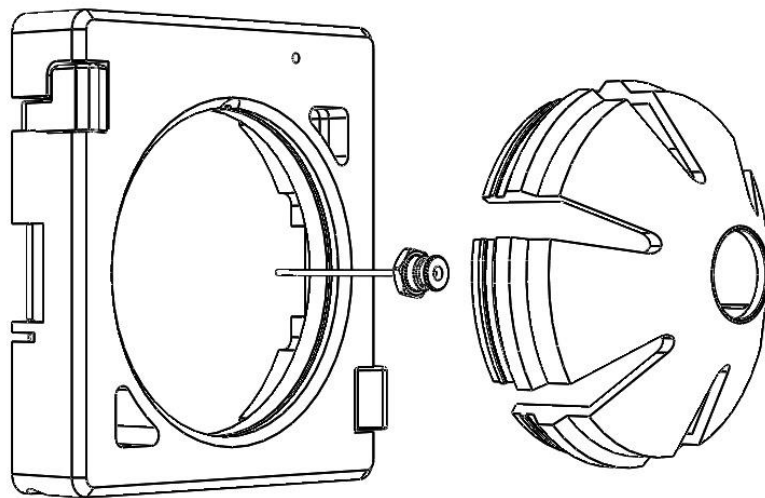


## Installation Manual

### SICRIT® Interface TX2/3

for Thermo Fisher LTQ, LTQ Velos, Orbitrap Elite and Exactive Series



This manual has to be stored carefully and must be at hand to any user of the described system. In addition to this guide, Plasmion GmbH provides the following installation manuals:

*Hardware and Operations Manual for SICRIT® SC-30X Ionization Set*

*Installation and Operations Manual for SICRIT® GC/SPME-Module*

Please check for an updated version of this manual on [plasmion.de](http://plasmion.de).



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.





The content of this document has been checked thoroughly and is believed to be reliable. However, Plasmion GmbH does not assume any responsibility for damages of foreign or own products and instruments resulting from improper use or any combination of the product with other instruments. Plasmion GmbH is not liable for consecutive damages resulting from integration and/or operation of its products in/with other systems. If the system is used in any manner not specified by Plasmion GmbH, the protection of the system could be impaired. Plasmion GmbH is not responsible for ignoring the outlined safety guidelines or the misuse of this system.

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>

## Table of Content

1.	Intended Use of the SICRIT® MS Interfaces .....	1
1.1	The SICRIT® Technology .....	1
1.2	The SICRIT® Interface TX2/3 for Thermo LC-MS-Instruments .....	1
2.	Installation of the SICRIT® Interface TX2/3 to the MS-instrument.....	3
2.1	Steps before the installation of SICRIT® Interface TX2/3.....	3
2.2	Installation of the SICRIT® Inlet capillary.....	4
2.3	Installation of the SICRIT® Ion source and SICRIT-MS-measurements .....	5
2.4	Installation of the SICRIT® Interlock fitting .....	6
2.5	Installation of the SICRIT® Safety cap .....	7
3.	Launching the MS-instrument with SICRIT® Ionization Technology.....	8
4.	Service and Maintenance.....	9
4.1	Maintenance of the SICRIT® Inlet capillary.....	9
4.2	Cleaning of the SICRIT® Inlet capillary .....	9

## 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 as GC or HPLC. The latter requires additional coupling modules.

### 1.2 The SICRIT® Interface TX2/3 for Thermo LC-MS-Instruments

The SICRIT® Interface TX2/3 replaces the standard housing of the Thermo Fisher *Ion Max API Source* and enables the coupling of the SICRIT® Ion source to the MS (Figure 1). The TX2/3 Interface consists of:

- an interlock fitting (a) that enables the MS to detect the SICRIT® Ion source.
- an ion-transfer inlet capillary (b) to connect with the SICRIT® Ion source.
- a safety cap (c) to protect the user.

The interface enables the general connection of the SICRIT® Ion source to your Thermo MS. It also enables the mechanical connection of additional SICRIT® modules for coupling methods e.g. SPME-SICRIT®-MS, GC-SICRIT®-MS (please check for available products at [plasmion.de](http://plasmion.de)).

The SICRIT® Interface TX2 and TX3 only differ in the geometry of the SICRIT® Inlet Capillary.

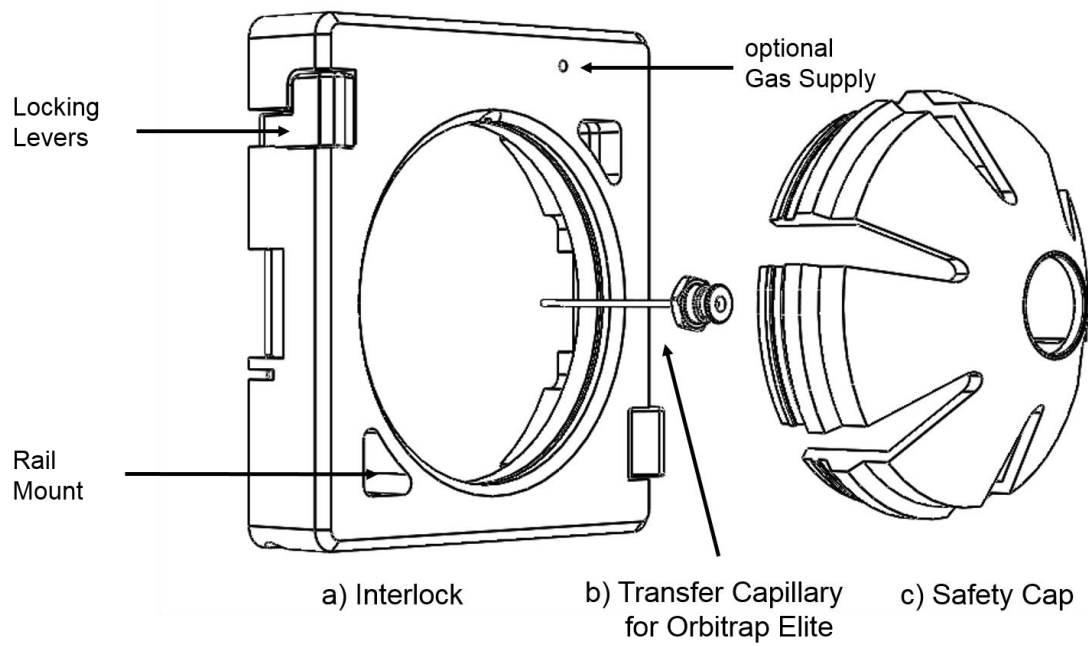




Figure 1: Components of the SICRIT® Interface TX2/3.

## 2. Installation of the SICRIT® Interface TX2/3 to the MS-instrument

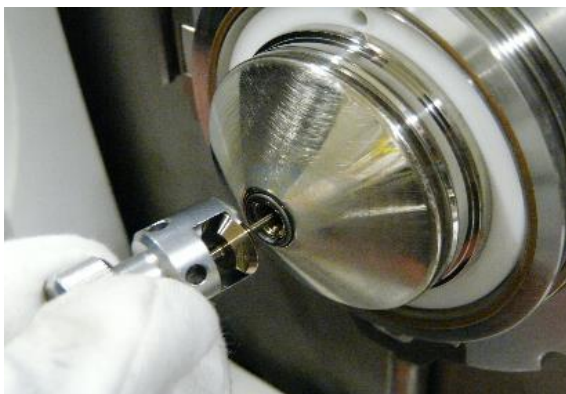
### 2.1 Steps before the installation of SICRIT® Interface TX2/3

Before the interface can be installed to the mount of the Thermo MS, the standard *Ion Max* housing has to be removed. Please follow the specific descriptions of the manufacturer of your MS.

	<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>

- Put your MS instrument in standby mode and let *the ion sweep cone* cool down.
- Unlock the lever on the housing and take it out of the mounting.
- Unscrew both of the screws connected to the *ion sweep cone* and take the cone off.
- Now the transfer capillary can be dismantled with the specific tool of the MS-manufacturer (Figure 2 a). Make sure not to remove or damage the graphite sealing ring. After successful removal, the MS interface should look as shown in Figure 2 b.

a)



b)



Figure 2: Removing the ion transfer capillary with the MS-manufacturer tool.

## 2.2 Installation of the SICRIT® Inlet capillary

For the operation of the SICRIT® Ion source, a special inlet capillary fitting your MS is required and provided with this interface. The capillary provided with the TX2 interface will fit Thermo Fisher LTQ, LTQ Orbitrap and older Exactive series instruments. The capillary provided with the TX3 will fit Thermo Fisher LTQ Velos, Orbitrap Elite and Exactive Series.



If your original Thermo capillary differs in length from the one provided with the interface, please contact Plasmion or your respective sales agent before installation.

Insert the SICRIT® Inlet capillary through the *Spray Cone* opening. Make sure that the graphite sealing ring is positioned correctly (Figure 3).

- Fix the inlet capillary with a 13 mm open-end wrench (only hand tight!).
- Control the tight fit of the capillary with the shown pre-pressure (< 2 mbar) in the status window of the *Tune Plus* software.



Figure 3: Installation of the SICRIT® Inlet capillary.



Make sure that the capillary inserts as easily as the original capillary. If you sense an unusual resistance when inserting the capillary pull it out immediately. The capillary inlet could be deformed through the effect of the heat.



## 2.3 Installation of the SICRIT® Ion source and SICRIT-MS-measurements

After assembling the SICRIT® Inlet capillary, the SICRIT® Ion source can be mounted (Figure 4).

- Press the ion source gently onto the source adapter.
- Firmly hold the source and rotate the lock about ¼ turns clockwise, until you hear a “click” sound. This signalizes that the lock is engaged and mounting is finished.

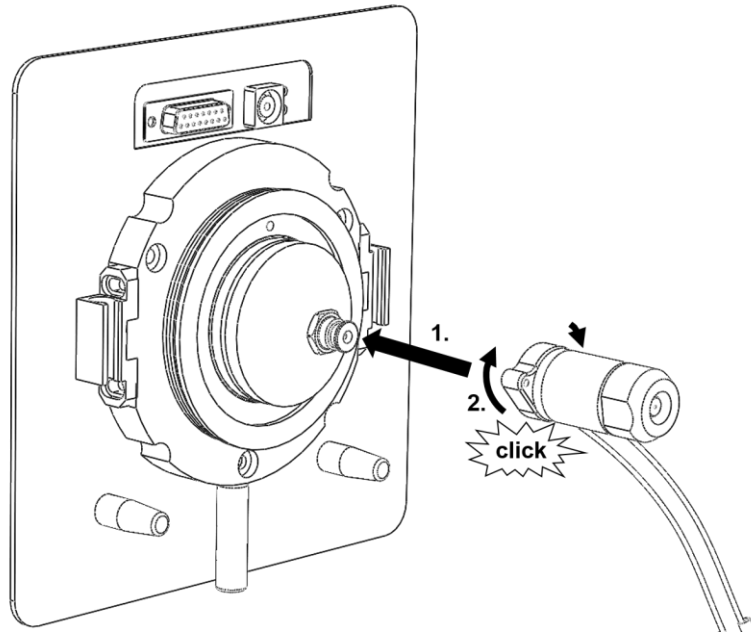


Figure 4: Installation of the SICRIT® Ion source.



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

## 2.4 Installation of the SICRIT® Interlock fitting

For the installation of the SICRIT® Ion source to Thermo Fisher Orbitrap-systems the SICRIT® Interlock is used on the ion source mount instead of the *Ion Max API* housing.

- Put the ion source cable through the center of the interlock.
- Adjust the two holes of the interlock to the guiding pins of the mount and press the interlock gently onto the mount (Figure 4, step 1).
- Lock the two diagonally arranged levers on the interlock by turning them 75 degrees (Figure 4, step 2).
- Check the correct installation by the status message *"Instrument status ok"* in the *Tune Plus* software.

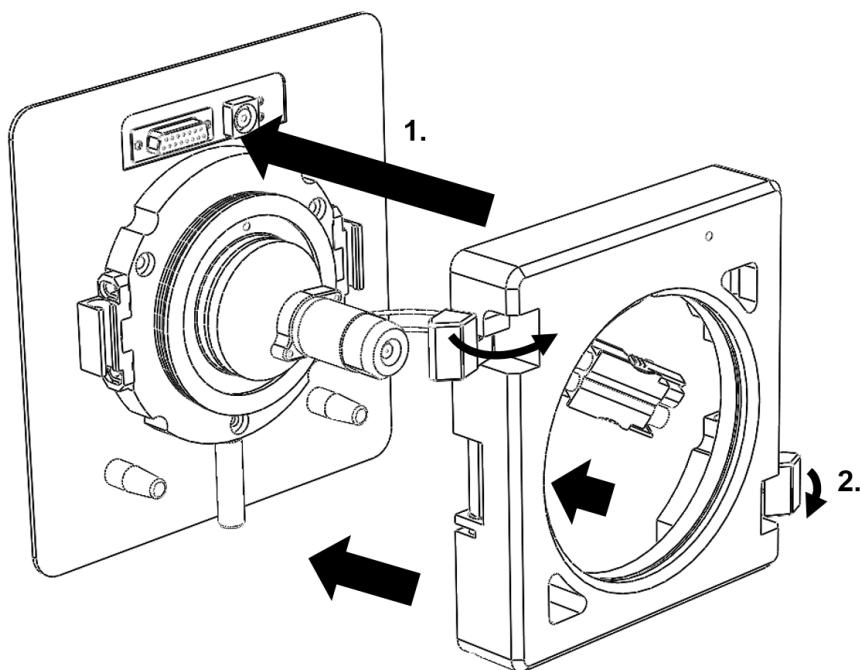


Figure 4: Installation of the SICRIT® Interlock to the mount of the MS-instrument.

After installation of the interlock, the SICRIT® Ion source should be detected as standard ESI source by the MS-instrument. Proceed with installation of the safety cap.

## 2.5 Installation of the SICRIT® Safety cap

The provided safety cap is part of the interface-module for the use of SICRIT technology with Thermo Fisher MS-instruments and must be installed for operation!

The safety cap protects the user against hot components of the MS-inlet during the operation of the SICRIT® Ion source.

- “Click” the SICRIT® Safety cap into the interlock and in the correct position as it is predefined by the design of the cap (Figure 5).

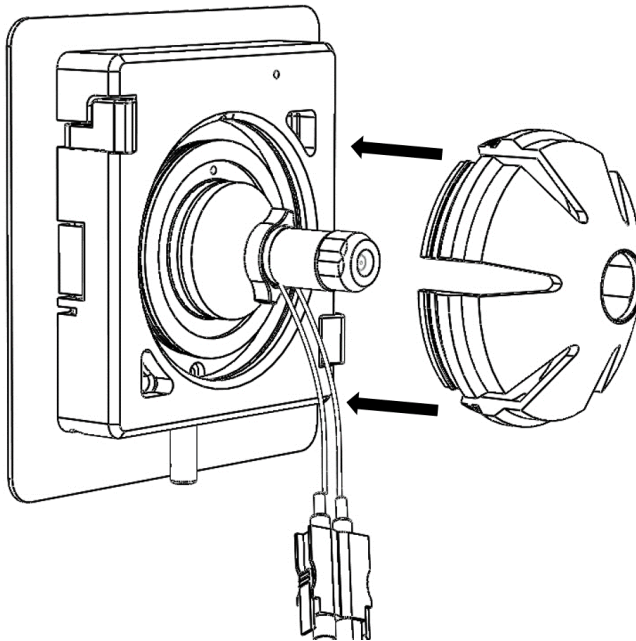


Figure 5: Installation of the SICRIT Safety cap onto the SICRIT Interlock.

Further steps 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 available free of charge [plasmion.de](http://plasmion.de).

### 3. Launching the MS-instrument with SICRIT® Ionization Technology



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

#### Thermo MS Software Settings for the Operation with SICRIT® Ionization.

The SICRIT® Ion source replaces the standard *API ion sources* like ESI or APCI. Before assembling and launching the SICRIT ion source the following recommended operation parameters should be set in the *Tune Plus* software of the MS (Table 1):

Table 1: Recommended software source settings for SICRIT® ionization

Setting	Recommended Values
Sheath Gas Flow Rate	0
Aux Gas Flow Rate	0 (except if used for GC/SPME Module)
Spray Voltage	0 kV
Capillary Temperature	150°C - 250 °C



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

## 4. Service and Maintenance

### 4.1 Maintenance of the SICRIT® Inlet capillary

It is recommended to clean the inlet capillary periodically to avoid the formation of contaminations in form of deposits and to ensure an optimum performance of the ion source. A drop in the pre-pressure indicates a clogging of the inlet capillary due to high particle load and requires the cleaning of the capillary. In order to remove the inlet capillary stick to the steps described above for replacing the Thermo Fisher transfer capillary with the SICRIT® Inlet capillary.

- Put your MS to standby mode and let the *spray cone* cool down.
- Turn off the SICRIT HV power supply.
- Disconnect the HV cables.
- Take off the safety cap.
- Unlock the levers of the SICRIT® Interlock and take off the interlock carefully.
- Take off the SICRIT® Ion source.
- Dismantle the inlet capillary with a 13 mm open-end wrench.
- Carefully pull the SICRIT® Inlet capillary out of the MS inlet. Make sure not to remove or damage the graphite sealing ring.

### 4.2 Cleaning of the SICRIT® Inlet capillary

Follow the procedure below to clean the SICRIT® Inlet capillary:

- Use an ultrasonic cleaning bath to clean the inlet capillary for 15 min in a 50:50 methanol: water-mixture.
- Check the graphite sealing ring for damages and replace it by a new sealing ring if necessary.
- Insert the SICRIT® Inlet capillary as described above and control the pre-vacuum shown in the status monitor of the *Tune Plus* software.