



Liquid dispensing

Multidrop Combi reagent dispensers

Meet your laboratory's needs for flexibility and performance with easy-to-use Thermo Scientific™ Multidrop™ Combi reagent dispensers, designed to support the varied requirements for liquid dispensing in pharmaceutical and biotechnology laboratories. Compact Multidrop Combi instruments fit easily on the bench, and the intuitive user interface makes setup and programming a straightforward. With these devices, you can fill plates in seconds with precision and reproducibility, helping you run tests faster and increase productivity.



Multidrop Combi systems for effortless dispensing



Instrument	Multidrop Combi+ Reagent Dispenser	Multidrop Combi SMART+ Reagent Dispenser	Multidrop Combi nL Reagent Dispenser
Volumes	0.5–2,500 µL	0.5–2,500 µL	50 nL–50 µL
Plate format	6- to 1,536-well plates; including 96- and 384-deep well plates and tubes in rack format (plate height: 5–50 mm)	6- to 1,536-well plates; including 96- and 384-deep well plates and tubes in rack format (plate height: 5–50 mm)	96- to 1,536-well plates; including 96- and 384-deep well plates and tubes in rack format (plate height: 5–50 mm)
Dispensing technology	Peristaltic pump	Peristaltic pump	Pressurized valve system
Dispensing precision	Small tube dispensing cassette: 2 µL: CV ≤5%; 10 µL: CV ≤3%. Stand tube dispensing cassette: 20 µL: CV ≤1.5%; 100 µL: CV ≤1%.	Small tube dispensing cassette: 2 µL: CV ≤5%; 10 µL: CV ≤3%. Stand tube dispensing cassette: 20 µL: CV ≤1.5%; 100 µL: CV ≤1%.	50 nL: CV ≤10%; 0.5 µL: CV ≤5%; 1–10 µL: CV ≤4%; >10 µL: CV ≤2%
Dispensing accuracy	Small tube dispensing cassette: 2 µL: ±10%; 10 µL: ±5%. Stand tube dispensing cassette: 20 µL: ±2%; 100 µL: ±1%.	Small tube dispensing cassette: 2 µL: ±10%; 10 µL: ±5%. Stand tube dispensing cassette: 20 µL: ±2%; 100 µL: ±1%	<1 µL: ±5% >1 µL: ±2%
Dispensing speed	96-well plate: 10 µL in 5 s; 20 µL in 5 s; 100 µL in 10 s. 384-well plate: 1 µL in 6 s; 5 µL in 9 s; 10 µL in 13 s; 20 µL in 21 s. 1,536-well plate: 1 µL in 15 s; 5 µL in 28 s.	96-well plate: 10 µL in 5 s; 20 µL in 5 s; 100 µL in 10 s. 384-well plate: 1 µL in 6 s; 5 µL in 9 s; 10 µL in 13 s; 20 µL in 21 s. 1,536-well plate: 1 µL in 15 s; 5 µL in 28 s.	384-well plate: 50 nL in 6 s, 1 µL in 8 s. 1,536-well plate: 50 nL in 21 s, 1 µL in 27 s.
Dead volume	<1 mL volume range: 0.5–50 µL; <7 mL volume range: >50 µL (it is possible to backflush the reagent into original reservoir to avoid loss of expensive reagent)	<1 mL volume range: 0.5–50 µL; <7 mL volume range: >50 µL (it is possible to backflush the reagent into original reservoir to avoid loss of expensive reagent)	<1.2 mL volume range: (it is possible to backflush the reagent into original reservoir to avoid loss of expensive reagent)

Multidrop Combi+ and Multidrop Combi SMART+ reagent dispensers

Easy, precise dispensing in seconds

The Thermo Scientific™ Multidrop™ Combi+ and Multidrop™ Combi SMART+ reagent dispensers offer performance, versatility, and simplicity for biotech, pharmaceutical, and QC laboratories.

Multidrop Combi+ and Multidrop Combi SMART+ reagent dispensers offer you:

- **Wide volume range**—precise dispensing over a 0.5–2,500 µL range, providing reproducible assay data
- **Compatibility**—any plate, any well size, from 6 to 1,536 wells and plate heights of 5 to 50 mm; the Multidrop Combi+ and Multidrop Combi SMART+ dispensers work for virtually any application
- **Simple operation**—the visual, icon-based graphic display makes it easy to use and program, even without training
- **Reduced reagent costs**—low volume dispensing, minimal dead volume, and backflushing minimize re-runs and usage of expensive reagents
- **Traceability**—Multidrop Combi SMART+ dispenser automatically tracks SMART+ dispensing cassette usage for improved reliability and traceability
- **Increased functionality**—easy-to-use Thermo Scientific™ FILLit™ Software provides a means to develop and transfer protocols into the instrument, as well as offering an extensive plate selection
- **High throughput and full robotic compatibility**—increased throughput, backed up by the reliability of Multidrop technology, proven by use in thousands of labs worldwide

Total flexibility

From 6 to 1,536 wells, the Multidrop Combi+ and Multidrop Combi SMART+ dispensers are capable of dispensing into a full range of plates. With automated dispensing-height adjustment for low-profile to deep-well plates, they offer flexibility for any dispensing application. The small footprint enables the dispensers to fit into laminar cabinets. The combination of extensive dispensing volumes and versatile column selection and speed makes the Multidrop Combi+ and Multidrop Combi SMART+ instruments an excellent choice for a variety of laboratories.



Extensive applications

- Assay development
- Cell-based assays
- Compound storage
- ELISA assays
- Genomics and proteomic research
 - PCR setup
 - Sequencing setup
- Primary and secondary screening

Wide range of solutions

- Beads
- Buffers
- Cells
- Diluents
- Reagents
- Solvents
- Viscous solutions—detergents and substrates

Precise dispensing

The Multidrop Combi+ and Multidrop Combi SMART+ dispensers utilize peristaltic pump technology and unique Multidrop dispensing cassettes to facilitate absolute precision across a broad volume range. High accuracy and precision of the instruments empower drug discovery teams to design new high-throughput assays on 1,536-well plates. Similarly, dispensing up to 2,500 μL is ideal for some delicate cell-based assays. Dead volumes are minimized at all settings due to the ability to backflush to recover reagents. A wide range of dispensing speeds is also possible, and up to eight different solutions can be dispensed simultaneously. The ability to adjust different volumes for each individual column enables the user to fill the plate with different dilutions of the same reagent. A steady flow of highly reproducible, meaningful data enables real increases in productivity.

Easy to use

With the improved user interface, Multidrop Combi+ and Multidrop Combi SMART+ dispensers enable users to take full advantage of technical advances. Screen navigation is simple with descriptive icons that make it easy to change all dispensing parameters for customized work—such as plate type, dispensing volume, pump speed, tip height, offset values, dispensing direction, etc.—or go straight to preset protocols. Users can also store their own protocols in the instrument memory, from which they can be launched in seconds. In all cases, the intuitive user interface means that little or no training is required. The improved selected columns feature makes it easier to select columns for partial plate dispensing. The dispense mode for 6- to 48-well cell culture plates provides an option to slow the plate movement and avoid spillage. FILLit Software, **available for download**, enables users to upgrade easily for increased functionality and control of the Multidrop Combi+ and Multidrop Combi SMART+ instruments.

Autoclavable dispensing cassettes and reagent backflushing

To facilitate sterile conditions and avoid cross-contamination, the Multidrop Combi+ and Multidrop Combi SMART+ dispensers use 8-channel detachable and autoclavable dispensing cassettes. Cassettes are selected according to the dispensing volumes and user preference and can be changed in seconds. Backflushing of tubing and negligible dead volumes minimize expensive reagent loss.

Full robotic compatibility

Multidrop Combi+ and Multidrop Combi SMART+ dispensers can increase productivity as stand-alone instruments. However, when users take advantage of their full robotic compatibility, the real benefits become clear. The instruments' plate carriers are optimized for easy plate access by robotic arm grippers, linked via either the RS-232 serial or USB port.

Multidrop Combi nL Reagent Dispenser

Effortless low-volume reagent dispensing

The Thermo Scientific™ Multidrop™ Combi nL Reagent Dispenser brings reliability and ease of use, meeting needs of low-volume reagent dispensing in pharmaceutical and biotechnology laboratories.

The Multidrop Combi nL Reagent Dispenser offers you:

- **Reliable low-volume dispensing**—precise dispensing over a range of 50 nL to 50 μ L, delivering high-quality assay data
- **Increased flexibility**—compared to manually filling plates, it dispenses repeatably into plates with a variable plate height, allowing the user to fill either rows, columns, or discrete wells with the easy-to-use FILLit PC software
- **Effortless dispensing**—the visual, icon-based onboard user interface makes all functions easy to set up, use, and maintain
- **Reduced reagent cost**—low-volume dispensing, minimal dead volume, and the backflush function minimize the use of expensive reagents
- **High throughput**—fast dispensing, combined with full robotic compatibility, helps ensure increased assay throughput for laboratories needing low-volume assay formats

Reliable low-volume dispensing

The Multidrop Combi nL dispenser's valve-based dispensing technology provides an easy-to-start and easy-to-handle approach to low-volume assays. The Multidrop Combi nL dispenser facilitates collection of high-quality assay data with precision, accuracy, and ease.

Flexibility

The Multidrop Combi nL dispenser facilitates consistent high-throughput dispensing into 1,536-, 384-, and 96-well plates, covering a volume range of 50 nL to 50 μ L. It dispenses repeatably into plates with a variable height from 5 mm to 50 mm, allowing the user to fill low-profile, standard-format, and deep-well plates without changing cartridges or manifolds. Precalibrated liquid types allow a quick selection at startup. Additional liquids can be set on the unit in the stand-alone mode or using FILLit Software. The instrument can be used to dispense all common reagents, diluents, and buffers, as well as viscous solutions, making it ideal for a broad range of assays. The loss of reagent is minimized with low dead volume and the reagent recovery feature, which allows the user to backflush all the remaining reagents from the liquid path.



Ease of use

The intuitive onboard graphical user interface of the Multidrop Combi nL dispenser makes all functions easy to set up and use. Key dispensing parameters can be selected quickly in the instrument main menu, and no extensive training sessions are needed for the routine use of the unit. Maintenance of the instrument is made easy with the special tip wash feature and the dispensing head structure, which enable a quick and effortless cleanup procedure. The valves are easily accessible, and the setup allows for a change of an individual valve. The status light of the pump pressure indicates the pressure level of the unit and makes it easy to see when the instrument is fully pressurized and ready for dispensing.

Functionality

Easy-to-use FILLit Software helps enable users to select discrete wells, define well volumes, and build dispensing protocols. Additionally, protocols can be downloaded to the instrument for stand-alone use or transferred from the instrument back to the PC for further modification. The calibration wizard guides users through a quick calibration process, which makes it possible to add different liquid types.

To help with high QC demand, the software enables users to print the run log, including detailed run information.

Full robotic compatibility

The Multidrop Combi nL dispenser is designed for an easy integration with automation solutions, supporting low-volume dispensing for high-throughput laboratories. The compact size of the instrument with the optimized plate carrier makes it ideal for automated systems. The highest throughput is enabled by full integration with a range of robotic platforms.

FILLit Software

FILLit Software is an easy-to-use tool that allows rapid development of protocols that can be run directly from a PC or transferred to the instrument's memory.

Features:

- An extensive plate list, containing plates from different manufacturers, is available for selection
- A versatile step list for more complex protocols to be run automatically
- Users can select the same volume for the plate and different volumes for different columns
- Protocols can also be downloaded to the instrument for stand-alone use or transferred from the instrument back to the PC for further modifications
- Precalibrated liquid types stored in the memory allow a quick selection at startup
- The calibration wizard guides the user through a quick calibration process, which makes it possible to add new liquid types
- User can select individual volumes for discrete wells due to individual control of each Multidrop Combi nL valve

FILLit software is available to be downloaded from [thermofisher.com/FILLit](https://www.thermofisher.com/FILLit)





Cassettes

The extended line of Thermo Scientific™ Multidrop™ dispensing cassettes offers optimal solutions for a wide volume range and a variety of reagents.

The autoclavable Multidrop dispensing cassettes are available with plastic or metal tips, as well as longer tubing if the reagent bottle needs to be placed further from the instrument. Choose between standard or small tube cassettes based on your dispensing volume requirements. Additionally, SMART+ versions for Multidrop Combi SMART+ dispensers are also available, including lifetime data.

Standard tube dispensing cassette

Standard tube dispensing cassettes are designed to be used with Multidrop Combi+ and Multidrop Combi SMART+ dispensers.

Details

- Plastic cover structure, wide 40 cm long silicone tubing, and polypropylene tip comb with 0.5 mm tip inner diameter
- Designed for volumes from 5 μ L up to 2.5 mL
- Most suitable for dispensing volumes of at least 20 μ L
- Wide tubing allows high-speed dispensing of large volumes
- Standard tube cassettes are also available with 200 cm long tubing versions, ideal for automated systems where reagent vessels are remote from the instruments

Small tube dispensing cassettes

Details

- Plastic cover structure, 40 cm long silicone tubing with small tubing diameter, and polypropylene or metal tip with 0.22 mm orifice
- Tip structure and design optimized for efficient and reproducible dispensing of small volumes from 0.5 µL up to 50 µL
- Small tube dispensing cassettes are available with either plastic or metal tips to accommodate a variety of reagents
- The 200 cm long small tube cassettes are ideally suited for use with automated systems; the eight channels are joined as a single tube, minimizing liquid resistance

SMART+ dispensing cassettes

Thermo Scientific™ SMART+ dispensing cassettes are used with the Multidrop Combi SMART+ dispenser. These cassettes are equipped with a SMART information radio-frequency identification (RFID) tag to store lifetime dispensing data for the cassette. When used with the Multidrop Combi SMART+ dispenser, the remaining usage time is displayed. SMART+ cassettes are available in standard and small tube versions and are distinguished from normal cassettes by an RFID tag. See details of SMART+ dispensing cassette compatibility in the ordering information table.

Tubing sets

Compatible with standard tube dispensing cassettes, Thermo Scientific™ tubing sets are an economical choice. These sets require opening the cassette cover and calibrating prior to use. The 200 cm long tubing versions are ideal for use with automated systems.

Cassette maintenance—best practices

- Clean the dispensing cassette daily after use. Wash by dispensing ddH₂O through the cassette. Be sure to wash all tubing completely.
- Standard tube cassettes: use a minimum of 20 mL of ddH₂O.
- Small tube cassettes: use a minimum of 10 mL of ddH₂O.
- If cleaning with water is not sufficient, use a mild laboratory detergent (e.g., TWEEN™) or a cleaning solution (e.g., 1% Micro-90™ Cleaning Solution) depending on the application.
- Then dispense with a large amount of ddH₂O. Empty the tubing.
- After washing, store the dispensing cassette in the rest position and dry at room temperature.

Caution: when dispensing proteins, wash first with ddH₂O before ethanol to avoid precipitation.

Cassette compatibility and ordering information

Description	Multidrop Combi+ dispenser	Multidrop Combi SMART+ dispenser	Cat. No.
Standard tube dispensing cassette	✓	✓	24072670
Standard tube dispensing cassette 5-pack	✓	✓	24072671
Standard tube dispensing cassette 10-pack	✓	✓	24072672
Long standard tube dispensing cassette (tubing length 200 cm)	✓	✓	24072677
Small tube plastic tips dispensing cassette	✓	✓	24073290
Small tube plastic tips dispensing cassette 5-pack	✓	✓	24073291
Small tube metal tip dispensing cassette	✓	✓	24073295
Small tube metal tip dispensing cassette 5-pack	✓	✓	24073296
Long small tube plastic tip dispensing cassette (tubing length 200 cm)	✓	✓	24073293
Long small tube metal tip dispensing cassette (tubing length 200 cm)	✓	✓	24073298
Tubing set for standard tube dispensing cassette (tubing length 40 cm)	✓	✓	24070290
Long tubing set for standard tube cassette (tubing length 200 cm)	✓	✓	24070297
SMART+ small tube plastic tip dispensing cassette		✓	N22700
SMART+ small tube metal tip dispensing cassette		✓	N22702
SMART+ standard tube dispensing cassette		✓	N22704
SMART+ standard tube dispensing cassette, long (tubing length 200 cm)		✓	N22706

Ordering information

Description	Cat. No.
Multidrop Combi+ Reagent Dispenser	5840330
Multidrop Combi SMART+ Reagent Dispenser	5840340
Multidrop Combi nL Reagent Dispenser, 50 nL to 50 µL	5840400
Multidrop Combi nL Reagent Dispensing Valve	N07494
Reagent reservoir, 250 mL with accessories*	N07489
Reagent reservoir, 250 mL storage bottle**	N07497
Reagent reservoir, 1,000 mL†	N07490
Glass reagent reservoir, 250 mL‡	N09504
Glass reagent reservoir, 1,000 mL§	N09505
Tubing set and manifold for 250 mL reagent reservoir	N07491
Tubing set and manifold for 1,000 mL reagent reservoir	N07492
Tubing assembly from reagent reservoir to pressure/vacuum system	N07495

* Includes 250 mL polypropylene reservoir with filter, tubing, and manifold.

** Includes 250 mL polypropylene reservoir without tube connectors.

† Includes 1,000 mL polypropylene reservoir with filter, tubing, and manifold.

‡ Includes 250 mL glass reservoir with filter, tubing, and manifold.

§ Includes 1,000 mL glass reservoir with filter, tubing, and manifold.



 Learn more at thermofisher.com/multidrop

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