This instrument is an economically priced non-contact liquid handling system for offline LC-MALDI MS and MS/MS workflows with the following advantages:

- Highly reproducible sample preparation
- Low sample preparation volumes (10 nL+) - high detection sensitivity
- Non-contact fraction collection maintains chromatographic resolution
- Non-contact liquid dispensing and removal
- Head mounted camera for substrate inspection and sample imaging

Non-contact LC fraction collection

Controlled by the LC-software fractionation starts immediately or after a defined waiting time. The non-contact fraction collector consists of a dispenser engine, a T-connector and a conical dispenser tip. The final section of the fused silica LC capillary is located inside that tip and terminates exactly at the end of it. Here the effluent is mixed with a second liquid, which can be matrix solution or any other liquid, and then jointly ejected as a well-defined series of droplets.

The minimum droplet volume measures only 10 nL. To enhance the detection sensitivity and maintain the chromatographic resolution each droplet can be dispensed to a different position on the MALDI target (one droplet, one fraction) or multiple droplets can be collected on the same position.

The ratio of eluate and dispensing solution is controlled by the dispensing frequency (e.g. 1, 5 or 10 droplets/s). This we call digital liquid handling as everything is controlled by and based on number of droplets. It’s really simple, it’s easy.
Intuitive User Interface

Instrument software is the result of more than ten years experience in MALDI MS sample preparation; guiding the user easily through all features such as target layouts, spotting patterns, fraction collection modes, definition of additional workflows etc.

- Flexible instrument software
- Intuitive user interface
- Easy set-up of different work flows
- Task queue for collection of multiple LC runs
- Compatible with all LC instruments
- Compatible with all MALDI mass spectrometers
- Task designer offers effortless drag and drop programming

Applications – Possible work flows:

- Non-contact LC fraction collection (minimum fraction size: 10 nl)
- Non-contact dispensing of a liquid of free choice onto the MALDI target, e.g. MALDI matrix solution or acidic water
- Non-contact liquid removal, e.g. of acidic water deposited onto thin-layer sample preparations for washing and conditioning
- Alternating non-contact dispensing of two liquids of free choice, e.g. for on-target dilution or mixing of matrix and an additive or two matrix solutions
- High resolution imaging of all steps of the sample preparation work flow for development, trouble shooting and documentation purposes, e.g. how much sample is left for further analyses after a first or second MS or MS/MS run
- All possible combinations of 1-5 alternating for each sample spot in a single run or as series of consecutive runs

Technical Data:

- Capacity: 2 MTP-sized positions
- Micro-dispensing device: volume range from 10 nl to ml per single ejection
- Regulated negative pressure for non-contact liquid removal
- Chemically inert and biologically compatible
- Maximum drive range: X=200 mm, Y=200 mm, Z=50 mm
- Single increment resolution = 10 µm
- Positioning accuracy in XY directions +/-20 µm
- Maximum speed: X=0.3 m/s, Y=0.3 m/s, Z=0.1 m/s
- Maximum positioning velocity: up to 5 depositions per second
- Self-contained pneumatic system
- Power: 100-230 VAC; iTWO 561 W; safety housing 75 W; HEPA filter 20-160 W

Dimensions:

- Version A stand alone:
  W 34 cm, D 37 cm, H 40 cm, Weight ~25 kg
- Version B in safety housing:
  W 50 cm, D 55 cm, H 59 cm, Weight ~45 kg
- Ergonomic user stand USTA for keyboard, mouse and monitor:
  W 44 cm, D 58 cm, H 175 cm, Weight 36 kg
- HEPA filter system:
  W 38 cm, D 41 cm, H 61 cm, Weight 12 kg

Options:

- Integration of custom-specific components
- Temperature controlled unit (Cooling and warming units)
- Humidity control
- Clean room conditions
- Environmental enclosure
- Mobile instrument set-up

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