Perkin Elmer Envision 2100 Multilabel Reader

Key features

• Modular design allowing:
  - Optimisation for specific applications
  - The possibility to upgrade later as needs change
• Fast measurement of all plate formats
• Supports all five main non-radiometric technologies with the facility for:
  - Kinetic measurements
  - Scanning of the well area
• Manual/Robotic loading and plate stackers available
• Windows NT/2000 software supporting:
  - Easy connectivity
  - Database storage of all results and protocols
• Barcoded filters and optical modules
• Easy to learn and to use

Technologies

Time-resolved fluorescence (TRF) (240-850 nm)
• Multiple time window TRF
• Dual emission measurements for Europium and Samarium labels (DELFIA technology)
• Dual emission measurements for LANCE assays
• Ratio measurements

Fluorescence intensity (240 - 850 nm)
• Simultaneous dual emission measurements from the top of the plate or below it (two detector system)
• Ratio measurements

Fluorescence polarization (FP) (240-850 nm)
• Simultaneous dual emission measurements (two detector system)

Luminescence
• Simultaneous dual emission measurements (two detector system)
• Glow luminescence measurements

Absorbance (240-850nm)
• Ratio measurements

General Description

The Wallac 2100 EnVisionTM is the world's first multilabel plate reader developed to give optimized performance in every application. Based on a revolutionary modular design, it supports all the application areas that you and your colleagues work with, now or in the future. Modular design also means that when new types of assays come into use, or if your work changes, new modules can be added. Modularity stands for optimal performance with no compromise for each specific application. EnVision won't keep you waiting. The measurement time for a 1536-well plate is less than one minute (one flash/well).

Applications

EnVision is a multilabel reader for all major applications, including

- **reporter gene assays**
- **cell applications**
- **genotyping**
- **enzyme assays**
- **signal transduction**
- **receptor ligand binding**
- **immunoassays**
- **quantification**
- and possible other **future assays.**

Specifications

Fluorometry

96	Performance
Fluorescein	< 5 pM
Detection limit	< 1 fmol/well
384 Performance	
Fluorescein	< 5 pM
Detection limit	< 0.25 fmol/well
1536 Performance	
Fluorescein	< 20 pM
Detection limit	< 0.15 fmol/well

Fluorescence polarization

96	Performance
Fluorescein 1 nM, SD	< 3 mP
384 Performance	
Fluorescein 1 nM, SD	< 3 mP
1536 Performance	
Fluorescein 1 nM, SD	< 7 mP

TR-Fluorometry

96	Performance

Europium	< 60 fM
Detection limit	< 12 amol/well
384 Performance	
Europium	< 60 fM
Detection limit	< 3 amol/well
1536 Performance	
Europium	< 150 fM
Detection limit	< 1 amol/well

Luminometry

96	Performance
ATP	75 pM

Photometry

96	Performance
Measuring range	0 - 3 OD
Accuracy at 2 OD	< 2 % or +/- 0.01 A
384	Performance
Measuring range	0 - 3 OD
Accuracy at 2 OD	< 2 % or +/- 0.01 A
1536	Performance
Measuring range	0 - 3 OD

FP, Abs, FI, DELFIA

96 well plate

Flashes	time/plate
100	1 min 7 s
50	55 s
25	48 s
10	45 s
1	42 s
1, on the fly	31 s

384 well plate

Flashes	time/plate
100	2 min 43 s
50	1 min 56 s
25	1 min 37 s
10	1 min 20 s
1	1 min 7 s
1, on the fly	33 s

1536 well plate

Flashes	time/plate
100	9 min 32 s

50	6 min 14 s
25	4 min 33 s
10	3 min 33 s
1	2 min 58 s
1, on the fly	44 s

Counting modes and features included

EnVision counting modes are easily accessible. In the same protocol, even for the same well, you can freely use several different counting modes and labels.

Kinetics

Specific operation sequences can be defined easily. Enzyme assays, in particular, require kinetic measurements from the same well.

Scanning

Cell applications need several reading points in one well. Due to the heterogeneous spread of cells in a well it is important to scan the complete area of a cell culture well. The scanning function is also suitable for the reading of small membranes, chips and slides.

Dual ratio measurements

Certain labels requires dual excitation or emission readings. With EnVision protocols you can freely define different labels to match your specific assay needs. Simultaneous dual emission measurement with two emission detectors allows you to obtain the fastest possible results.

Top and bottom reading

Fluorescence readings (including FP and TRF) can be taken from the top or bottom. Top reading is the most efficient method when no lid is used because no plastic surface has to be penetrated. For adherent cells and lidded plates, below reading provides superior efficiency. It is a true epimode, in the sense that the both excitation and emission are directed to and from below.

Multiple window time-resolved fluorescence

The multiple window TRF option offers the possibility to record 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.

Shaker

The shaker accommodates the wide range of plates and applications for which EnVision 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.

Stacker

Stackers represent a semi-automated plate loading option. Load and unload towers can take 20 or 50 plates at a time. With easy single-hand operation you place and remove the loaded stacker towers. Measurement is started with a single mouse-click. The plate stackers are robust towers, which are easy to lift into place and remove. Plates can be moved in both directions.

Light sources

EnVision employs a high stability, short arc flashlamp as a common light source in all measurements. For every type of assay the user can select the number of flashes used and thus the user can optimize measurement time. Fewer flashes results in a faster measurement time, all the way down to under one minute for a 1536 well plate.

Optical system

The unique measurement performance of Envision is a consequence of the instrument's special optical design. The optical system features **Direct Double Optics**. This means a full lens system without any light guides or fiber bundles on the top measurements.

Optical filters

A wide range of filters cover the wavelengths used in fluorometric and photometric applications. Additional filters are available upon request.

All interference filters are pre-installed into the barcoded filter blocks which are easily installed in the instrument.

Application-specific optical modules

User interchangeable applicationspecific optical modules form a crucial part of the optical system. The optical modules include all application critical components;for example dichroic mirrors for specific labels. All application- specific optical modules are barcoded. For top reading, four optical modules can be in place. Any of the them can also be used for below reading.

Detectors

The photoluminescence detector is a red-sensitive temperature-stabilized photomultiplier tube to decrease background. For chemiluminescence and time-resolved fluorescence measurements the detectors are used in single photon counting mode. For fluorescence intensity and fluorescence polarization measurements the detectors are used as in gated analog mode with user adjustable gain, again to maximize performance. Two detectors increase speed of measurement which is highly advantageous in all dual emission measurements like FP (fluorescence polarization) and LANCE assays.

Height sensor:

Every time a plate is loaded the height is detected. This ensures that plate height will not damage the instrument.

Focus point adjustment:

The focus point is adjustable. The measuring height can be defined as a parameter in your protocol. The focus point can be located at the very bottom or at the very top of the well or anywhere between. This is beneficial when measuring filters plates, cell layers, membranes etc. It also enables you to reduce sample volumes efficiently.

Plate loading modes

- Manual reading (one plate at time)
- Stacker loading (up to 50 plates per load)
- Robotic integration

Robotic integration

When used with a robotic system, the EnVision reader is usually linked through OLE automation – Active X/ COM interfaces. OLE and EnVision software provide the basis for seamless integration and instrument control. The robot and the counter work as a unit.

Plate types

All types of microplates with up to 1536 wells may be measured.

Windows workstation software

The EnVision user interface is easy to use and learn. Operating under Windows 2000 or Windows NT or future environments, it provides the level of reliability expected from 32-bit Windows software. True two-way communication with other instruments is easy to achieve due to the OLE interface and the Windows environment. The software includes a database for storage of all protocols and results.

PC configurations

- Windows NT 4.0 SP6 or Windows 2000
- Intel Pentium processor (>500 MHz)
- 128 MB or more memory
- 24-bt color display (1024 x 768)
- 10 GB free hard disc space
- CD-ROM drive
- Ethernet card

Printer

All Windows compatible printers are suitable. Connection to the PC is via parallel port.

Test plate

A test plate is supplied with every instrument. This includes multilabel solid samples covering all technologies and commonly used labels.

Physical dimensions

Height: 580 mm
Depth: 550 mm, with stacker: 700 mm
Width: 420 mm
Weight: 50 kg

Power requirements

Power consumption: 250 VA
Mains voltage 110-120 V/220-240 V,
50/60 Hz

Options

EnVision grows with your needs. The instrument consists of a basic configuration to which you add the options needed for your laboratory. Options can be added later on when your demands change.

Plate barcode

The barcode reader allows you to load barcode labeled plates, which are identified by the barcode reader. Codabar, Code39, Interleaved 2 of 5, Code 128, UPC and EAN barcodes can be read.

Ordering Information

EnVisionTM 2100 Multilabel reader

Measurement labels

- Fluorescence Intensity = FI
  - Freely selectable application specific labels
- Fluorescence Polarization = FP
  - Freely selectable application specific labels
- Time-resolved fluorescence = TRF
  - Freely selectable application specific labels
- Absorbance
  - Freely selectable application specific labels
- Luminescence
  - Freely selectable application specific labels

Options

- High speed dual emission reading (two detector system)
- High throughput light source
- Stacker for automatic plate loading
- Magazines for 20 plates
- Magazines for 50 plates
- Below reading
- Below dual reading

- Adjustment of measurement height
- Plate barcode reader, short side of the plate
- Plate barcode reader, long side of the plate computer

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