Violet 3.0

Simplifying FLIM/FRET to empower life science research

Violet 3.0 is the all-in-one microscopy platform for *QF-Pro®* technology, bringing ***F***luorescence ***L***ifetime ***I***maging ***M***icroscopy (***FLIM***) and ***F***örster ***R***esonance ***E***nergy ***T***ransfer (***FRET***) to any lab. Our comprehensive benchtop solution features a high-end modulated laser, sensitive image sensor, and also a multi-channel LED for immunofluorescence. Violet 3.0 includes two stage inserts: one for up to 4 microscopy slides and another for a standard multi-well plate, accommodating various sample types. Its ease of use supports both experienced scientists and beginners in exploring spatial biology with confidence. Experience research as never before and pave the way for groundbreaking advancements in spatial biology. Violet 3.0 – where simplicity meets innovation, opening whole new avenues of research.

QF-Pro® Software

What makes *Violet 3.0* even more accessible and easy to use is the accompanying *QF-Pro®* software suite. This guides users of all experiences through the process of loading their samples and creating a map of Regions of Interest (ROIs) to be acquired. The platform then sequentially acquires all mapped ROIs and calculates a *QF-Pro®* score and image per region. Post-acquisition analyses, such as the application of a threshold or change in Lookup Table (LUT) is automated, with the option of fine-tuning for more experienced users. All data can then be seamlessly exported from the *QF-Pro®* software into Microsoft Excel data sheets or PNG/TIFF images.

The combination of *Violet 3.0* and *QF-Pro®* software allows any laboratory or researcher to access to benefits of *QF-Pro®*.

How can QF-Pro® benefit you?

Quantifying ***F***unctions in ***P***roteins (***QF-Pro®***) is a state-of-the-art bio-imaging platform offered by HAWK Biosystems. *QF-Pro®* is the only technology able to spatially quantify functional proteomic events, such as protein-protein interactions and protein post-translational modifications, directly tissue samples, at an unrivalled resolution.

Main Features:

- Quantifies protein functions directly within tissue samples.
- Spatially maps these events across the tumour microenvironment.
- Only clinically validated spatial biology assay in the immuno-oncology domain.
- Easy to use reagent kits containing every needed to perform *QF-Pro®* labelling.
- Bespoke *Violet 3.0* hardware and software platform tailored for easy analysis of *QF-Pro®* experiments.

HAWK Biosystems

HAWK Biosystems

hawkbiosystems.com

Violet 3.0 Technical Data:

Violet 3.0 System	
Dimensions	750 mm x 700 mm x 355 mm (l x w x h)
Weight	57 kg
Supply voltage	100-240 V
Supply frequency	50/06 Hz
Power consumption	200W max
Data interface	USB 2.0 or higher (3.0 for the camera)
Ambient temperature	15°C – 35°C
Operating humidity range	< 80%, up to 30°C
Safety interlocks	Fully light sealed. Mechanical and light interlocks on all openable panels.
Objectives	2x (NA 0.08), 20x (NA 0.75), 40x (NA 0.95)
Filters	Excitation and emission filters provided per channel.
Control interface	Via control pads (XY and Z) or software
Cooling	A water-cooling system (PCO Gmbh) sits external to the system and connects to the camera via a bulkhead in the unit. This allows for the cooling of the image sensor. The rest of the device is passively cooled.

Laser System	
Wavelengths & power	488nm / 200mW
Long term power stability	<1% / 8h
RMS noise 10 Hz .. 20 MHz	< 0.2 % (CW)
Input signal type	Full ON/OFF (LV/TTL @ 2=kOhm)
Additional shutter	Safety interlock incorporated into all openable panels. Key switch required for initial operation.

Detection System	
Detection System	Two-tap CMOS image sensor-based camera
Dynamic range	1024:1 (60dB)
Readout noise	15 e- rms (typ.)
Quantum efficiency	Approximately 39% at peak
Spectral range	370nm – 780nm (FWHM)
Max frame rate	45 double frames per second
Modulation frequency	30MHz
Modulation signal shape	Square
Exposure time	1 ms – 2000 ms
Thermoelectrically cooled	-5°C
Data interface	USB 3.0

LED System	
Wavelengths	365nm, 470nm, 550nm, 635nm

Note: The above technical specifications relate to the relevant units within the Violet 3.0 device. The device is a single unit (plus water-cooler) which contains a single power connection and 2 USB connections (for enhanced camera performance).

INVISIBLE LASER RADIATION - AVOID EXPOSURE TO BEAM
$P_0 \leq 500MW$
$\lambda = 315 - 400NM$
Class 3B Laser product
IEC60825-1:2014

LASER RADIATION - AVOID EXPOSURE TO BEAM
$P_0 \leq 500MW$
$\lambda = 400 - 700NM$
Class 3B Laser product
IEC60825-1:2014