

Installation Manual

SICRIT[®] MS Interface BX1

for Bruker LC-MS instruments



Release November 2024

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 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 BX1 for Bruker LC-MS instruments

The SICRIT® Interface BX1 replaces the standard *Apollo II* ion source housing of the Bruker LC-MS and enables the coupling of the SICRIT® Ion source to the MS (Fig. 1). The interface set 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. 26-004),
- an ion source adapter assembly including a ceramic extension (b, Art.-Nr. 06-0041), an inlet adapter (c, Art.-Nr. 16-008), and a source adapter with fixing nut (d, Art.-Nr. 16-008) to connect the inlet capillary to the SICRIT® Ion source.

The MS interface enables the general connection of the SICRIT® Ion source to your Bruker 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).

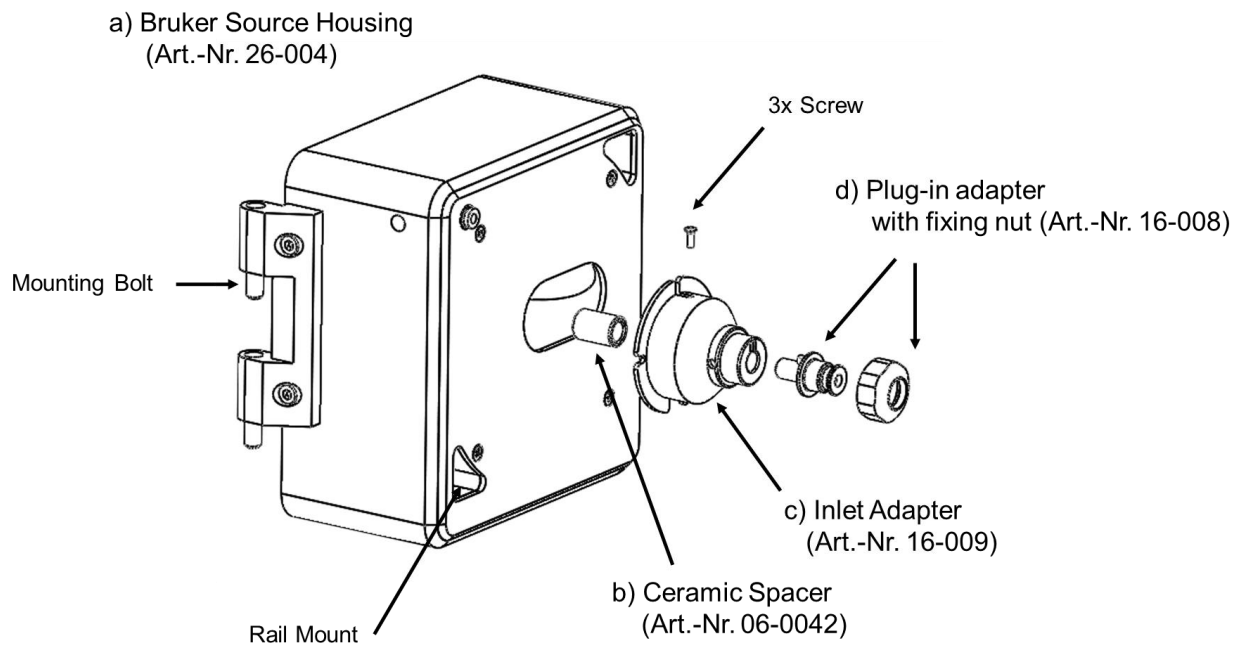


Figure 1: Components of the SICRIT® Interface BX1.

2. Installation of the SICRIT® MS Interface BX1 to the MS instrument

2.1 Steps before the installation of SICRIT® MS Interface BX1

Before the interface can be installed, the standard Bruker *Apollo II* ion source must be removed. Please follow the specific descriptions of the MS manufacturer.

	<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>

- Turn off the spray chamber, put your MS in standby **mode**, and let the system cool down.
- Open the spray chamber and remove it from the LC-MS.
- Remove the spray shield, so the capillary end cap is exposed.
- Remove the capillary cap from the end of the capillary.

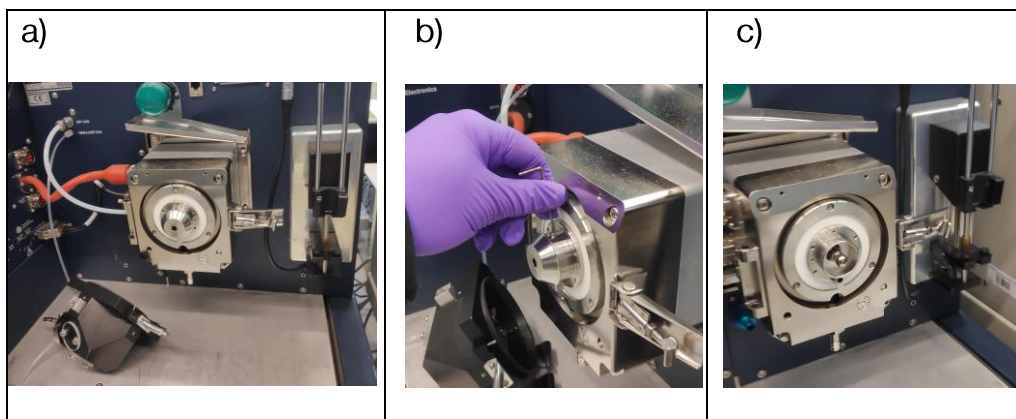


Figure 2: Removed electrospray spray chamber (a), Removing the spray shield (b) Inlet with capillary cap (c).

2.2 Installation of the SICRIT® BX1 Ion source adapter assembly

For the operation of the SICRIT® Ion source the resistive capillary must be connected directly with the SICRIT® Ion source adapter by the following steps:

- Place the ceramic spacer on the resistive glass capillary (see Fig. 3).

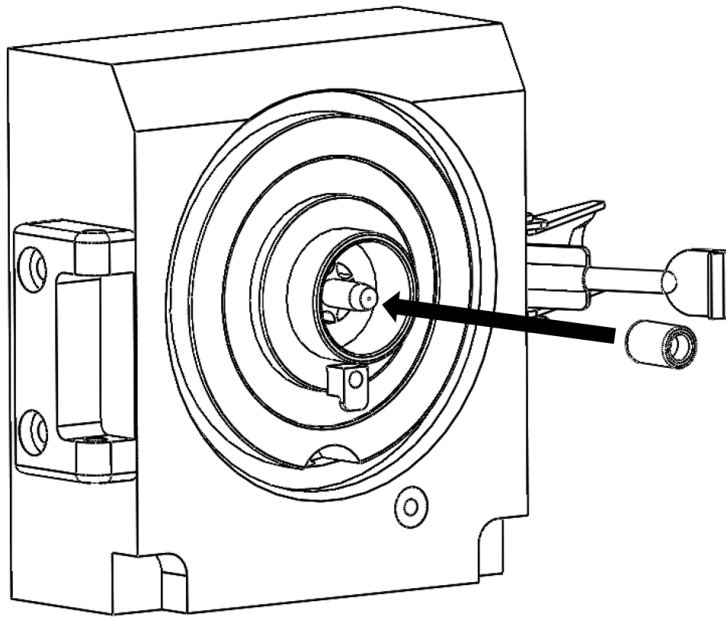


Figure 3: Installation of the ceramic spacer.

- Mount the inlet adapter using the delivered screws over the ceramic spacer (see Fig. 4).
- Mount the source adapter onto the inlet adapter. Make sure to guide the pin into the notch (see Fig. 5).
- Complete by installing the nut over the source adapter by screwing it clockwise onto the inlet adapter thread (see Fig. 5). Do NOT use tools e.g., pliers and tighten it only finger-tight!

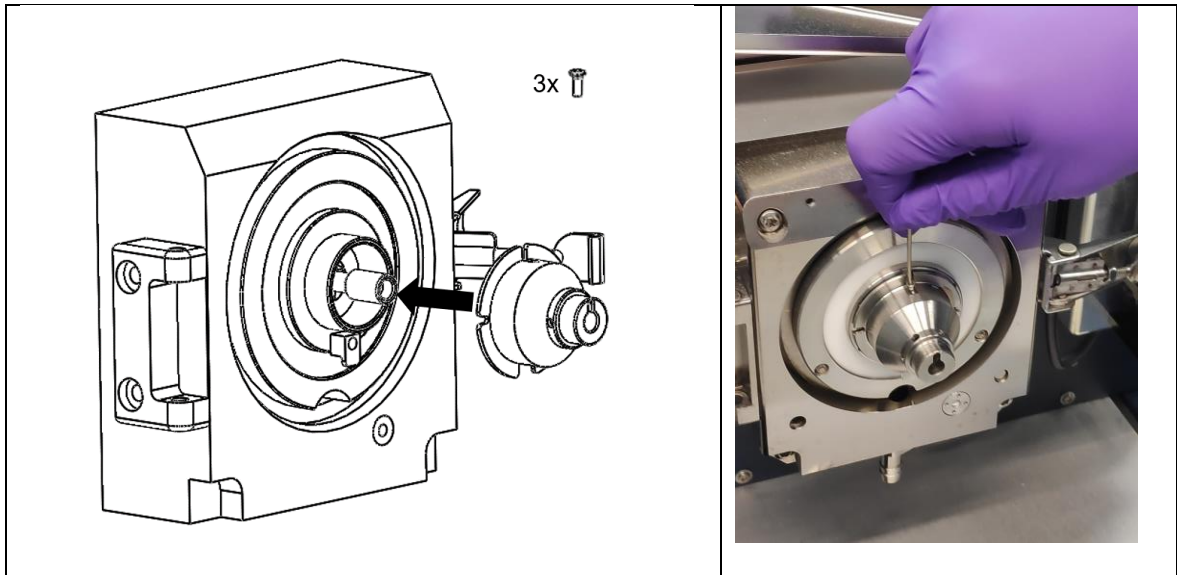


Figure 4: Installation of the inlet adapter.

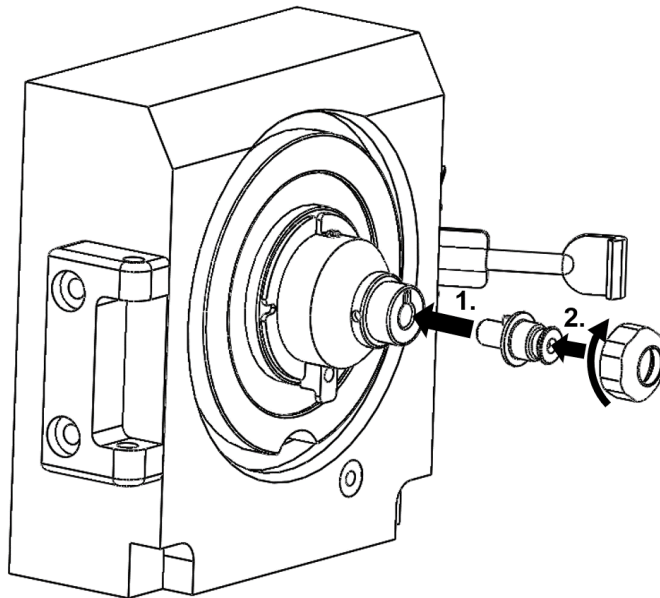


Figure 5: Installation of the source adapter.



Attention!

Make sure that you tighten the nut finger-tight! Do NOT use any tools to tighten the nut.

Overtightening might damage the resistive glass capillary!

2.3 Installation of the SICRIT® Ion source

After installation of the SICRIT® Ion source adapter assembly you can now mount the SICRIT® Ion source by means of the quick lock mount (Figure 6).

- 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.

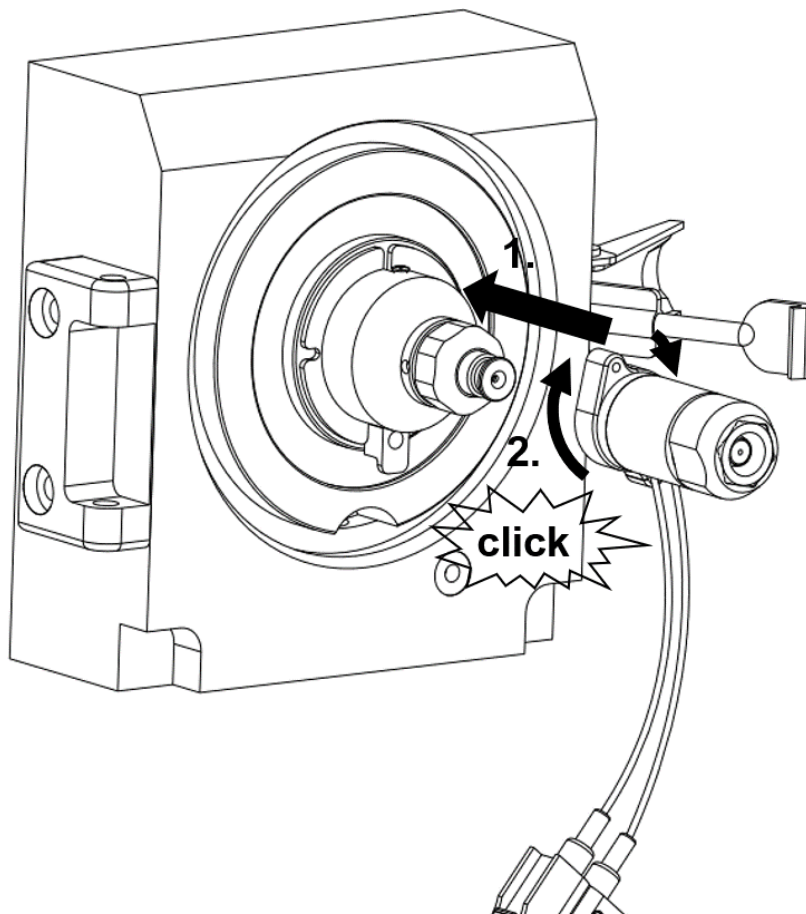


Figure 6: Installation of the SICRIT® Ion source.



On new sources the locking might require some force. The locking mechanism becomes easier after a few installations.

2.4 Installation of the SICRIT® MS Source housing

After mounting of the SICRIT® Ion source, install the provided SICRIT® MS Source housing BX1 before operation of the ion source as following:

- Hook on the source housing by placing the mounting bolts in the guides of the MS (see Fig. 7).

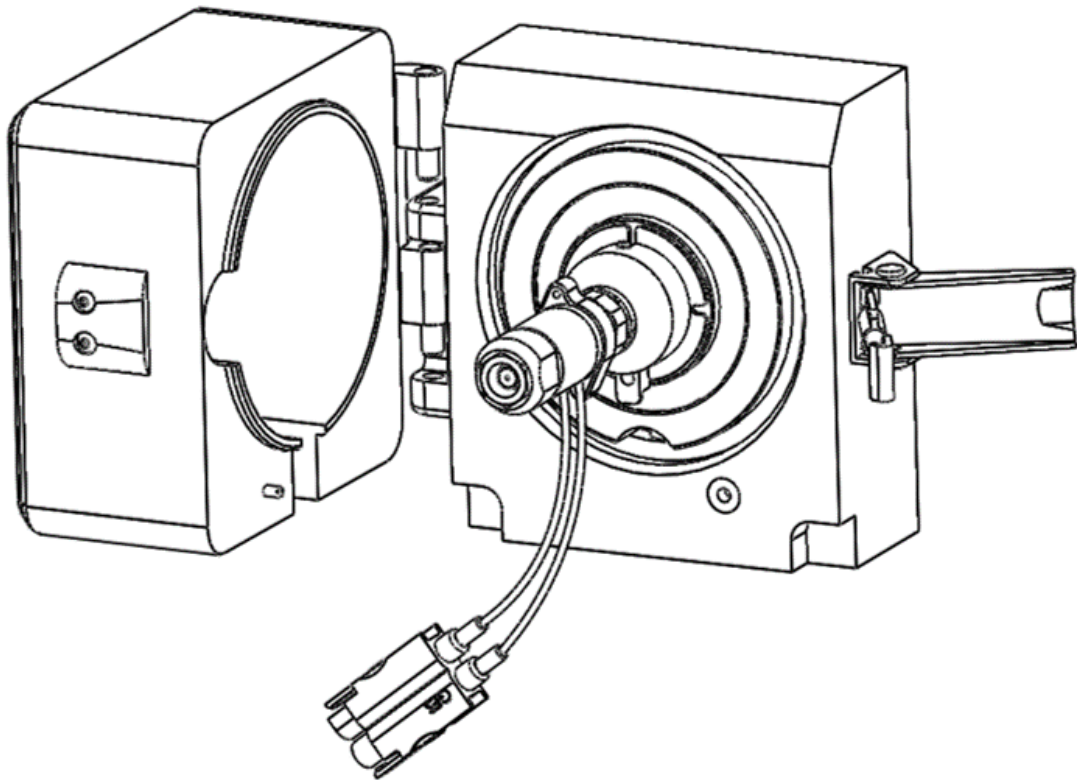


Figure 7: Hooking of the SICRIT® Source housing on the MS.

- Move the HV cables of the ion source through the cutouts while closing the source housing. Make sure not to jam the cables!
- Make sure that the contact pin fits into the respective borehole
- Lock the source housing by closing the locker over the catch on the interface (see Fig. 8).



Attention!

Make sure not to jam the HV cables while closing the source housing! Use the provided cutouts (see Fig. 9). 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.

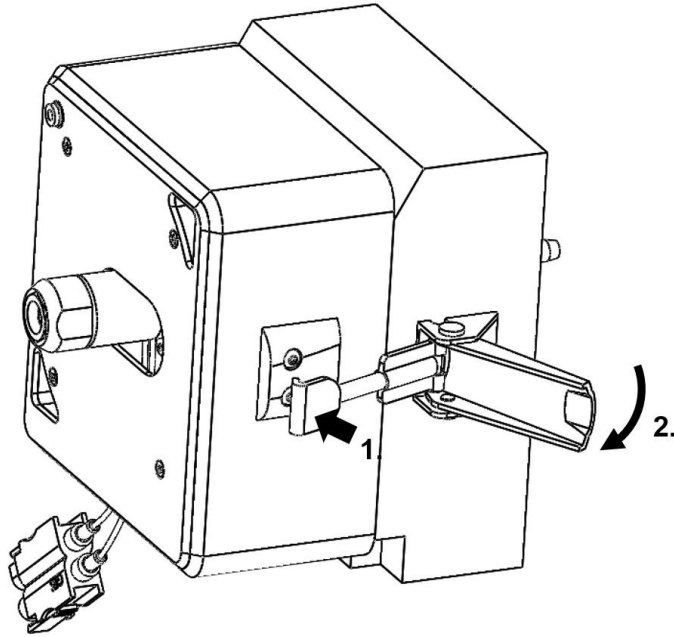
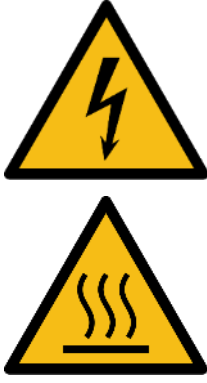



Figure 8: Closing the Source housing.

	<p>Attention!</p> <p>Do not remove the surface cover plate of the SICRIT® 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>
	<p>If the source is not recognized by the MS software, this indicates a missing contact of the pin on the rear of the housing. Please adjust the length of the threaded pin until it makes contact.</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>If you do not use/restrict the nebulizer flow (e.g. GC/SPME Module), close of the gas line with a proper fitting, else the instrument might not achieve the required readbacks to get “ready” state.</p>


MS Software-Settings for operating SICRIT® Ion Source

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

- Select ESI as ionization source in the “Source” tab of the software and use the recommended settings according to Tab. 1 (see Fig. 9).

Table 1: Recommended source settings for SICRIT® ionization

Setting	Recommended Values
V Capillary	0-1000 V (usually 0 V)
End Plate Offset	0 V
Nebulizer	0 bar (except if used for optional modules)
Dry Gas	inactive
Dry Temp	inactive

	<p>Plasmion GmbH refuses any liability for damage to persons, its own or foreign products if other than the above-mentioned recommended settings are used during SICRIT® MS operation!</p>
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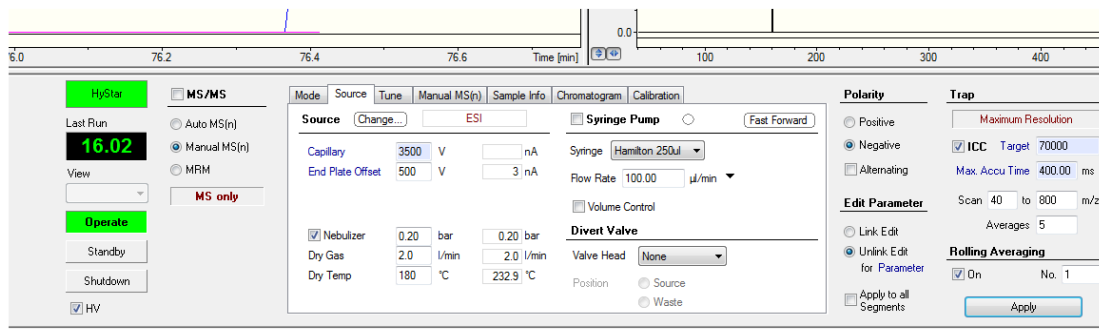


Figure 9: Source tab with parameter settings of Bruker MS Software.

4. Service and Maintenance of the SICRIT® MS Interface BX1

4.1 Maintenance of the SICRIT® MS Interface BX1

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, please follow the steps described for installation in reverse order:

- Put your MS to standby mode and let inlet cool down.
- Turn off the SICRIT® SC-30 control unit's HV output.



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 lever of the SICRIT® Source housing and take off the source housing carefully.
- Dismantle the ion source turning the lock counterclockwise.



Attention!

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

- Loosen the nut and take out the source adapter.
- Unscrew the inlet adapter and take of the ceramic spacer.

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 and ceramic 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.