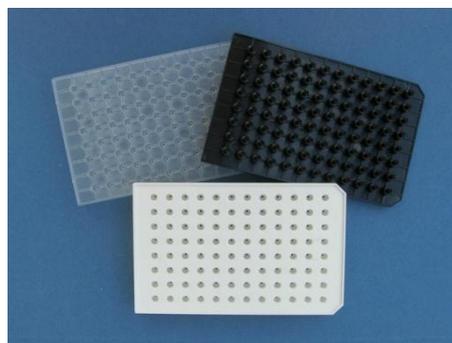


## IMAPlate™ 5RC96 Start Kit User Manual with type A adaptor (for readers with new plate definition function)



### Description:

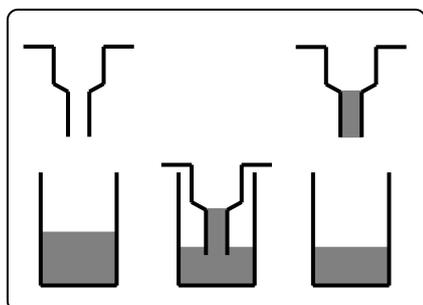
IMAPlate™ 5RC96 Start Kit is a useful multi-utility miniature analytical platform that is designed to enable every lab personnel to manually perform up to 96 liquid transfer, reaction, analysis as well as assay in parallel and simultaneously according to our patent pending technology. It contains 5 white IMAPlate™ 5RC96, 1 type A adaptor, and 1 user manual. Although it is a simply structured plastic disposable plate, the IMAPlate™ 5RC96 has many integrated features of routinely used common analytical lab devices. Besides its unique self-dosed capillarity liquid handling, all options for pipette-based liquid handling are still remained when desired.

The IMAPlate™ 5RC96 is made of polystyrene and comprises 96 identical, funnel-like bottomless reaction units positioned according to the standard 96-well plate format. Each reaction unit contains a 5µl capillarity reaction chamber with a light path length of 5mm. Together with the type A adaptor, it can perform UV-Vis-IR full-spectrum measurement in a 96-well plate reader that is able to define the plate parameters.

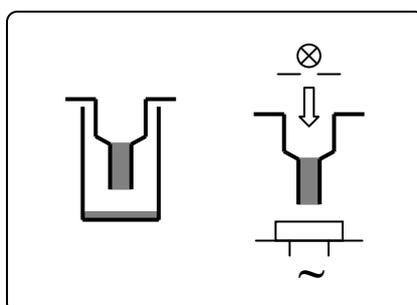
Due to its multi-functional characteristics, the IMAPlate™ 5RC96 can be used as a manual 96-channel pipette for high-throughput transferring tiny amount of liquid, as a long light-path length 96-microcuvette array for UV-VIS-IR spectroscopic analysis and as a virtual 96-microwell plate for parallel reaction and assay. It improves the performance of miniature heterogeneous reaction and assay by simplifying washing procedure, as well as miniature homogeneous assay by eliminating air gap and incomplete mixing. Its easy-to-use, robustness, high sensitivity, free of sample misplacement and cost-effectiveness would markedly ease of your lab bench-work, and can dramatically enhance your laboratory productivity.

### IMAPlate™ technology:

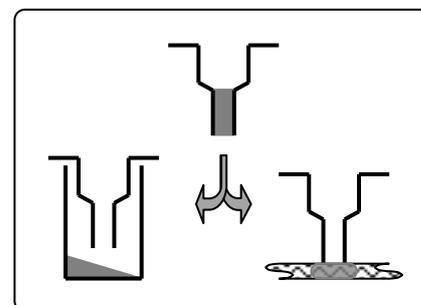
#### Overview of capillarity liquid handling (illustrated with a single reaction unit)



Quantitative amount of sample or reagent solution is sucked from the bottom opening and will remain in the reaction chamber by capillarity action.



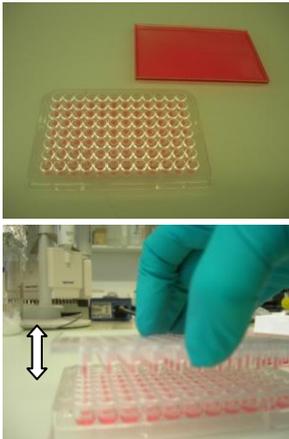
The solution remained in the reaction chamber can be incubated for reaction or analyzed by a 96-well plate reader.



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

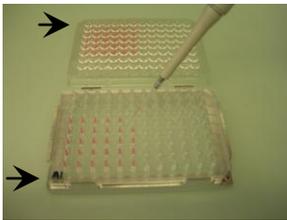
## Basic Operation:

### A) Self-dosed solution loading by capillary force (high-throughput):



1. Prepare a source plate or tray with a desired amount of samples or reagent solution. (*For individual samples add 30 – 50  $\mu$ l to a V- or U-bottomed 96-well plate is recommended.*)
2. Lower a new empty IMAPlate™ 5RC96 until the bottom openings touching the solution.
3. Quickly move the IMAPlate™ 5RC96 up and down several times to ensure the capillary reaction chambers fully loaded.
4. Raise the IMAPlate™ 5RC96 very slowly from the source plate or tray.
5. *Optional step: immerse the lower part of the reaction chamber into a wash solution and lift the IMAPlate™ 5RC96 very slowly in order to get rid of trace amounts of sample or reagent that may retain on the outside of the reaction chamber.*
6. Perform other actions accordingly.

### B) Low volume loading with a pipette (1 – 5 $\mu$ l):



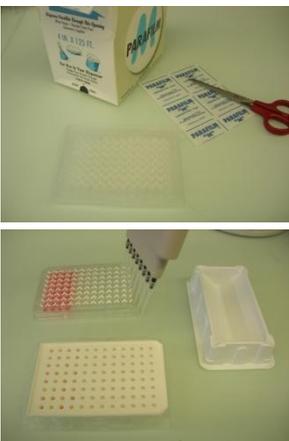
1. Turn the IMAPlate™ 5RC96 upside down.
2. Label the plate to avoid sample misplacement.
3. Put it on the reader adaptor or a flat solid surface.
4. Pipette a desired amount of sample directly into the reaction chamber from the bottom opening. (*Reverse pipetting technique is recommended.*) **Be careful the orientation of the samples.**

### C) Macro volume loading with a pipette (15 – 25 $\mu$ l):



#### ***Without mixing step (for single or premixed solution loading)***

1. Place the IMAPlate™ 5RC96 on the reader adaptor or an empty 96-well plate.
2. Pipette a desired amount of sample or assay mixture directly into the upper compartment.
3. Gently tap it in horizontal direction several times to ensure the assay solution filling up the lower compartment.
4. Perform other actions accordingly. (e.g. incubation or absorbance measurement)

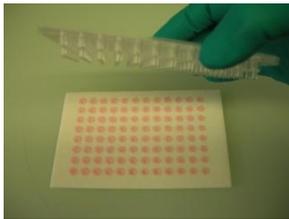


#### ***With mixing step (for several solution loading)***

1. Prepare a piece of parafilm (e.g. 100 x 150 mm) and place it on the top of an empty 96-well plate without the wax paper. Push a new IMAPlate all the way down to the 96-well plate and all the lower openings of the reaction chamber will be sealed.
2. Pipette a desired amount of sample and reagent solution one by one into the upper compartment (*recommend total volume between 15 – 25  $\mu$ l*).
3. Mix thoroughly with a plate shaker\*.
4. Peel off the parafilm.
5. Gently tap it in horizontal direction several times to ensure the assay solution filling up the lower compartment\*.
6. Perform other actions accordingly. (e.g. absorbance measurement)

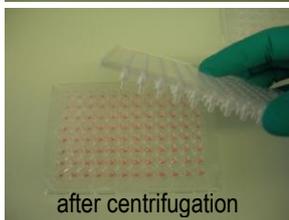
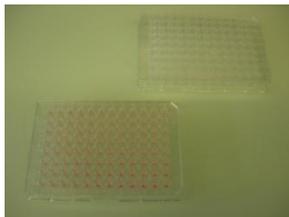
\* Depending on the assay setup, incubation can be performed after Step 3 if the solution needs to be in the upper compartment or after Step 5 if solution needs to be in both upper and lower compartments.

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



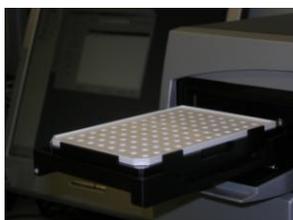
1. Put a filter paper on a flat solid surface.
2. Lower the IMAPlate™ 5RC96 until the bottom openings touching the filter paper.
3. Gently push the IMAPlate™ 5RC96 against the filter paper.
4. Wait until all solution is completely absorbed by the filter.
5. Perform other actions accordingly.

## E) Liquid releasing by centrifugation (recommended for recovering sample):



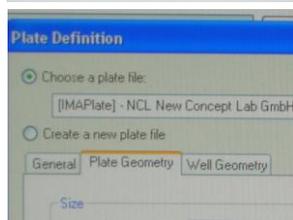
1. Place the IMAPlate™ 5RC96 carefully onto an empty 96-well plate to make a centrifugation set. *(The 96-well plate with a well depth over 11 mm is recommended.)*
2. Prepare balanced, even numbered centrifugation sets.
3. Put the balanced sets into a centrifuge symmetrically.
4. Centrifuge at a desired 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 exceed the maximum RCF allowed for IMAPlate™ 5RC96, 96-well plate or centrifuge.**
5. Perform other actions accordingly.

## F) Absorbance measurement by 96-well plate reader:



1. Place the IMAPlate™ 5RC96 onto a type A adaptor 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 peak wavelength and correction wavelength (base-line of the analyte) using an IMAPlate 5RC96 default setting (see procedure G to create a default setting if no such setting is available for the reader).
4. Calculate the true absorbance ( $Abs_{true} = Abs_{peak} - Abs_{baseline}$ ).
5. Use the true absorbance for data analysis.

## G) Create a default setting for IMAPlate 5RC96 on the reader:



1. Create a new plate file for the IMAPlate 5RC96 in the correspondent screen (see reader instruction).
2. Input parameters in the plate definition screen accordingly (such as row 8; column 12; height 14.75mm; length 127.76mm; width 85.48mm; well diameter 1.1mm; well depth 13.4mm; A1 to top offset 11.24mm; A1 to side offset 14.38; well-to-well spacing 9.0mm).
3. Put an empty IMAPlate™ 5RC96 together with the type A adaptor into the reader.
4. Measure the IMAPlate™ 5RC96 at a desired wavelength.
5. Try to get similar readings for the corner position A1, A12, H1 and H12 with minimum absorbance value\* by slightly varying the parameters such as A1 position or well-to-well spacing etc. (Follow reader instruction to get the accurate parameters).
6. Save the setting under the name for IMAPlate 5RC96 and the default setting is done.

\* The minimum absorbance value will, for most readers, be above 0 because of the small diameter of the IMAPlate reaction chamber, which can partially block the detection light of the reader. The good setting should give a close absorbance value for every reaction chamber.

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## Precautions:

1. IMAPlate™ 5RC96 and the relevant products should be used only by trained laboratory staff.
2. Please get familiar with the operation instruction before using the products.
3. If the IMAPlate™ 5RC96 needs shaking or vortex during the experiment, please predetermine the speed at which the IMAPlate™ 5RC96 should have enough force to hold the solution.
4. Never touch the bottom openings by fingers especially when the IMAPlate™ 5RC96 is loaded with solution.
5. Do not use the products when you are not clear whether our products are suitable for your application. Please contact us or distributor.
6. Do not use damaged products.
7. Follow laboratory safety instructions for samples and reagents to avoid any hazard and other health problems.
8. Follow equipment operation instructions to avoid any accident happen.
9. Dispose of the IMAPlate™ 5RC96 and wasters in accordance with the relevant legal regulations.

## Consumables ordering information:

Catalog No:	Article	Contents
NCL-P5W-002	IMAPlate™ 5RC96 White	5 plates / box
NCL-P5B-004	IMAPlate™ 5RC96 Black	5 plates / box
NCL-P5T-006	IMAPlate™ 5RC96 Clear	5 plates / box

## Product selection:

IMAPlate™ 5RC96	Liquid transfer	Absorbance measurement	Fluorescence measurement	Reaction
White	√	UV-Vis-IR	-	√
Black	√	UV-Vis-IR	√	√
Clear	√	-	-	√

## IMAPlate™ 5RC96 technical data and features:

Reaction chamber diameter: 1.1 mm

Reaction chamber height: 5 mm

Reaction chamber volume: 5 µl

Reaction chamber surface area: 18 mm<sup>2</sup>

Format: Standard 96-well plate

Material: Polystyrene

Chemical resistance: Good chemical resistance to many aqueous solutions but limited resistance 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/or 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 adaptor: Aluminium

Outside dimensions of reader adaptor (L x W x H): 128mm x 86mm x 15mm

*We guarantee that our products will be delivered free of defect and passed our quality control. If you should receive a damaged product please notify both the shipper and us immediately and we will replace the product at our cost. To our best knowledge, the information given in this document is accurate. It is the user's responsibility to determine the suitability for his/her own use of the products described herein, and since conditions of use are beyond our control, we disclaim all liability with respect to the use of any our products. In order to continuously improve the quality of our products, we reserve the right to make changes in the specifications and dimensions of the products without notice. The products are for purchaser use only. No resale or redistribution right is granted in any way on the products to the purchaser.*