

SICRIT® Ionization Set SC-30

The SICRIT® Ionization Set SC-30 upgrades any LC-MS instrument with a plug & play ionization source. The SICRIT® soft ionization technology enables PTR-like online MS-measurements as well as coupling of sample enrichment and/or chromatographic techniques with soft ionization MS using optional SICRIT® modules.



Figure 1 - SICRIT® Ionization Set with Control Unit SC-30 and Ion Source.

SICRIT® Ionization Set SC-30

The SICRIT® (Soft ionization by Chemical Reaction In Transfer) technology is based on flow-through cold plasma ionization. The Ionization Set consists of the SICRIT® Ion Source and the Control Unit SC-30, which supplies high frequency high AC voltage for plasma ignition. Furthermore, the control unit drives optional SICRIT® modules via 24 V supply.

SICRIT® Control Unit SC-30

The SICRIT® Control Unit SC-30 features easy operation of the SICRIT® Ion Source and additional hardware modules. Settings can be adjusted via the rotary encoder. The Ion Source is connected using the supplied high voltage (HV) cable. The stand-alone control unit works with 100- 240 V (50-60 Hz) power supply.

SICRIT® Soft Ionization Source

The SICRIT® Ion Source extends the inlet of your LC-MS and ionizes all molecules drawn in by the MS by means of a ring-shaped cold plasma. The plasma is ignited directly inside the extended MS inlet, thus transmission and, consequently, sensitivity are greatly improved. The ring-shaped plasma ensure soft ionization of a very broad range of analytes - even of non-polar compounds like alkanes - resulting in spectra with molecular product ions and barely fragmentation. Therefore, SICRIT® is dedicated for non-target analysis..



Figure 2 - Front view of Control Unit SC-30 with display and rotary encoder (top), back view with plug sockets (bottom)

Installation and Operation

The SICRIT® Ion Source is designed for universal use on each LC-MS instrument of all vendors by use of Plasmion's MS interfaces. These replace the original ion source and allow operation of the SICRIT® Ion Source. The source itself is directly mounted onto the API inlet using a quick-lock adapter. The flow-through principle makes elaborate geometry optimization and parameter tuning obsolete and ensures, that new users can immediately start with their experiments. The only parameters which have to be adjusted are voltage and frequency to ensure stable plasma conditions and high ionization efficiency.

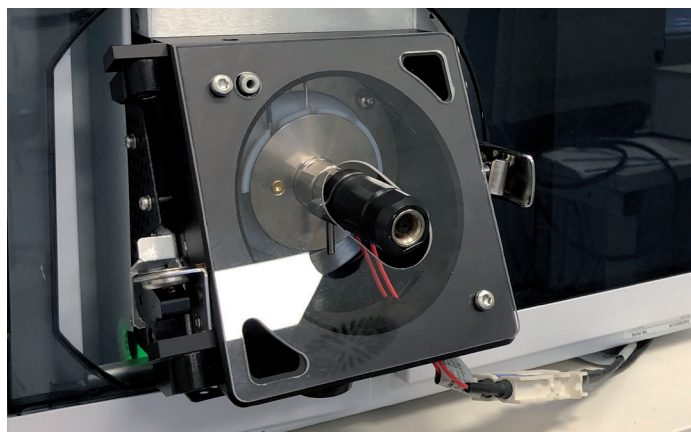


Figure 3 - SICRIT Ion Source installed on Agilent LC-MS instrument.

Fields of Applications.

The SICRIT® Ion Source is designed for direct and real-time MS measurements without sample pretreatment as well as for combination of the soft ionization with chromatography using respective Plasmion hardware solutions.

Direct and Real-time Measurements

The SICRIT® Ionization Set SC-30 is the basic setup for direct and / or online monitoring of volatile compounds. Just hold a solid or liquid sample in front of the ion source and you will instantly get the VOC fingerprint on your LC-MS!

Especially in combination with high-resolution TOF or Orbitrap LC-MS systems, the SICRIT® Ion Source develops its full potential for forensic direct and non-target screenings. This enables sensitive aroma profiling, product classification or detection of trace contamination. Furthermore, real-time applications like inline/online-quality control or reaction process monitoring are easily addressable.

The SICRIT® Ion Source transforms your LC-MS instrument within minutes into an „electronic nose“ sensor dedicated for real-time MS measurements.



Figure 4 - Direct VOC sampling for aroma analysis of red wine.

Coupling to Sampling Systems and Chromatography

The SICRIT® Ionization Set can be optionally equipped with hardware solutions to combine SICRIT®-MS with Plasmion's sampling and coupling solutions.

The ion source can be connected via 6 mm tube fitting, which serves as universal adapter to additional hardware.

By optional modules, the SICRIT® Ionization Set SC-30 can be utilized for diverse combinations with sample enrichment and separation methods, taking advantage of the unique ionization range and sensitivity of SICRIT®.

Interfaces and Optional Modules

Plasmion provides interfaces for operation of SICRIT® Ion LC-MS instruments of following vendors:

Agilent, Bruker, Sciex, Shimadzu, Thermo Fisher, Waters

• SICRIT® Heated Transfer Line



The SICRIT® Heated Sampling Line facilitates sample transfer into the ion source for direct screening experiments or real-time process monitoring.

• SICRIT® GC/SPME Module



The SICRIT® SPME Module connects state-of-the-art sample enrichment and separation techniques with your SICRIT® Ion Source, e.g. for direct injection of small liquid amounts, direct SPME-MS measurements or GC coupling to your LC-MS.

Technical Data and Specifications

Dimensions (Control Unit)	270 x 200 x 80 mm
Dimensions (Ion Source)	45 x 30 x 20 mm
Weight (Control Unit)	2.1 kg
Weight (Ion Source)	0.1 kg
Supply Voltage	100 - 240 VAC 50 - 60 Hz max. 400 W
Power Connector	Connector Tyoe IEC/EN 60320-1/C14
HV Output	2 x 0 - 1100 VAC (0 - 3000 V _{pp}) 10.0 - 50.0 kHz max. 100 W
Modules Output	24 VDC max. 100 W
Operation Conditions	5 - 60 °C surface temperature < 80% RH (non condensating)
Carrier Gas Conditions (Ion Source)	Temperature and Humidity: 5 - 250 °C (continuous) max. 320 °C (short-term) 0 - 90% RH Possible carrier gases: Air, N ₂ , CO ₂ , He Flow rates: depending on MS instruments, typically 0.5 - 1.5 L/min
LC-MS Connection	For operation, specific SICRIT MS Interfaces are required (see Plasmion's product portfolio)