

VICTOR³ and VICTOR³ V Multilabel Plate Readers

General Description

VICTOR³™ is a multilabel, multitask plate reader for all light-emitting and light-absorbing detection technologies including: fluorescence (top and bottom), luminescence, absorbance, UV absorbance, time-resolved fluorometry, and fluorescence polarization. You choose the detection technologies you need and upgrade as your needs change. Select from a basic fluorescence and luminescence model, to the fully-loaded VICTOR³ V. Add other options at any time. A small bench top unit, VICTOR³ can operate as a stand-alone instrument or can integrate into a robotic system.

Counting Modes

Fluorescence (320 nm–850 nm)

- Dual ratio measurements
- Top and bottom fluorescence

Luminescence

- Glow luminescence
- Flash luminescence
- Dual luminescence

Photometry (320 nm–850 nm)

UV Photometry (260 nm/280 nm)

Time-resolved Fluorometry (TRF)

- Dual window TRF
- Dual emission measurements

Fluorescence Polarization (400 nm–850 nm)

VICTOR³ counting modes are always accessible. In the same protocol, even for the same well, you can freely use several different counting modes.



Features Included

1. Kinetics

VICTOR³ handles both fast and slow time kinetic measurements. The specific delays and repeats can be defined by plate, row or well. Built-in temperature control, dispenser and shaker are important for many kinetics applications.

- The same plate can be measured automatically up to 99 times in succession. Maximum delay between measurements can be set to 3,600 seconds.
- Specific operation sequences can be defined by well or by row. The same well can be read up to 100 times.

2. Scanning

Cell applications benefit from reading several points in one well. In VICTOR³ the number of readings (maximum 100 points) and the distance between the spots can be defined within the same well and distributed in a squared or rounded area. The scanning function is also suitable for reading small membranes, chips and slides. The minimum stepping is 0.1 mm.

3. Dual ratio measurements

In VICTOR³ you can define two excitation/emission filters for one label and measure without the need for any internal calibrations of serial PMT. With a dispenser, it is the perfect system for Ca²⁺ modulations and other similar studies.

4. Top and bottom reading

Fluorescence readings can be taken from the bottom or top. Top reading is the most efficient counting method when no lid is used because no plastic surface has to be penetrated. Adherent cells and lids require bottom reading for highest counting efficiency. The software enables both top and bottom reading to be used in the same run.

5. Dual window TRF

The dual window TRF option enables recording of two separate windows in one flash cycle. It is important to follow a change in the emission profile of a lanthanide chelate in energy transfer applications especially when the actual energy transfer might be affected.

6. Temperature Control

The temperature of the measuring chamber can be regulated from ambient +2° C to 45° C. The PMT is isolated and kept at 25° C, which is important to ensure highly precise results. There is no need for external plate heating cassettes.

Applications

The wide range of counting modes together with necessary options opens up a huge range of application possibilities:

- **Cell-based:** cytotoxicity, cell viability, cell quantification, cell proliferation, cell adhesion, NK cell activity, oxidative burst, calcium uptake, reporter gene, phagocytosis
- **Binding studies:** immunoassays, receptor assays
- **Environmental toxins**
- **Food monitoring**
- **Kinetics:** enzyme activity, Ca²⁺ measurements and other ion measurements
- **Molecular Biology:** hybridization, DNA quantification, gene expression, PCR product quantification
- **Quantifications:** protein, ssDNA, dsDNA, cells, bacteria, cytokines
- **Toxicology**
- **Drug screening**

Optics

The instrument's uniquely designed direct optics ensure the very best sensitivity and working range with all technologies.

Light Sources

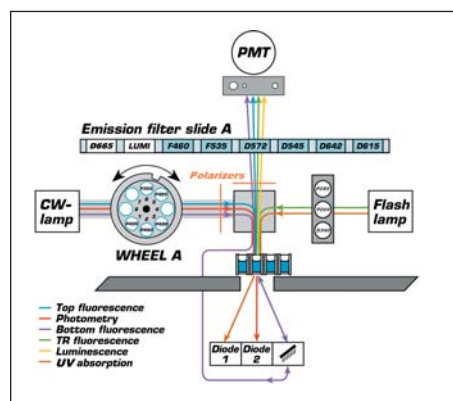
The instrument is built around two lamp systems with respective filter arrangements for wavelength selections.

1. Continuous light source (cw) for fluorometric and photometric measurements:

- Tungsten-halogen lamp, 75 W, lifetime typically > 300 h, spectral range 320 nm–850 nm.
- Changeable rotatable filter wheels, provided with 8 or 4 positions for 15 or 25.4 mm filters.

2. Flash light source for TR-fluorometric and UV absorbance measurements:

- UV Xenon flash tube 1500 V.
- Filter slide provided with three positions.



Detection Units

The detection units are chosen as the best technical solutions for each of the various technologies.

1. R 1527P photomultiplier tube for fluorometry, luminometry and TR-fluorometry:

- Digital Photon counting, high cathode sensitivity with low noise photo cathode

2. Photo diode for photometry use

Filters

A wide range of high quality filters is factory installed. These filters cover the most common wavelengths used in fluorometric and photometric applications. Additional filters are available upon request. Depending

on the model and enabled technologies the following filters will be supplied:

- Absorbance: 405 nm, 450 nm and 492 nm
- UV absorbance: 260 nm and 280 nm
- Fluorescence:
 - Excitation 355 nm and 485 nm
 - Emission 460 nm and 535 nm
- TR Fluorescence:
 - Excitation 340 nm
 - Emission 545 nm, 572 nm, 616 nm and 642 nm
 - Additional 665 nm emission filter for LANCE™ comes with red sensitive PMT
- Fluorescence polarization:
 - Excitation 480 nm and 531 nm
 - Emission 535 nm and 595 nm

Focusing

The measuring height can be defined as a parameter in your protocol. This provides the option of setting the focus point in a range from 3–18 mm in a normal 96-well plate. This is useful for measuring filter plates, cell layers and membranes, etc. It also enables you to reduce sample volumes efficiently.

Adjustable Lamp Energy

The lamp energy level is adjustable through the software. The acquired value is saved with your label. Whenever you use the same label, the same setting is used, which guarantees highly reproducible counting facilities.

Shaker

The shaker accommodates the wide range of plates and applications for which VICTOR³ is suited. Three modes are available: linear, orbital and double orbital. The duration, speed and amplitude of shaking can all be defined by the user.

Sample Changer and Conveyors

Several sample loading methods can be used with VICTOR³.

Running Modes

- Manual loading (one plate at a time)
- Stacker loading (up to twenty plates per load)
- Robot integrated

Stacker

The stacker supports microplates with these dimensions:

- Length: 127.2–128.2 mm
- Width: 84.5–86.0 mm
- Height: 10.0–25.0 mm
- Skirt: 1.5–6.5 mm

The plate stackers are robust metallic towers, which are easy to lift into place and remove. Each stacker carries 20 plates a time. 40-plate stackers are also available.

Robotic Integration

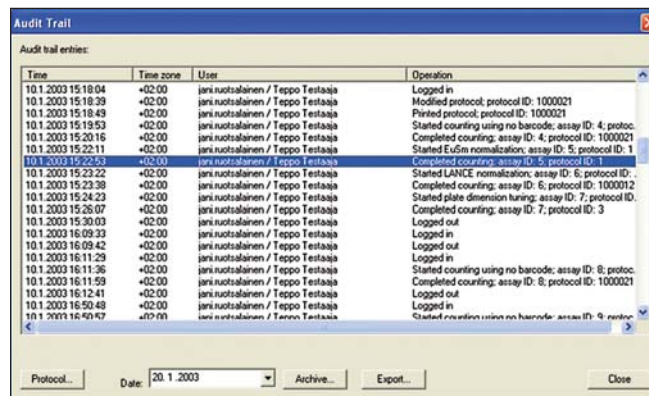
When used with a robot, the VICTOR³ reader is usually linked through OLE automation—ActiveX/COM interfaces. OLE and VICTOR³ software provide the basis for seamless integration and instrument control. The robot and the reader work as a unit.

Plate Types

All types of microplates from 1–1536 wells are compatible with the instrument. Photometry, time-resolved fluorescence, fluorescence intensity and fluorescence polarization technologies are applicable with 1536-well plates. Non-standard configurations can be defined in the workstation software. Petri dishes, slides, filters, Terasaki plates, and PCR plates are all suitable for VICTOR³. Opaque plates (black and white) can be used for luminescence samples as well as for all fluorescence measurements because of the epifluorometer mode. Filterplates and membranes can also be used. For absorbance measurements, a clear bottom plate is required.

Windows® Workstation Software

The VICTOR³ user interface is easy to learn and use. The software operates under the Microsoft® Windows® XP and Windows® 2000 operating systems.



Audit Trail dialog for viewing the audit trail entries

PC Configurations

Minimum PC requirements are a Windows® XP/2000 compatible Pentium® computer, 256 MB memory, CD-ROM drive and SuperVGA display supporting minimum 800 x 600 resolution with 256 colors. The PC should be provided with the PerkinElmer instrument interface.

VICTOR Specifications

Fluorescence Detection

(200 µL, 96-well black plate):

- Fluorescein: typically < 2 fmol/well, 10 pM
- Linearity: > 5 decades
- Crosstalk: < 0.01 %
- Umbelliferone: typically < 200 fmol/well, 1 nM
- Rhodamine: typically < 100 fmol/well, 0.5 nM

Time-Resolved Fluorescence Detection

(200 µL, 96-well clear plate):

- Europium: typically < 10 amol/well, 50 fM
- Europium linearity: > 5 decades
- Crosstalk: < 0.01 %
- Terbium: typically < 5 amol/well, 25 fM
- Samarium: typically < 50 amol/well, 250 fM
- Dysprosium: typically < 150 amol/well, 750 fM

Luminescence Detection (96-well plate):

- Lower limit of detection (LLD):
total flux of 20000 photons/s (standard PMT)
100000 photons/s (red sensitive PMT)
- ALP: typically 1 amol/well with AMPPD substrate
- ATP: typically 80 amol/well in flash assays
- Luciferase: 0.9 pg/well using brite lite

Absorbance Detection (96-well plate):

- Measuring range @ 405 nm: 0-4 A
- Accuracy @ 405 nm: < 2 % (or 0.01 A) within 0-2 A
- Precision @ 405 nm: < 0.5 % (or 0.01 A) within 0-2 A

Fluorescence Polarization (384-well black plate):

- Fluorescein: 1 nM, 40 µL
- Standard deviation: < 5 mP

Options

VICTOR³ grows with your needs. The instrument consists of a basic configuration to which you can add options later on when your demands change.

Dispenser

The dispenser module consists of 1–4 high quality syringes. Up to 4 separate channels can be directed to one well. The default volume range is 5–350 µL in 1 µL increments.

- Accuracy: Typically < 5% for 5 µL, < 0.5% for 50 µL, < 0.05% for 350 µL
- Precision: Typically < 1.4% for 5 µL, < 0.2% for 50 µL, < 0.02% for 350 µL
- Dead volume: < 1.5 mL

Barcode Reader

The optional on-board barcode reader supports barcodes: Code 39, Codabar, Interleaved 2 of 5, UPC/EAN and Code 128. The barcode may contain the protocol number or the plate number.

Stacker

A semi-automated plate loading option, this field-installable stacker includes 20-plate towers. 40-plate loading and unloading towers are also available for the stacker.

Red-Sensitive PMT

- Extends wavelength reading to 850 nm
- Enables use of LANCE technology
- Includes Temperature Control (1420-130)

WorkOut v.2.0 Data Analysis Software

For both endpoint and kinetics assays, WorkOut™ software provides a flexible and easy-to-use tool for assay design and results handling. It includes powerful features such as context sensitive help, and the ability to work simultaneously with any number of open documents. There are a wide range of curve fitting methods, kinetics reduction methods, data export facilities and graphics options.

Ordering Information

Instruments

Cat. No.	Name
1420-032	Manual VICTOR ³ with fluorescence and luminescence technologies
1420-011	Manual VICTOR ³ with fluorescence, luminescence and absorbance technologies
1420-050	Manual VICTOR ³ with fluorescence, luminescence, absorbance and UV absorbance technologies
1420-012	Manual VICTOR ³ with fluorescence, luminescence, absorbance, UV absorbance and TRF technologies
1420-042	Manual VICTOR ³ with fluorescence, luminescence, absorbance and fluorescence polarization technologies
1420-033	VICTOR ³ with fluorescence and luminescence technologies, stackers and robotic loading system
1420-014	VICTOR ³ with fluorescence, luminescence and absorbance technologies, stackers and robotic loading system
1420-051	VICTOR ³ with fluorescence, luminescence, absorbance and UV absorbance technologies, stackers and robotic loading system
1420-015	VICTOR ³ with fluorescence, luminescence, absorbance, UV absorbance and TRF technologies, stackers and robotic loading system
1420-043	VICTOR ³ with fluorescence, luminescence, absorbance and fluorescence polarization technologies, stackers and robotic loading system
1420-040*	VICTOR ³ V with fluorescence, luminescence, absorbance, UV absorbance, TRF and fluorescence polarization technologies
1420-041*	VICTOR ³ V with fluorescence, luminescence, absorbance, UV absorbance, TRF and fluorescence polarization technologies, stackers and robotic loading system

* Both VICTOR V models also include red sensitive PMT as standard. All models include temperature control as standard.

Options

Cat. No.	Name
1420-113	Red-sensitive PMT (LANCE)
1420-130	Temperature control
1420-217	40-plate loading tower for stacker
1420-218	40-plate unloading tower for stacker
1420-221	Barcode reader
1420-251	1-channel injector
1420-252	2-channel injector
1420-253	3-channel injector
1420-254	4-channel injector
1420-3050	WorkOut v.2.0 Data Analysis Software
1420-3030	Enhanced Security Option for 21 CFR Part 11 compatibility

Field Upgrades

Cat. No.	Name
1420-110	TR-Fluorometry (not applicable with models 1420-042 or 1420-043) for field upgrades
1420-216	Stacker and robotic loading (includes 20-plate load and unload towers) for field upgrades
1420-261	Additional injector pump

Note also that all options 1420-113 through 1420-254 can be field upgraded as well.

**PerkinElmer Life and
Analytical Sciences**
710 Bridgeport Avenue
Shelton, CT 06484-4794 USA
Phone: (800) 762-4000 or
(+1) 203-925-4602
www.perkinelmer.com



For a complete listing of our global offices, visit www.perkinelmer.com/lasoffices

©2006 PerkinElmer, Inc. All rights reserved. The PerkinElmer logo and design are registered trademarks of PerkinElmer, Inc. VICTOR³, LANCE and WorkOut are trademarks of PerkinElmer, Inc. or its subsidiaries, in the United States and other countries. Pentium is a registered trademark of Intel Corporation. Microsoft and Windows are registered trademarks of Microsoft Corporation. All other trademarks not owned by PerkinElmer, Inc. or its subsidiaries that are depicted herein are the property of their respective owners. PerkinElmer reserves the right to change this document at any time without notice and disclaims liability for editorial, pictorial or typographical errors.