

Installation Manual

SICRIT® MS Interface WX1

for Waters and Perkin Elmer LC-MS instruments
(except Waters Acquity QDA)



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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.

All trademarks are property of their respective **owners**.

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 damages 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 WX1 for Waters or Perkin Elmer LC-MS instruments

The SICRIT® Interface WX1 replaces the standard ion source housing of the Waters or Perkin Elmer MS and enables the coupling of the SICRIT® Ion source to the MS (Fig. 1). The WX1 Interface consists of:

- a source housing (a) with a plastic safety cover and including an interlock connector (b) for recognition of detect the SICRIT® Ion source (Art.-Nr. 26-008)
- an ion source adapter assembly including an inlet adapter (c, Art-Nr. 16-014) and an ion source adapter (d, Art.-Nr. 06-0015) for connection to the SICRIT® Ion source. The set includes a Viton ring to seal both adapter pieces as well as screws for mounting onto the MS ion block assembly

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

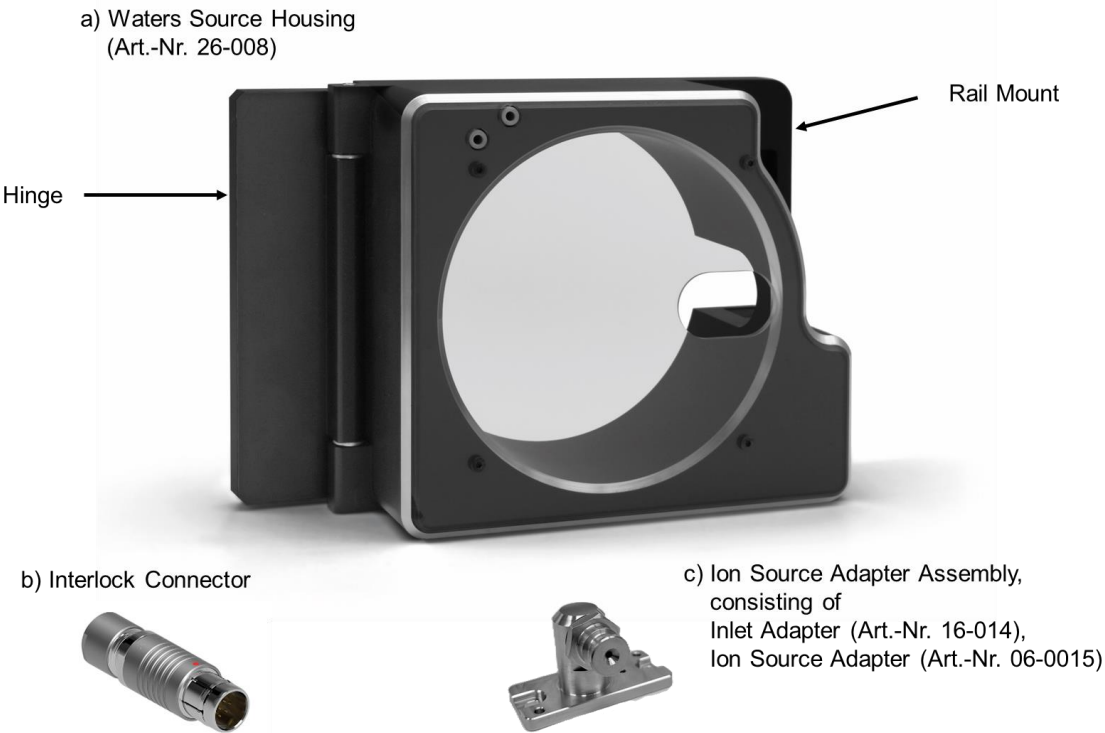




Figure 1: Components of the SICRIT® MS Interface WX1.

2. Installation of the SICRIT® MS Interface WX1 to the MS instrument

2.1 Steps before installation of the SICRIT® MS Interface WX1

Before the interface can be installed, the standard API ion source enclosure 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 damages 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>

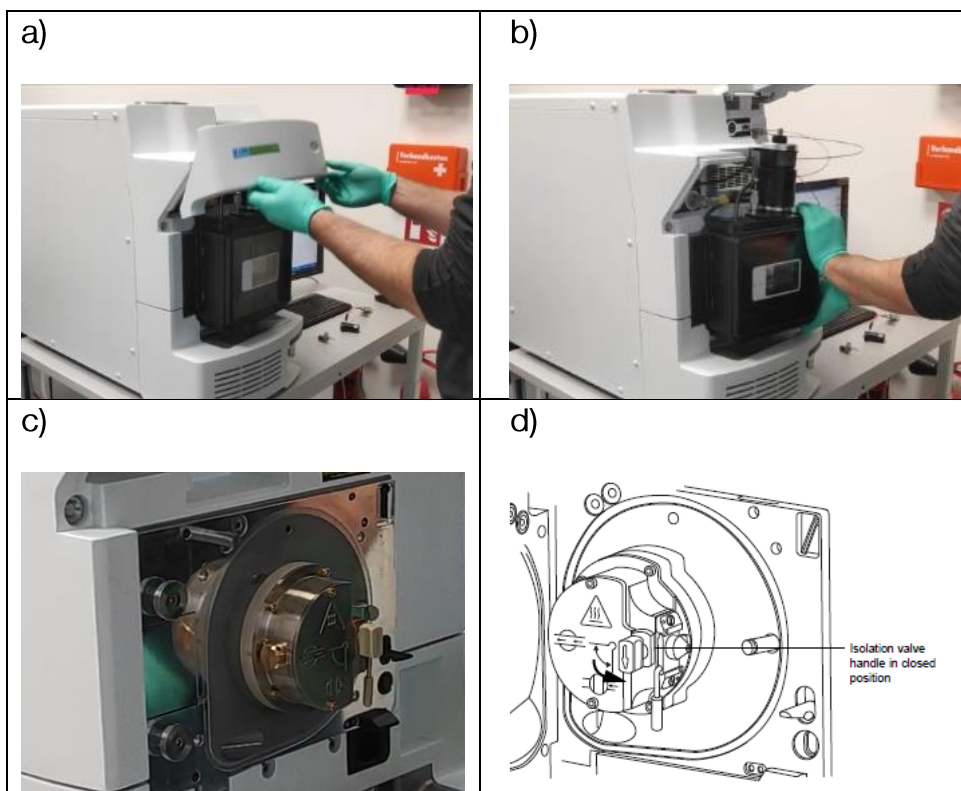


Figure 2: Opening of source interface spray chamber (a), opening of source enclosure (b), Inlet with sample cone orifice (c).

- Select *source standby* in the instrument console and let the system cool down.
- Open the source interface door and remove the connector cable.
- Pull the source enclosure release and lift off the source enclosure.
- Close the isolation valve by moving its handle counterclockwise to the vertical position.

2.2 Installation of the SICRIT® WX1 Ion source adapter

For the operation of the SICRIT® Ion source the ion block assembly has to be connected directly with the SICRIT® Ion source adapter assembly by the following steps:

- Slide out the sampling cone assembly out of the ion block assembly using the cone gas nozzle handle (see Fig. 3)

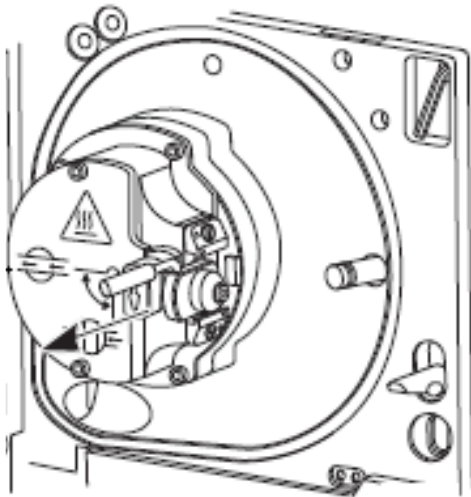


Figure 3: Removing the sample cone assembly from ion block assembly.



Attention!

Do not open the isolation valve at any time when the sampling cone assembly has been removed from the ion block assembly

- Remove the sampling cone assembly retaining blocks by unscrewing them
- Use the provided lifting tool to remove the sample cone and the o-ring from the cone gas nozzle (see Fig. 4)

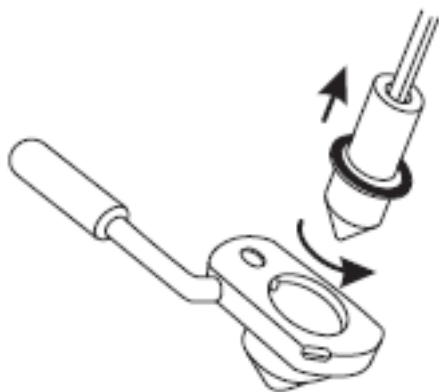


Figure 4: Removing the sample cone with o-ring from the cone gas nozzle using the provided tool.

- Insert sample cone and o-ring into the SICRIT® Ion source adapter assembly.
- Mount the SICRIT® Ion source adapter assembly using the provided screws and the boreholes of the retaining blocks.

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.
- After mounting of the SICRIT® Ion source, the isolation valve can be opened by turning the handle in orthogonal position.

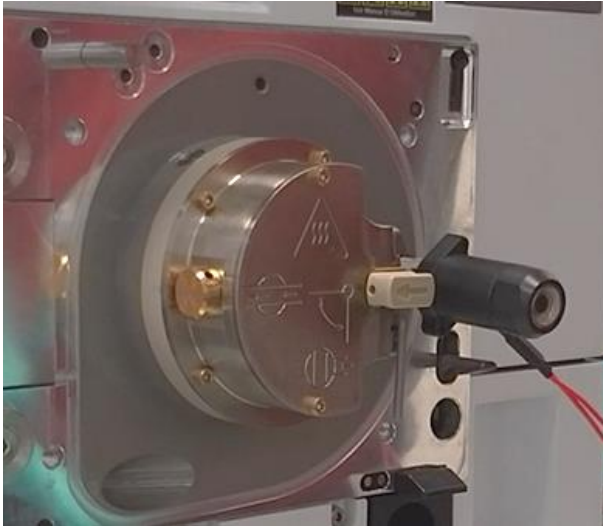




Figure 5: SICRIT® Ion source mounted on ion block assembly.

	<p>Attention!</p> <p>Do not use too much force during locking of the source. This might cause break of the vacuum.</p> <p>Tip: After first assembly, you can install and remove the source assembled with the source adapter.</p>
	<p>On new sources the locking might require some force. The locking mechanism becomes easier after a few installations.</p>

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:

- Plug in the SICRIT® Interlock connector.
- Hook on the source housing by placing the notches of the housing over the two respective supporting studs of the MS (see Fig. 6).



Figure 6: Hooking of SICRIT® MS Source housing on the MS interface.

- Move the HV cables of the ion source through the cutouts while closing the source housing. Make sure not to jam the cables!
- Lock the source housing by closing the door.

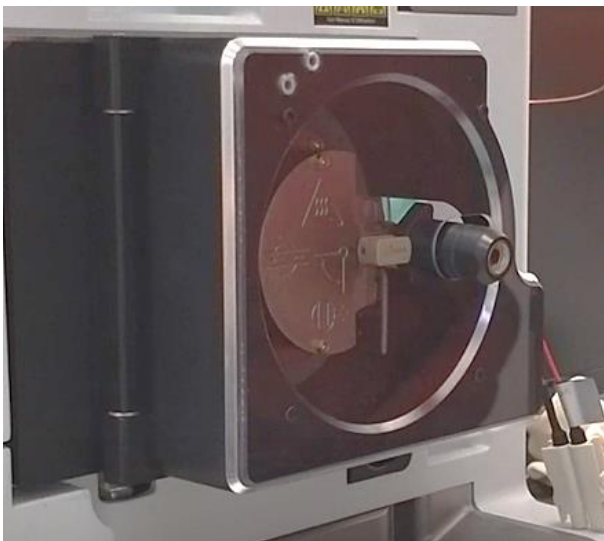
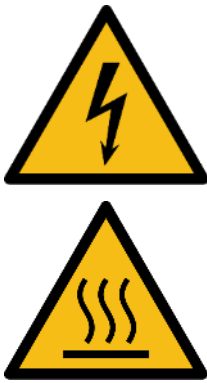


Figure 7: SICRIT MS Interface WX1 after complete installation.



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.

	<p>Attention!</p> <p>Do not remove the surface cover plate of the SICRIT® MS Source housing.</p> <p>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.</p>
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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 LC 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

	<p>If the system is used in a manner not specified by the manufacturer, the warranty of the manufacturer may be impaired.</p>
	<p>The source housing is pre-configured with a jet nozzle to reduce the purging gas flow. Don't remove this nozzle!</p>

MassLynx Software-Settings for operating the SICRIT® Ion Source

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

- Select nano-ESI as ionization source in the “General” tab of the software.
- Switch to “Source” tab and use the recommended settings according to Tab. 1 (see Fig. 8).

Table 1: Recommended source settings for SICRIT® ionization

Setting	Recommended Values
Capillary Voltage	0 kV
Cone	50 V
Source Temperature	70 °C
Purge Source Gas Flow	1 L/hr (except if used for optional modules)
Cone Source Gas Flow	2 L/hr (except if used for optional modules)

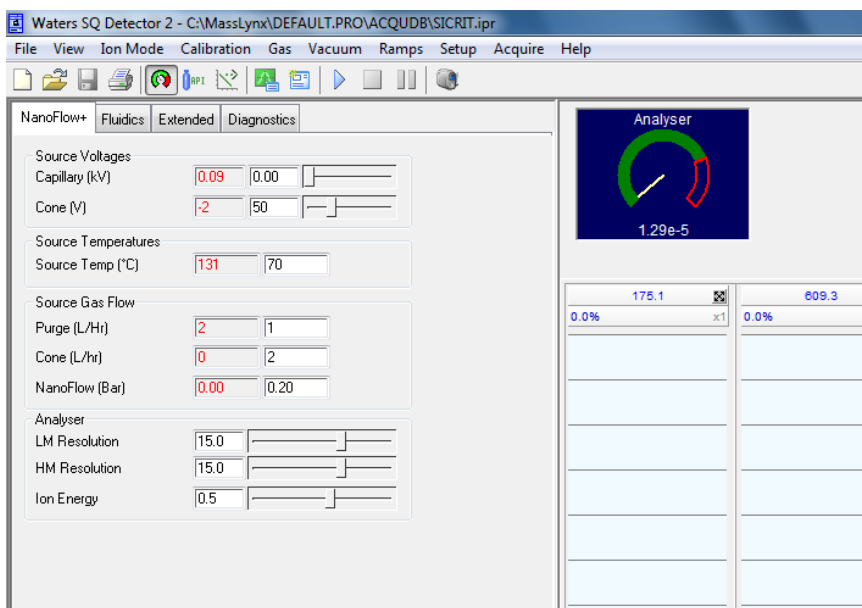


Figure 8: Source tab with parameter settings of MassLynx Software.

4. Service and Maintenance of the SICRIT® MS Interface WX1

4.1 Maintenance of the SICRIT® MS Interface WX1

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.
- Plug off the interlock connector. Unlock the lever of the SICRIT® MS source housing and take off the housing carefully.
- Close the ion isolation valve



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.
- Dismount the ion source adapter assembly by unscrewing.
- Remove the sample cone and o-ring using the provided lifting tool.

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 and protective window using a moist linen tissue.
- Make sure all parts are dry and clean before reinstallation.