

dispense. discover.
with every pulse.



lab-loving
people

PULSpencer series
Liquid handling

analytik jena

An Endress+Hauser Company

Applications designed for today's and tomorrow's assays

Driven by precision, speed, and miniaturization

The PULSEspencer series enables reliable dispensing workflows across a wide range of assay types. It supports miniaturization, direct dilution, and fast reagent distribution from early research to advanced screening. Typical application fields include: cell-based assays, biochemical assays, DMPK, proteomics, genomics, screening, assay development, and many more.

Application principles enabled by the PULSEspencer series

Direct dilution

Eliminating serial dilution and normalization steps

Miniaturization

Reducing reagent and sample volumes while increasing data density

Fast reagent and cell distribution

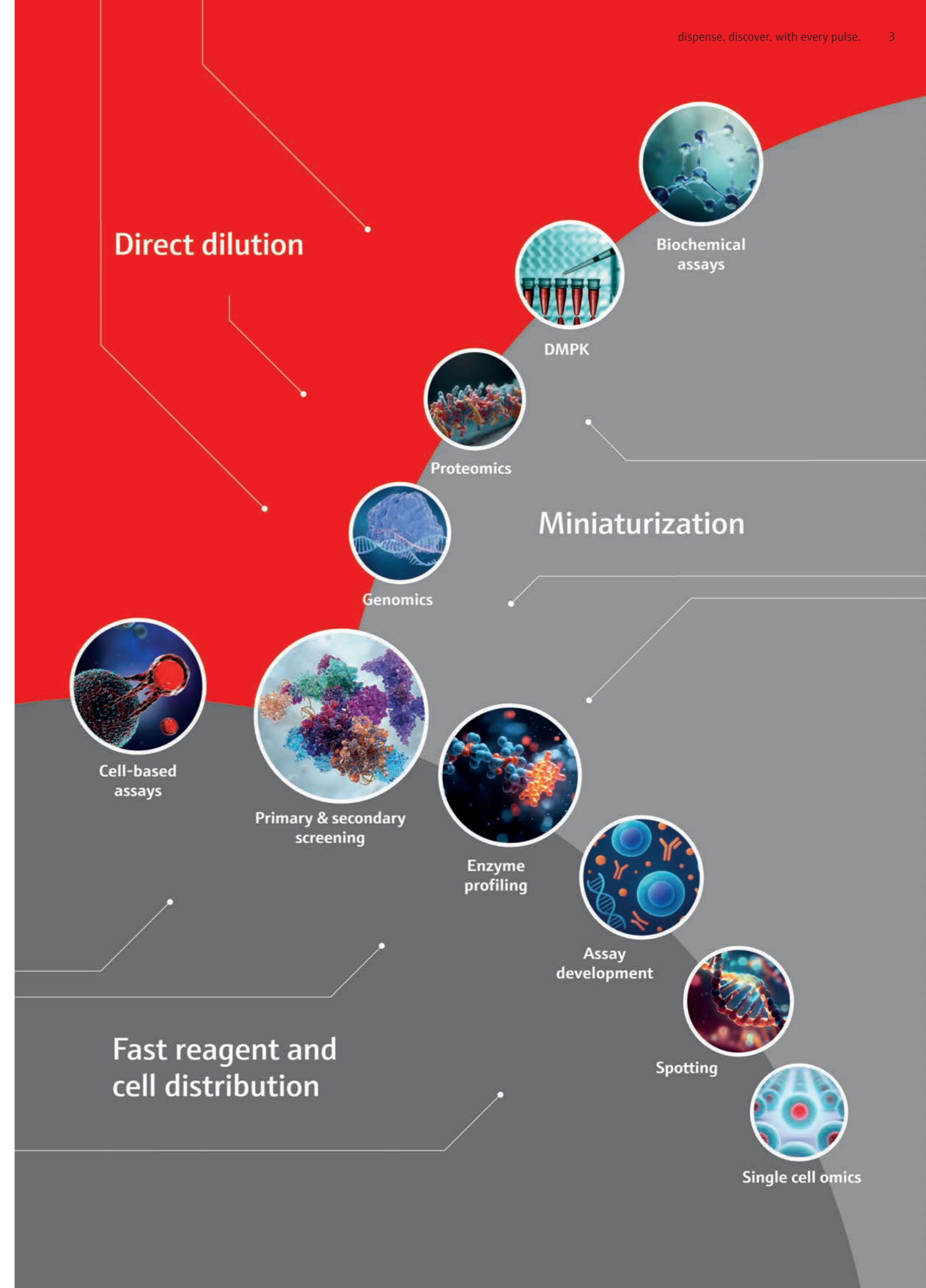
Dispensing defined volumes into any well format quickly and accurately

✓ What this means for your lab

- Reduce assay volumes without changing your workflow
- Eliminate manual dilution and normalization steps
- Increase throughput while maintaining precision
- Use the same system across multiple assay types

🔍 Application highlights

Visit the Analytik Jena knowledge base for the latest PULSEspencer application notes.



PULSEspencer series

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Redefine your assays

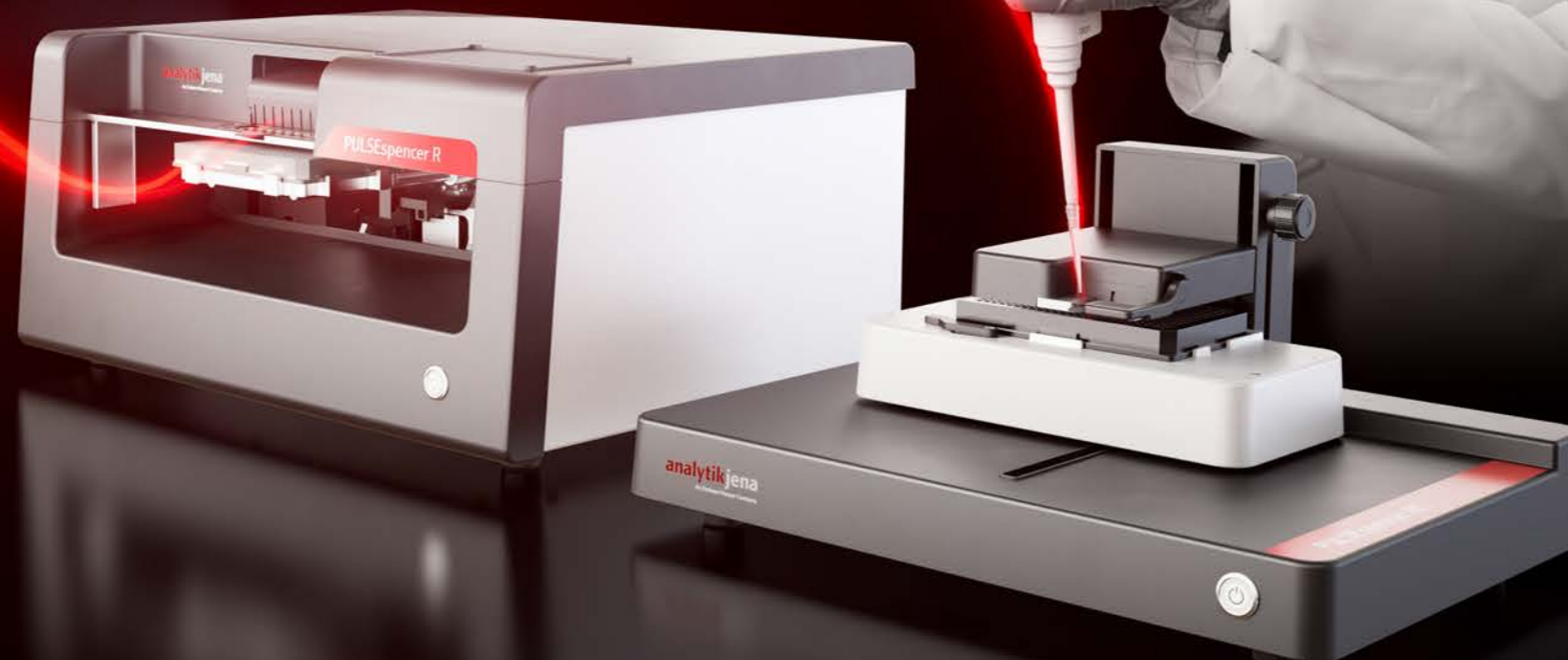
- Faster assay setup and execution through guided software and contactless dispensing
- Miniaturization reduces reagent consumption and waste
- High precision ensures consistent, reliable results across experiments

Intelligent tools for confident assay optimization

- Intuitive, step-by-step guidance that minimizes training time and user errors
- Smart assay optimization tools with parameter suggestions for higher efficiency
- Validating inputs and flagging inconsistencies reduces risk of failed runs and wasted reagents

Compact, modular – expertly engineered for every application

- High capability in a small footprint, fitting seamlessly into any lab environment
- Support of a wide range of applications, from drug discovery to genomics, covering multiple assay types
- Expert-engineered reliability ensures consistent results and dependable long-term support



Meet the PULSEspencer series

Empower your lab with a system that combines space-saving design, modular flexibility, and unmatched versatility. With Analytik Jena's proven expertise in liquid handling, the PULSEspencer series ensures precision and confidence in every assay.

Designed for precision reagent and cell dispensing, the PULSEspencer series streamlines complex workflows and supports assay miniaturization with ease in up to 1536 well plates. Whether you're preparing dilution series, optimizing conditions, or handling critical reagents, this system delivers accuracy and reproducibility in every step – saving time and resources in your lab.

✓ Your lab benefits

- Assay miniaturization
- Consistent, high-quality data
- Low volume consumption
- Reduced contamination risk & variability
- Save lab space and increase throughput
- Minimal training and easy implementation
- Adaptable to evolving lab needs

i Dispensable fluids

Both PULSEspencer R and RC are designed for precise dispensing of **DMSO solvents and aqueous fluids** (small molecule compounds or biomolecules) with or without surfactant.

In addition, the PULSEspencer RC is capable of simple **single- to multi-cell dispensing** and acetonitrile solvents.



Workflow simplification and assay miniaturization

The devices simplify assay preparation by reducing the need for manual pipetting and serial dilution steps.



Precise ultra-low volume non-contact dispensing

The PULSEspencer series can dispense extremely small volumes (from 8 pL) directly into assay plates without contact.



User-friendly software wizards

The software offers guided assay creation with intuitive wizards that accompany the user step-by-step.



Smart assay optimization tools

The software automatically optimizes plate layouts, e.g. through randomization and concentration distribution.



Controlled single-cell dispensing

The PULSEspencer RC enables controlled, reproducible workflows for streamlined assays and single-cell omics applications.



Compact design and modular combination

The PULSEspencer series has a space-saving design and can be flexibly combined with other devices for several workflows.





PULSEspencer R

Redefine precision in your workflows. The PULSEspencer R delivers ultra-accurate, non-contact reagent dispensing for assay miniaturization and rapid optimization – ideal for drug discovery and high-throughput screening.



Cassette type	RRB	RR4	RR8s	RR4s
Description	8 dispenseheads	4 dispenseheads	8 dispenseheads	4 dispenseheads
Dispensing volume range	8 pL – 20 µL	1 nL – 200 µL	11 pL – 20 µL	1 nL – 200 µL
Compatibility	Aqueous solutions, protein		DMSO, >10 different PCR Master Mixes, aqueous solutions requiring surfactant	
Key capabilities	Titration low volume	Normalization	Titration low volume	Normalization

PULSEspencer RC

Push the boundaries of single-cell research. The PULSEspencer RC combines cutting-edge dispensing technology with unmatched control, enabling a comprehensive workflow for applications demanding ultimate precision at the cellular level.



Cassette type	CC	CRL	CRH	CRLs	CRHs
Description	1 dispensehead	1 dispensehead	1 dispensehead	1 dispensehead	1 dispensehead
Dispensing volume range	480 pL – 20 µL	8 pL – 20 µL	1 nL – 200 µL	11 pL – 20 µL	1 nL – 200 µL
Compatibility	Cell suspension	Aqueous solutions, protein		DMSO, acetonitrile*, >10 different PCR Master Mixes, aqueous solutions requiring surfactant	
Key capabilities	Isolation of 1 to 25 cells per well	Titration low volume	Normalization	Titration low volume	Normalization

* Only for CRLs cassettes

Redefine your assays

Miniaturization meets precision – simplify workflows, save time, and achieve reliable results with every pulse.



Workflow simplification and assay miniaturization

The devices simplify assay preparation by reducing the need for manual pipetting and serial dilution steps.

Simplify complex workflows and reduce assay volumes without compromising accuracy. By reducing manual pipetting and serial dilution steps, the PULSEspencer series streamlines assay preparation and enables true miniaturization. This means faster setup, lower reagent consumption, and consistent, reproducible results – all in a compact, high-tech solution.



Your advantages

- Streamlined processes
- Reduced reagent use
- Faster setup
- Consistent results

Feature	PULSEspencer R	PULSEspencer RC
Dispensing technology	Non-contact by applying thermally generated pressure pulses	
Volume range	8 pL – 200 µL* (approx. 7.4 orders of magnitude)	
Precision	< 8%**	
Compatibility	Reagents	Reagents and cell suspension
Dispensing speed	Reagent: <ul style="list-style-type: none"> ▪ 10 nL across 96 well format in 20 sec ▪ 10 nL across 384 well format in 70 sec Cells: <ul style="list-style-type: none"> ▪ 384 well plate in ~ 5 min 	

* Depending on type of fluid and dispensehead cassette
 ** For volumes >100 µL



Precise ultra-low volume non-contact dispensing

The PULSEspencer devices can dispense extremely small volumes (from 8 pL) directly into assay plates without contact.

Achieve unmatched precision with ultra-low volume dispensing starting at just 8 picoliters – completely contact-free. The PULSEspencer series delivers accurate droplets directly into assay plates, minimizing contamination risk and ensuring reliable performance for even the most demanding applications. Precision redefined for modern laboratories.



Your advantages

- Extreme precision
- Contact-free
- Reduced contamination risk
- Versatile applications



Intelligent tools for confident assay optimization

Our dispenser software wizards and optimization tools simplify complex workflows, guide every step, and ensure reproducible results – enabling faster, more reliable assay development.



User-friendly software wizards

The software offers guided assay creation with intuitive wizards that accompany the user step-by-step.

Start confidently with user-friendly software wizards that walk you through assay creation step-by-step. Whether setting up PCR or titration assays, or synergistic studies, the system reduces complexity and minimizes errors, making even advanced workflows accessible to all users. Beyond guided workflows, the software actively optimizes plate layouts for maximum efficiency. It supports randomization of sample positions, auto-setup of dilution series based on minimum and maximum volumes or concentrations, and intelligent distribution of concentrations across wells. These tools minimize trial-and-error, improve reproducibility, and accelerate assay development, giving users confidence in every result. A special simulation mode enables safe, test-based protocol setup prior to execution, reducing risks and saving reagents.



Your advantages

- Effortless experiment set-up
- Intuitive guidance
- Immediate insights
- Efficiency boost



Smart assay optimization tools

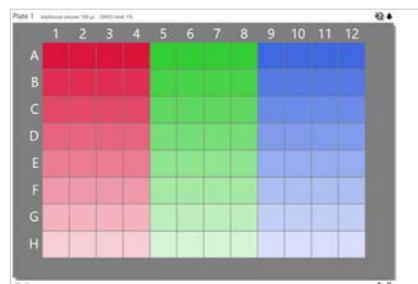
The software automatically optimizes plate layouts, e.g. through randomization and normalization.

Intelligent wizards help you work smarter and error-free



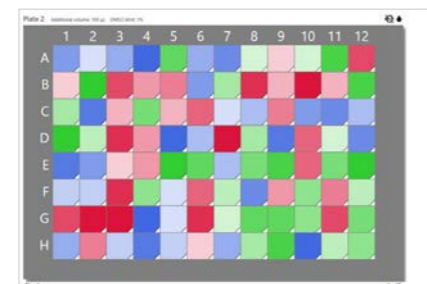
Titration

Create precise dilution series for accurate dose-response and optimization.



Randomization

Eliminate bias with smart sample randomization for reliable, reproducible results.



Synergy

Design powerful combination layouts to uncover synergistic or antagonistic effects.

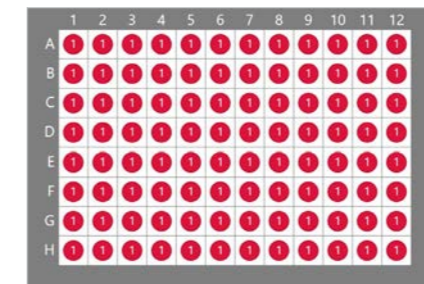


Controlled single-cell dispensing

The PULSEspencer RC enables controlled, reproducible workflows for streamlined assays and single-cell omics applications.

Cell isolation

Assign an exact number of 1 to 25 cells per well for reliable and reproducible single-cell analysis.



Cell line setting recommendations (excerpt)

Cell line	Origin	Culture type	Recommended cell size setting
HeLa	Human Cervical Tumor	Adherent	15-17 µm
HEK293T	Human Embryonic Kidney	Adherent	12-14 µm
CHO	Chinese Hamster Ovary	Adherent	12-14 µm
Jurkat	Human T Cell Leukemia	Suspension	9-11 µm
MCF-7 GFP+	Human Breast Cancer	Adherent	Sticky Cells - 18-20 µm



This table includes only a subset of the recommendations. For the full list, please contact our application experts.





Compact, modular – expertly engineered for every application

The PULSpencer series combines a space-saving, modular design with unmatched application versatility. With decades of liquid handling expertise from Analytik Jena, they deliver precision and flexibility in any lab environment.



Compact design and modular combination

The PULSpencer series has a space-saving design and can be flexibly combined with other devices for several workflows.

The PULSpencer devices deliver high performance in a minimal footprint, freeing up valuable bench space without compromise. Their modular architecture scales effortlessly with evolving workflows, ensuring future-proof flexibility for applications ranging from drug discovery to genomics. Backed by our proven liquid handling expertise, PULSpencer combines reliability, versatility, and space efficiency in one expertly engineered solution.

Feature	PULSpencer R	PULSpencer RC
Dimensions (L x W x H)	470 mm x 380 mm x 230 mm	385 mm x 280 mm x 190 mm
Weight	16.1 kg (35.4 lb)	4.8 kg (10.58 lb)
Compatible labware	12 to 1536 well plates (6-47 mm height), glass slides and custom labware	
Plate limits due to evaporation	DMSO: max. 32 plates, aqueous: max. 8 plates or 1536 wells	DMSO: max. 32 plates, aqueous: max. 8 plates or 1536 wells, acetonitrile: max. 100 wells across no more than 4 plates, cell fluid: max. 8 plates or 1536 wells



✓ Your advantages

- Space-saving footprint
- Modular scalability
- Broad application range
- Trusted expertise

Order information

Order number	Product
875-300010	PULSEspencer R
875-150010	PULSEspencer RC

Order number	Cassette name	Device	Compatible fluids	Packing unit(s)
875-300725	RR8	PULSEspencer R	Surfactant-free aqueous solutions and protein	20
875-300720	RR8s	PULSEspencer R	DMSO, >10 different PCR Master Mixes, aqueous solutions requiring surfactant	20
875-300745	RR4	PULSEspencer R	Surfactant-free aqueous solutions and protein	20
875-300740	RR4s	PULSEspencer R	DMSO, >10 different PCR Master Mixes, aqueous solutions requiring surfactant	20
875-150760	CC	PULSEspencer RC	Cell suspension	20
875-150725	CRL	PULSEspencer RC	Surfactant-free aqueous solutions and protein	30
875-150720	CRLs	PULSEspencer RC	DMSO, acetonitrile, >10 different PCR Master Mixes, aqueous solutions requiring surfactant	30
875-150745	CRH	PULSEspencer RC	Surfactant-free aqueous solutions and protein	30
875-150740	CRHs	PULSEspencer RC	DMSO, >10 different PCR Master Mixes, aqueous solutions requiring surfactant	30

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