

Plate Readers

EnSpire Multimode Plate Reader

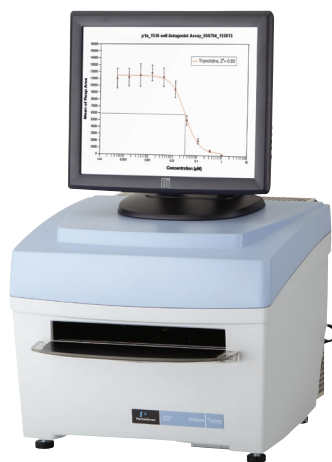
- Label-free Technology
- Alpha Technology
- Ultra-sensitive Luminescence
- Quad-monochromator
 - Fluorescence Intensity
 - Absorbance

Description

The EnSpire® Multimode Plate Reader is a high performance, compact and configurable instrument designed with filter or quad-monochromator capabilities. EnSpire reads optical biosensor label-free, fluorescence intensity, absorbance, ultra-sensitive luminescence and patented Alpha technologies in microplates up to 384-wells. EnSpire has been designed for laboratories with diverse user needs, and includes an intuitive and 'easy-to-use' touch screen to reduce assay start-up times, and simplify protocols across a wide array of applications.

The EnSpire is proven to support many different assays including:

- Label-free technology, based on the Corning® Epic® System, is suitable for non-invasive cellular receptor and signaling assays, as well as biochemical binding assays, such as protein:protein and protein:small molecule interaction assays.
- Photometric technology enables nucleic acid/protein quantitation, as well as ELISA absorbance assays.
- Fluorescence technology delivers the sensitivity required for quantitation assays.
- Expertise in Alpha technology combined with instrument innovation delivers the best performance for AlphaLISA/AlphaScreen® detection.



EnSpire Multimode Plate Reader

- Ultra-sensitive luminescence technology enables cell growth and reporter gene assays to be run with higher sensitivity and dynamic range; especially important with low transfection rates.

Key Features

- Corning® Epic® label-free technology
- AlphaLISA/AlphaScreen® detection capability with high power laser excitation
- Fluorescence intensity detection capability, top and bottom, with quad-monochromator
- Ultra-sensitive luminescence, glow and flash
- Choice of filter- or quad-monochromator-based absorbance detection
- Integrated computer with touch screen is "easy-to-use", even with gloves
- Integrated data analysis software with data export (Excel® or text files) features
- Eight barcode identified filter positions
- Integrated barcode reading from all four sides of a microplate
- Available with optional dispenser or stacker module
- 21 CFR Part 11 support

The optional dispenser module adds dual-channel dispensing capability to EnSpire, enabling real-time dispensing of cells and reagents with a minimum dispense volume of 1 μ L. The ability to program 2 dispense steps per well is ideal for dual luciferase assays and offers magnetic stirring and temperature control for the reagent containers (up to 65 °C), via the integrated software.

The EnSpire stacker module includes 20- or 50-plate magazines that are compatible with our PlateStak™ Automated Microplate Handler to allow efficient manual transfer of plates to the EnSpire. For even greater efficiency, EnSpire can be directly integrated to the JANUS® Automated Workstation to offer worry-free microplate handling between detection and liquid handling instruments.

Detection limit specifications with default settings	
Label-free	
Detection method	Optical biosensor (Waveguide resonant grating)
System variability	5 pm (picometer)
Fluorometry (Fluorescein)	
96-well plate	< 1 fmol/well
384-well plate	< 1 fmol/well
Bottom detection 384-well plate	< 5 fmol/well
Monochromator wavelength range	230-850 nm 0.1 nm step
Monochromator bandwidth (Exc & Em)	5 nm
Photometry	
96-well plate	0-4 OD
384-well plate	0-4 OD
Accuracy @ 2 optical density	< 2 %
Precision @ 2 optical density	< 0.1 %
Monochromator wavelength range	230-1000 nm 0.1 nm step
Monochromator bandwidth	5 nm
Luminometry	
96-well plate ATP	< 10 pM (Glow)
384-well plate ATP	< 10 pM (Glow)
384-well plate ATP	< 15 amol/well
AlphaScreen	
384-well plate (25 μ L, phosphorylated bio-peptide, kinase assay)	< 100 amol

Typical throughput (time per plate)		
Technology	96-well	384-well
Label-free	2 min.	2 min.
Absorbance (Monochromator)	42 sec.	1 min. 28 sec.
Absorbance (Filter)	31 sec.	1 min. 6 sec.
Fluorescence	1 min. 3 sec.	2 min. 38 sec.
Alpha	54 sec.	1 min. 48 sec.
Luminescence	51 sec.	1 min. 48 sec.

Maximum throughput (time per plate)		
Technology	96-well	384-well
Absorbance	22 sec.	27 sec.
Fluorescence	38 sec.	1 min. 5 sec.
Alpha	41 sec.	1 min. 15 sec.
Luminescence	43 sec.	1 min. 14 sec.

Temperature control
From ambient +3 °C up to 65 °C, \pm 0.5 °C at +37 °C uniformity



EnSpire with Dispenser

Dispenser specifications

Number of injectors	2
Plate formats	6- to 384-well plates
Volume range	1 – 475 µl per stroke, multiple dispense strokes can be programmed
Dispense volume	1 µl (min)
Dispense increments	0.5 µl steps
Accuracy	0.1 % @ 350 µl 1.1 % @ 10 µl < 3 % @ 1 µl
Precision	0.05% @ 350 µl 1.0 % @ 10 µl < 3 % @ 1 µl
Speed	50-500 µl/sec
Dead volume (i.e. reagent volume needed to prime the system)	400 µl
Residual dead volume	50 µl
Software controlled for reagent containers	Up to 65 °C
Stirring	Software controlled magnetic stirrer 100 to 500 rpm

Integrated data analysis software

Real-time display	Label-free kinetic trace Label-free response calculation tools (DMR/Mass Change)
Calculation methods	Including average, %CV, standard deviation, Z-factor, blank correction, dilution correction and many more
Curve fit	Lin-reg, spline, 4PL/5PL
Dose response (EC_{50}/IC_{50})	Curve, slope
Kinetic parameters	Area under the curve, slope determinants, V_{max} , K_M
User defined calculations	Addition, ratio, subtraction etc.
Data export format	USB, internal network, CSV including Excel®, text, graphics

Barcode reader specifications

Code types	CODE39 INTERLEAVED 2/5 CODABAR CODE128
Barcode width	0.25 mm (min)
Barcode length	50 mm (max), 6 – 20 characters
Barcode height	5 mm (min)
Empty space at the ends of barcode label	10 mm (min)
Bar-space ratio	1/3 non-fluorescent label material

Electrical requirements

Power consumption

Instrument	150-300 VA (max)
Touch screen	100 VA

Main voltage

Instrument	110-240 V, 50/60 Hz
Touch screen	100-240 V, 50/60 Hz

Physical data

Operating environment for label-free module 23 °C ± 3 °C, <70% non-condensing relative humidity

Dimensions:

Height:	41.2 cm (16.22 in.)
Depth:	50.8 cm (20.00 in.)
Width:	50.0 cm (19.69 in.)
Weight:	38 kg (84 lb)*

* Weight may increase depending on installed detection modes

EnSpire internal computer:

- Windows® Vista® with Service Pack 1 (SP1)
- Intel® Core2Duo Processor 2.26 GHz or equivalent
- 4 GB of RAM
- 17" color touch screen, resolution of 1280 x 1024 pixels
- 80 GB hard drive
- 4 x USB ports
- CD-ROM / DVD drive
- Ethernet card
- Requires 100-240 V, 50/60 Hz

PerkinElmer offers an extensive selection of high quality and validated application-focused microplates in 96-, 384-, and 1536-well formats for use with many assay technologies and instrument platforms to enable superior performance. Special coating, packaging and barcoding services are also available upon request.

EnSpire Label-free Microplates**

Color	Black with clear bottom
Maximum well volume (384)	82 µL
Maximum well volume (96)	190 µL
Lid compatibility	Low profile lid (included)

Well bottom elevation	3.3+/- 0.1mm
Dimensions	SBS standard
Molecular weight detection limit	>157 Da (assay dependent)

** EnSpire label-free microplates are compatible with most aqueous buffers (pH 5.5-9.0) and DMSO concentrations of < or equal to 5% for at least 24 hours.

For Cell-based Assays

Description	EnSpire-LFC, 96-well
Catalogue No.	6055400 (2 plates), 6055408 (8 plates)
Surface	Tissue culture compatible
Assay Volume	80-120 µL
Seeding Density	50,000-100,000 cells per well (cell type dependent)
Storage	Room temperature

* EnSpire-LFC, 96 well (Cell assay microplate with fibronectin coating - available soon)

Description	EnSpire-LFC, 384-well
Catalogue No.	6057400 (2 plates), 6057408 (8 plates)
Surface	Tissue culture compatible
Assay Volume	25-50 µL
Seeding Density	5,000-20,000 cells per well (cell type dependent)
Storage	Room temperature

Description	EnSpire-LFC, 384-well (coated)
Catalogue No.	6057420 (2 plates), 6057428 (8 plates)
Surface	Tissue culture compatible with fibronectin coating
Assay Volume	25-50 µL
Seeding Density	5,000-20,000 cells per well (cell type dependent)
Storage	Store at 2-8 °C (Do not freeze)

For Biochemical Assays

Description	EnSpire-LFB, 384-well (with amine coupling)
Catalogue No.	6057410 (2 plates), 6057418 (8 plates)
Surface	Maleic anhydride polymer surface
Assay volume	15-30 µL typical
DMSO tolerance	Up to 5%
Working pH range	4-10
Soak time	4 hours in buffer prior to assay
Storage conditions	Room temperature

Description	EnSpire-LFB, 384-well (with high sensitivity coating, user activated)
Catalogue No.	6057460 (2 plates), 6057468 (8 plates)
Surface	Maleic anhydride polymer surface
Assay volume	15-30 µL typical
DMSO tolerance	Up to 5%
Working pH range	4-10
Soak time	4 hours in buffer prior to assay
Storage conditions	Room temperature

To learn more about the EnSpire Multimode Plate Reader
visit www.perkinelmer.com/EnSpire

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