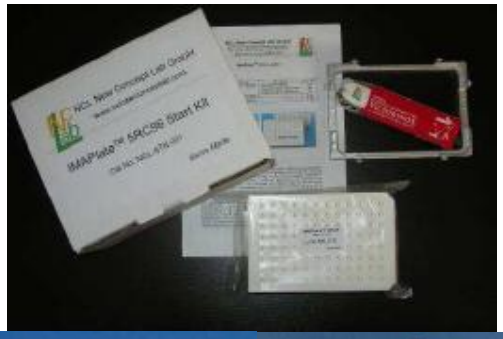
FT-DR9611

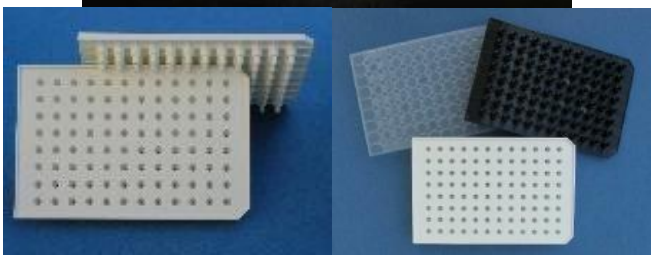
IMAPlate

Products Description

Microplates for Intelligent MultiFunctional Analysis – Liquid Handling + Spectrometry + ELISA

Catalog #:	**Product Name & Description:**
DR9602, 1 kit*	**IMAplate™ Start Kit**
DR9603, 1 kit*	*Contains: 5 IMAPlate™ 5RC96 plates (white) 1 reader adaptor (adjustable/DR9602) (non adjust./DR9603)
DR9611, 5 plates DR9613, 100 plates	**White IMAPlate™** (96 µcuves)
DT5431, 5 plates DT5433, 100 plates	**Black IMAPlate™** (96 µcuves/microplate)
DT5441, 5 plates DT5443, 100 plates	**Clear IMAPlate™** (96 µcuves)
DR9621, 1u	**IMAplate adaptator – adjustable**
Storage:	Room temperature (Z)

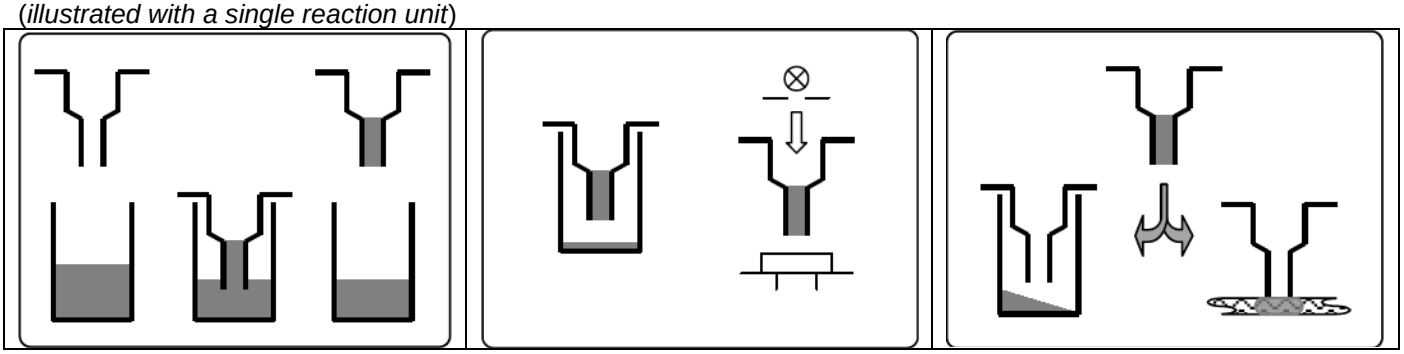




The IMAPlate™ is a disposable multi-utility lab device designed for trained specialists in an ordinary laboratory to manually perform high-throughput liquid transfer, analysis and assay in a miniature format according to our patent pending IMAPlate™ technology. The IMAPlate™ is made of polystyrene and comprises 96 identical, funnel-like reaction units positioned according to standard 96-well plate format and each reaction unit contains a 5µl round reaction chamber with a length of 5mm. Together with the reader adaptor, the samples in the reaction chambers of the IMAPlate™ can be measured by a standard 96-well plate reader.
The IMAPlate™ provides professionals in life science and chemistry a breakthrough lab tool with a unique liquid handling concept and is easy-to-use, robust, highly productive and cost-effective. It can be used as a 96-channel pipette for simultaneous liquid transfer, a 96-micro-cuvette array for UV, VIS and IR spectroscopic analysis and a virtual 96-microwell plate for parallel reactions and assays. In conjunction with 96-well plates, the IMAPlate™ is able to transfer and/or analyze up to 96 individual samples simultaneously.

IMAplate Technology (Intelligent MultiFunctional Analysis) - Overview

(*illustrated with a single reaction unit*)



Sample or reagent solution can quantitatively be sucked by capillary action through the bottom opening and kept in the reaction chamber.

Sample or reagent solution is confined by capillary force in the reaction chamber for reaction and analysis by a 96-well plate reader.

The solution in the reaction chamber can be collected into a 96-well plate by centrifugation or absorbed away by using a filter paper.

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Applications

• 96-channel pipette for liquid transfer
• 96 micro-cuvette array for UV, VIS or IR spectroscopy
• 96 microwell plate for parallel reactions and assays
IMAplates makes it possible pipette up to 96 individual samples simultaneously, then to analyze them with your usual microplate reader, then if needed to recover the samples!

IMAPlate™	Liquid transfer	Absorbance measurement	Fluorescence measurement	Reaction
White	√	UV-Vis-IR	-	√
Black	√	UV-Vis-IR	√	√
Clear	√	-	-	√

Advantages: High-throughput liquid transfer, analysis and assays in a miniature format

- **Reducing the consumption of samples and reagents**
- **Easy to use – Robust – Highly productive**
- **Cost effective**
- **Increasing sensitivity**
- **Shortening reaction time** involving solid phase

IMAplate offers a solution at the same time **more flexible**, **quicker** and **cost-effective**, when:
-samples are in limited quantity or precious,
-reagents are expensive (case of commercial kits),
-several analysis are performed on each sample (multiplex),
-alternative methods are cost- or time-consuming
-to speed steps and handling with reliability.

IMAplate technology combines above advantages notably in following applications:
-**DNA/RNA spectrometry quantitation** (replace i.e. Nanodrop, cutting off instrument price)
-serological **analysis of many analytes in small animals serums**
-ELISA **multiplexed analysis or screening** (pharma, cosmeto, vaccines)

How IMAplate works?

- **Loading, un-loading and washes are simplified, accelerated and reliable**:
  samples and reagents and buffers are loaded simultaneously by capillary force (a)(precise volume), assayed, then drawn away by an absorbent paper or by centrifugation. ex. **1 plate/ samples can be washed in just 10 seconds, without machine !**
- Microcuves of 5µL **save up 20 fold (rare) samples and any (costly) detection reagents** (ex in ELISA).
- Reading : the **optical path is perfectly defined**, and longer to those of standard microplates!
  Hence **detection sensitivity is superior.**
- The microcuves have no bottom! Thus **no parasite optical absorption** takes place, and you can work in UV, IR..., with superior sensitivity. You even can **recover the samples**.
- The microcuves have a **geometry more favorable for immunoenzymatic reactions** (surface/volume 3.8x superior), compared with wells of standard microplates: hence **kinetic is speeded** at each step (ex incubations 2 fold shorter in ELISA).

IMAPlate™ technical data and features (5RC96):

Reaction chamber diameter x height:	1.1 mm x 5 mm
Reaction chamber volume and surface area:	5 µl / 18 mm2
Format:	Standard 96-well plate
Material:	Polystyrene (white, black or clear)
Chemical resistance:	Good chemical resistance to many aqueous solutions (limited to some solvents)
Application temperature range:	0°C to + 60°C
Centrifugation, Maximum RCF:	2 000 x g
Quality control:	ELISA based protein adsorption and absorbance based liquid/ handling test
Autoclavability:	No
Storage:	Store at room temperature in a dry place from direct sunlight and UV light
Other information:	For single use only
Reader adapter:	Aluminium
Dimensions of reader adapter (L x W x H):	127.75mm x 85.5mm x 14.8mm

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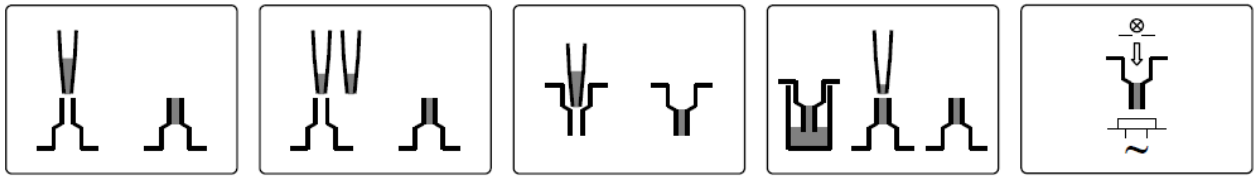
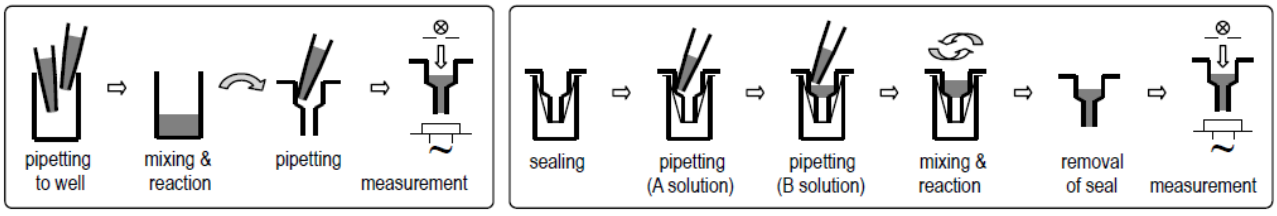
Options of liquid handling for low-volume measurement and assay (1-5µl or <1µl)



Options of liquid handling for macro-volume measurement and assay (15-25µl)



Directions for Operation

A) Liquid loading by capillary force (high-throughput):

1. Prepare a source plate/tray with a desired amount of sample or solution.
   (The 96-well plate with V bottom is recommended in order to save sample or solution.)
   (for washing wells, one may use a microplate cover containing 3-10ml of washing solution)
2. Lower the IMAPlate™ until the bottom openings touching the sample or solution.
3. Move the IMAPlate™ up and down several times to ensure the capillarity reaction chambers fully loaded.
4. Raise the IMAPlate™ slowly from the sample or solution in the source plate/tray.

5. Option step: *This is useful only for accurate reading with some reagents*.
immerge the lower part of the reaction chamber into a wash solution and lift the IMAPlate™ slowly in order to get rid of trace amounts of sample/reagent that may retain on the outside of lower part of the reaction chamber. The loaded sample or reagent do no mix in wash solution if operated properly.

6. Perform other actions accordingly.

B) Liquid loading by pipette (liquid saving method):

1. Place the IMAPlate™ on the reader adaptor or an empty 96-well plate.

2. Pipette a desired amount of sample or solution directly into the reaction chamber from the top opening.

3. Perform other actions accordingly.

Alternative (*recommended*)

1. Turn the IMAPlate™ upside down and put on the reader adaptor or a flat solid surface.

2. Pipette a desired amount of sample or solution directly into the reaction chamber from the bottom opening.
Be careful the orientation of the samples!

C) Liquid releasing by filter paper (discard sample/solution):

1. Put a filter paper on a flat solid surface.

2. Lower the IMAPlate™ until the bottom openings touching the filter paper.

3. Push the IMAPlate™ against the filter paper gently but firmly to allow liquid completely releasing.

4. Perform other actions accordingly.

D) Liquid releasing by centrifugation (recommended for recovering sample):

1. Place the IMAPlate™ carefully onto an empty 96-well plate to form a centrifugation set.
(The 96-well plate with a well depth over 11 mm is recommended.)

2. Prepare balanced, even numbered centrifugation sets.

3. Put the balanced sets into a centrifuge symmetrically.

4. Centrifuge at a desired RPM to allow liquid completely releasing.
(Pretest is recommended because different solutions may need different RPM due to their characters such as viscosity, adhesion and so on. ***Do not excess the lowest maximum RCF allowed for IMAPlate™, 96-well plate or centrifuge***.)

5. Perform other actions accordingly.

E) Absorbance measurement by 96-well plate reader:

1. Place the IMAPlate™6 onto an aligned reader adaptor (see Reader adaptor alignment) to form a measurement set.

2. Put the measurement set into a 96-well plate reader with a correct orientation.

3. Measure absorbance at both measurement wavelength (absorption peak of analyte) and correction wavelength (base line).

4. Calculate the true absorbance (the value of the subtraction of the absorbance of each reaction chamber at the measurement wavelength from that of the corresponding one at the correction wavelength).

5. Use the true absorbance for data analysis.

F) Reader adaptor alignment:

1. Place an empty IMAPlate™ onto the reader adaptor to form a measurement set.

2. Adjust the screws to position the IMAPlate™ first at the center of the reader adaptor.

3. Put the measurement set into the reader. (***Please make sure the reader can accommodate the measurement set, which contains the screws***.)

4. Measure the IMAPlate™ at a desired wavelength.

5. Try to reduce the absorbance value of the IMAPlate™ as much as possible by adjusting the screws to slightly change the position and repeat step 3 to 5. (*The good alignment should give a close absorbance value for each reaction chamber*.)

6. Use a knife to cut off protruding potions of the screws (outside of the adaptor) and the alignment between the adaptor and the reader is done.

References & Applications

DR961d-A	DNA/RNA quantification and quality analysis
DR961d-B	Protein quantification: Bradford Protein Assay
DR961d-C	A simple solution to improve the detection sensitivity of ELISA
DR961d-D	Miniaturized Enzyme-Linked ImmunoSorbent Assay
DR961d-E	Homogenous Assays
DR961h-A	Using IMAplate for Cell-HangingDrop – 3D cell culture of spheroids

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