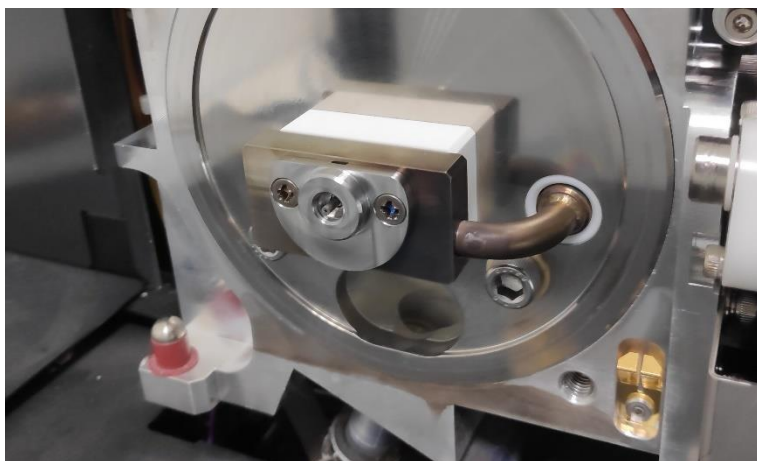


Figure 3: SICRIT® heatblock cone mounted onto the inlet.

- Put on 1.5 x 1 mm o-ring onto the tip of the desolvation line (DL)
- Screw in the SICRIT® Ion source adapter into the SICRIT® Sample Cone

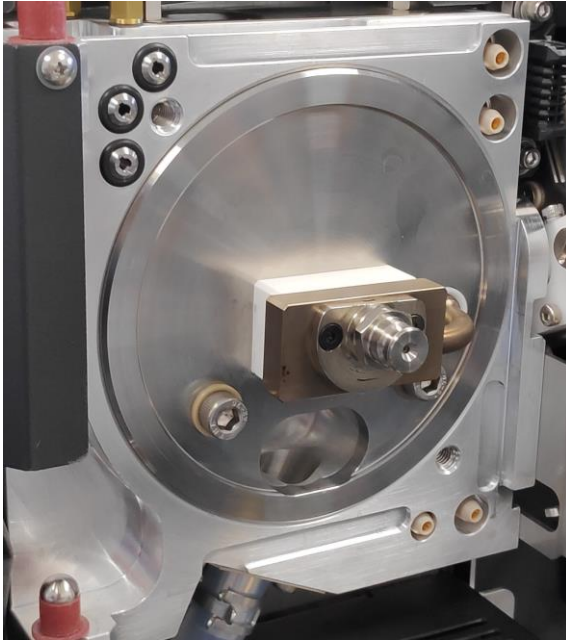


Figure 4 :SICRIT® Ion source adapter mounted onto the heatblock.

2.3 Installation of the SICRIT® Ion source

After installation of the SICRIT® Ion source adapter you can now mount the SICRIT® Ion source by means of the quick lock mount (Figure 5).

- Press the ion source gently onto the source adapter.
- Firmly hold the source and rotate the lock about $\frac{1}{4}$ turns clockwise, until you hear a “click” sound. This signalizes that the lock is secured, and mounting is finished.

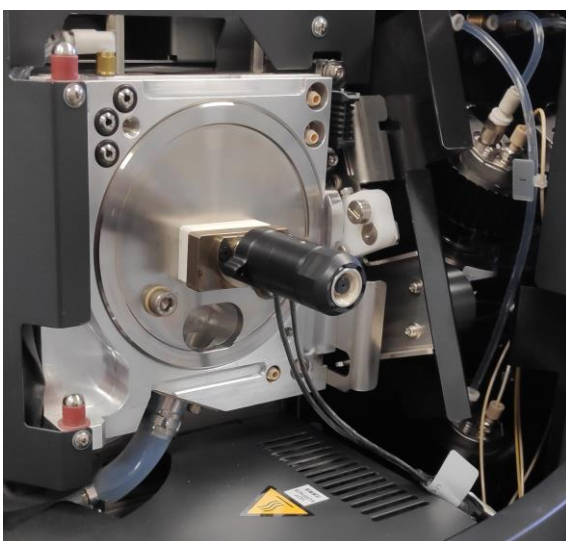


Figure 5: SICRIT® Ion source mounted on ion block assembly.

2.4 Installation of the SICRIT® MS Source housing

After mounting of the SICRIT® Ion source, install the provided SICRIT® MS Source housing before operation of the ion source as following:

- Hook on the source housing into the hinges (see Fig. 6).
- Lock the source housing by closing the door and pushing the lever back in. Move the HV cables of the ion source through the cutouts. Make sure not to jam the cables!

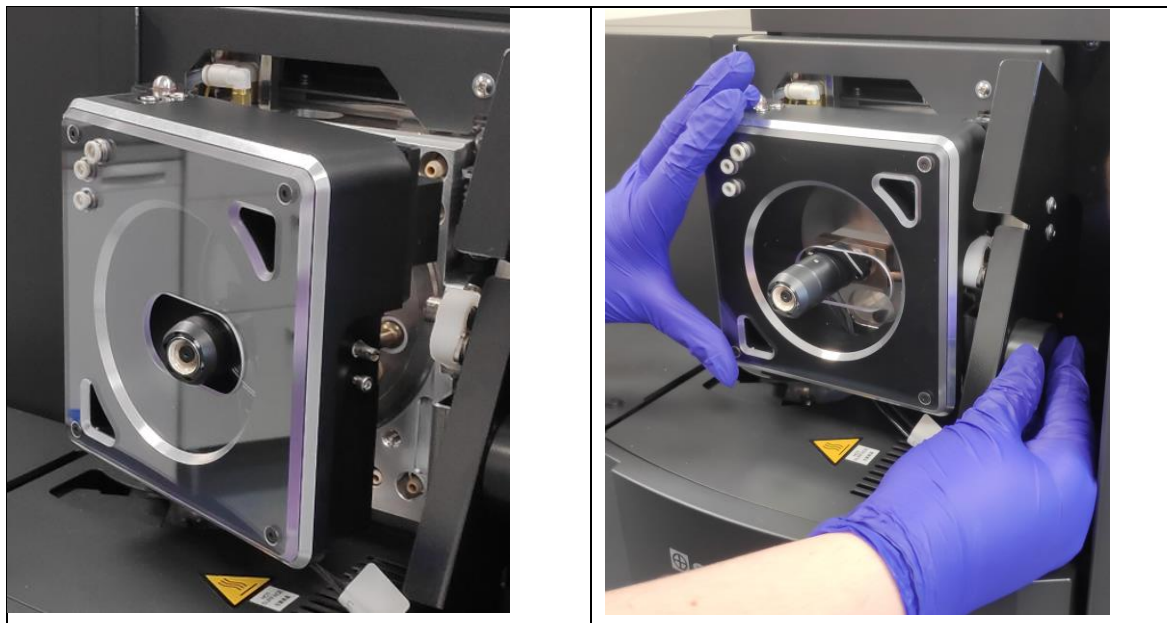


Figure 6: Hooking of SICRIT® Source Housing on the MS Inlet and closing the lock lever.

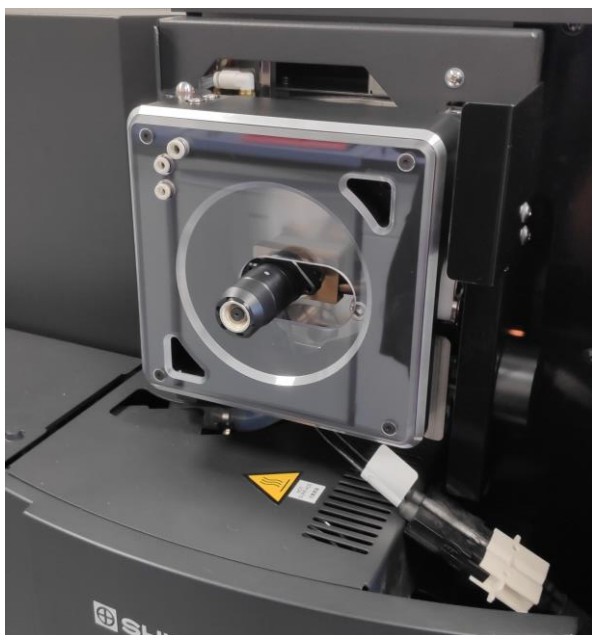
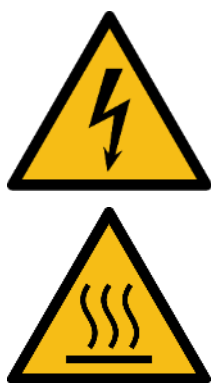


Figure 7: SICRIT® Interface SZ2 after complete installation.

**Attention!**

Make sure not to jam the HV cables while closing the source! Avoid bending the cables (minimal bending radius is 4 cm). Do not place the cables over sharp edges or hot surfaces. Avoid strain on the cables and use strain relief measures.

**Attention!**

Do not remove the surface cover plate of the SICRIT® MS Source housing. The cover plate is meant to protect the user for unintended contact with hot and/or electrically live components of the MS instrument or the ion source in the event of operation not according to the instructions given in this manual.

Further information about the intended use of the SICRIT® Ion source and the implementation of SICRIT® MS-measurements or measurements with coupling of GC or SPME can be found in the corresponding manuals of Plasmion GmbH.

If you need further assistance or support, please contact Plasmion via support@plasmion.com.

3. Launching the MS instrument with SICRIT® Ionization Technology



If the system is used in a manner not specified by the manufacturer, the warranty of the manufacturer may be impaired.

Shimadzu Software Settings for the Operation with SICRIT® Ionization

After installation of the ion source select following set parameters in the MS software:

- Turn on heaters and gases using the On/OFF buttons in LabSolutions Software
- Switch to the source settings and set recommended values according to Tab. 1 (see Fig. 7).

Table 1: Recommended source settings for SICRIT® ionization

Setting	Recommended Values
Nebulizing Gas Flow	0 (expect for use with optional modules)
Drying Gas Flow	Off / 0
Heating Gas Flow	Off / 0 (expect for use with optional modules)
Interface Voltage	0 kV
Interface Temperature	Deactivated as heating gas is switched off
Desolvation Temperature	Deactivated as heating gas is switched off
DL Temperature	30-300 °C (250 °C recommended)
Heat block Temperature	30-500 °C (250 °C recommended)

4. Service and Maintenance of the SICRIT® MS Interface SZ2

4.1 Maintenance of the SICRIT® Ion Source Adapter

We recommend cleaning the adapter periodically to avoid the formation of contaminations in form of deposits and to ensure an optimum performance of the ion source. For disassembly follow the steps described for installation in reverse order:

- Put your MS to standby mode and let the ion block assembly cool down.
- Turn off the high voltage at the SICRIT® control unit.



Attention!

Ensure the MS instrument is in standby and HV is turned off at SICRIT HV supply before continuing.

- Disconnect the HV cables.
- Unlock the SICRIT® MS Source housing by pulling the knob towards you and remove the housing carefully.



Attention!

All parts of the adapter might be very hot!
Let it cool down first and wear appropriate protective gear.

- Dismantle the ion source turning the lock counterclockwise.
- Remove the ion source adapter and unscrew the heated block.
- Remove and replace the O-ring from the tip of the DL line.

4.2 Cleaning the SICRIT® Interface parts

Follow the procedure below to clean the SICRIT® Interface parts:

- Use an ultrasonic cleaning bath to clean stainless steel adapter parts for 15 min in a 50:50 methanol/water mixture. Use only LC-grade solvents or better.
- If necessary, clean the source housing using a moist linen tissue.
- Make sure all parts are dry and clean before reinstallation.