



Li A Lafayette Instrument Company
www.campdeninstruments.com

Integraslice: a Premium Oscillating Microtome



Integraslice is an oscillating blade microtome engineered to the highest quality, born from 20 years experience and available in two models:

7550PSDS for fully **P**rogrammable cutting profiles of **S**peed, **D**istance and **S**ection thickness.
Features include **D**ynamically **A**ddjustable Speed and **A**mplitude [DASA]

7550MM for **M**otorised or **M**anual advance of the oscillating blade.

Features a set speed motorised advance or manual advanced controlled by a rotary dial knob.

contact:



red box direct

Think inside the box

Tel. +353 1 440 3775

Fax. +353 1 443 0784

VIOP 3318@blueface.ie

email info@redboxdirect.com

Web www.redboxdirect.com

Oscillating Microtome Design.

Integraslice is designed to produce the very highest quality of slices in the most difficult tissue slicing applications.

Integraslice's internal control system ensures that all parameters constantly monitored. In all operations, even at the slowest rates, blade advance and blade speed is accurately maintained exactly as the user has specified due to constant feedback control. Thus, cutting action is uniform through materials of varying consistency and it is impossible to stall the instrument in normal use.

Robust in design and built from the highest specification components, both models accommodate the following optional equipment: -

- ✓ Campden Instruments precision blade technology in stainless steel or zirconium ceramic.
- ✓ Tissue baths and cutting heads that can be removed for autoclaving or simply cleaning.
- ✓ Optional, integrally fitted Inspection Microscope and / or Cold Light Source.
- ✓ Optional Tissue Bath with Temperature Controller to cool or warm to +/- 0.5 Celcius.

Integraslice design combines accuracy, speed and the flexibility to remove the cutting head and tissue bath for mounting or transport of the tissue and for cleaning or autoclaving. Integraslice is supplied with a standard tissue bath and holder that can be replaced by the autoclavable version or the temperature controlled version.

Blade Motion.

This is of primary interest and utmost importance. Whatever features of controllability an oscillating microtome has and however desirable and beneficial these may be it is the motion of the oscillating blade and the blade technology that will determine the quality of the slice.

Integraslice design features a cutting head mounted upon a parallel leaf-spring assembly. The precision mechanical action is designed to hold the motion of the oscillating blade exactly in line with its cutting edge and to minimise the vertical motion to a few microns.

In house testing and quality control build consistency into all instruments to ensure accuracy whilst oscillating at speeds of up to 120 Hz

The second feature arising from the motion of the leaf spring assembly is that the path of the blade is a quasi-curve. Because, therefore, the advancing tissue is never in contact with a static blade there is no possibility of the tissue becoming compressed against the blade which would result in damage to cells and a differential in thickness across the slice (which thus becomes more acute the thinner the slice).

Advance and Retraction of the Blade.

Fine control of the advance speed from zero with a resolution of 0.01mm/sec. minimises trauma induced into the subject tissue. A high speed return of 4.0mm/sec ensures the slicing operation is completed in the minimum time possible. During blade return it is important not to draw the blade over the surface of the tissue. Therefore the machine automatically lowers the tissue away from the blade and then readjusts to the original height once blade retraction has been completed.

The individual slices can then be placed to rest in a perfusion chamber as quickly as possible thus preserving the biochemical actions of the cells in an optimum condition.

With such control this enables vital centres of the tissue under study to be sectioned using forward stationary and reverse with the maximum of care, whilst increasing speed through areas superfluous to the current study.

Control of Section Thickness.

The most accurate way of controlling slice thickness is to be raising the tissue [against gravity] between each slice. Slice thickness can be incremented in 1micron steps and controlled to a maximum speed of 1mm per second. Total vertical movement is 32mm to allow for the deeper 'Peltier' cooled tissue bath.

Observation of the sectioning operation.

The unique 'Clearview' observation window provides a ripple free surface on the a.c.s.f. to facilitate clear observation of the progress of the blade through the tissue. Observation can be with the naked eye or with the integrally mounted inspection microscope. Light is available from the fibre optic guides of the cold light source, which is a further optional extra.

User Interface and Ergonomics.

The moulded enclosure gives style and cleanliness, sealing against accidental spillage and is tolerant of salt and sugar a.c.s.f. The design also enables easy access to change the light source bulb and occasionally, the drive belts.

The user interface is a Liquid Crystal Display (LCD) with associated membrane keypad. The easy to follow menu is available in multiple languages for setting cutting parameters of blade speed, advance speed and section thickness.

Rotary dial knobs offer infinite variable control of the blade advance and return mechanism and brightness of the cold light source.

Once the parameters of cutting speed have been set the operation is commenced by actuating the two-stage footswitch. The first stage starting the oscillating blade and the second stage starting the advance of the blade. Thus, when the footswitch is released the opposite happens and the advance is halted before the oscillation.

Specifications at a glance.

Blade Motion:	A quasi-curve with minimal vertical movement
Oscillation Speed:	Linear from 20-120 Hz
Amplitude of Cut:	Nominally 0.5 to 1.5mm
Blade Advance Speed:	Between minus 1.00mm to plus 3.00mm/sec in 0.01mm steps
Blade Return Speed:	4.0mm/sec whilst tissue is automatically lowered from blade
Vertical Range:	32mm total, in 1um steps or maximum speed of 1mm/sec
Sectioning Range:	1 – 40mm
Maximum Size of Specimen:	30 x 40mm
Tissue Bath Options:	Standard, Autoclavable or Temperature Controlled
Cutting Head Options:	Standard or Autoclavable
Blades:	Stainless steel double sided, double bevel or ceramic single bevel.
Observation:	Inspection microscope 10X-40X with zoom & 'Clearview' window.
Voltage Input:	115/230 Volts
Rated Frequency:	50-60 Hz

Model Specific Features.

Model 7550PSDS

PSDS denotes Programmable cutting profiles of Speed, Distance and Section thickness.

Using the rotary dial knob the speed of advance can be slowed through one area and quickened through another. By selecting 'record' mode and going manually through the first slice, the instrument effectively learns the changes of speed and distance the blade travels. When third parameter of section thickness is entered and the number of slices required is set, the instrument will then faithfully reproduce the parameters that it recorded.

During each repeat cycle the tissue is automatic withdrawn from the blade during the reverse stroke. This is by lowering the tissue bath to allow the blade to retract without drawing across the tissue as it does so, before readjusting to the correct height for the next slice.

Thus the user is left with hands free to harvest the slices in the shortest possible time.

A further major feature is the DASA control. This is unique to Campden Instruments and available only on this top-of-the-range model. This is the Dynamic Adjustment of Speed and Amplitude where both the speed of oscillation and the amplitude of the cut can be dynamically adjusted, in steps of 0.1mm, whilst the blade is in motion. The relationship between speed and amplitude is, of course, inversely proportional, the limits of which are set by internal control system.

The relationship can be represented as follows:

Amplitude (mm)	Max. Speed (Hz)	Min. Speed (Hz)
0.5	120	20
1.0	100	20
1.5	80	20

Model 7550MM

MM denotes Manual or Motorised blade advance. This model has all the fine control of the PSDS but without the programmability or the DASA control. The amplitude is manually adjustable between 0.5 – 1.5mm at a maximum oscillation speed of 80Hz.

The manual advance offering the fingertip sensitivity of control of Campden's well-known HA752 Vibroslice and the motorised operation giving repeatability and consistency. In appearance the MM and the PSDS models are similar with only differences in the menu selections and membrane switch user interface.

Picture of MM LCD and keypad here

Most importantly, the quality of the slice can be the same due to the quasi-curve motion of the cutting head mounted on the precision engineered leaf spring assembly, the precision blade technology and the rigid base platform.

Campden Temperature Controlled Tissue Baths for Integraslice.



The 765LP and 765HP Temperature Controlled Tissue Baths are designed for use with all Campden Instruments Oscillation Microtomes. Research has shown that unfixed brain slices sectioned at 4°C give better tissue preservation and are viable longer for in-vitro recordings. Additionally, some enzyme histochemical techniques give better staining results when sectioned at low temperatures.

The bath assembly will fit in place of the standard tissue bath [model 752/2B] and has the same volume. The standard Campden Instruments tissue holder (752/2A) fits in the normal way.

An autoclavable bath is also now available, [model 765LP-AC or 765HP-AC] machined from solid metal it can be easily detached from the sensitive Peltier elements in the base for sterilisation.

contact:



red box direct

Think inside the box

Tel. +353 1 440 3775

Fax. +353 1 443 0784

VIOP 3318@blueface.ie

email info@redboxdirect.com

Web www.redboxdirect.com