

## Assay Development Application Overview

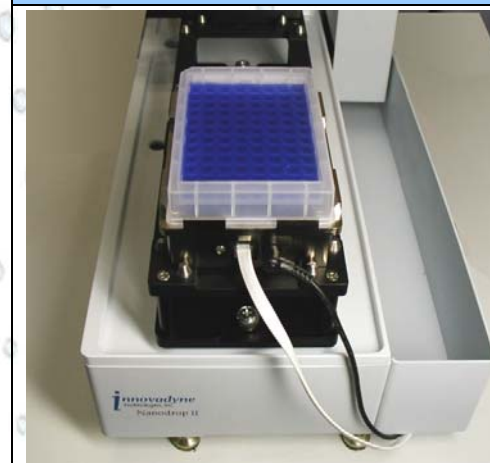
Innovadyne Technologies offers flexible liquid handling configurations for assay development ranging from benchtop semi-automated systems to systems that can be integrated for higher throughput. Our fluidics design, with non-contact dispensing and a valve-free sample/reagent fluid path, combines the benefits of high precision dispensing with ease of maintenance.

Low dead volumes and fast, effective washing make Innovadyne liquid handlers cost effective and versatile for the user who requires an instrument that can handle a wide range of media (cells, beads, membranes), readily adapts to changing conditions and offers best-in-class performance. Our instruments are ideal for method development or short run assays that require frequent changes in reagents. All assay development platforms feature the Nanobuilder software system that enables a wide range of applications and data manipulation.

In the application note "Developing a Sterile, Reliable Laboratory Setup for Low-Volume Tuberculosis Antibiotic Discovery Assays", developed in collaboration with the Novartis Institute for Tropical Diseases (Singapore), Novartis used a Nanodrop II with its stage in a Biosafety Level II containment cabinet to test potential antibiotics against proliferating tuberculosis bacteria. Novartis was able to demonstrate the precise and reproducible transfer of low volumes (down to 250 nL) of stock compounds into the assay plates without cross-contamination and operating for relatively long periods of time in isolation without maintenance and without loss of precision.



**Platemaker HTS**



**Nanodrop II with Orbital Shaker in 2nd Plate Position**

### Initial Evaluation Runs, Low Volume

	1000 nL	500 nL	250 nL
<b>Average Cv</b>	3.2%	2.8%	6.2%

### Production Runs, 50 µL (100 96-well plates)

<b>Average Assay Z-Factor</b>	.885
<b>Average Signal-to-Background Ratio</b>	10.1

## Application Notes

- **Developing a Sterile, Reliable Laboratory Setup for Low-Volume Tuberculosis Antibiotic Discovery Assays (M065)**
- **Long-Term Performance Evaluation of the Nanodrop using BSA (M025)**

## Technology Briefings

- **High Precision, Non-Contact Dispensing (M002)**
- **Low-Volume Dispensing with the Nanodrop (M021)**

## Features (all platforms)

- High precision liquid handling
- Fast delivery minimizes well to well assay variability
- Low-dead volumes
- Valve-free fluid path -- supports dispensing of difficult media
- Flexible configurations
- Large dynamic volume range: 100 nL-40  $\mu$ L
- 96, 384, 1536, 3456 plates
- 96/384/1536 low profile, Xtal, and deep well
- User-friendly software
- Ability to clean nozzles between runs
- Simple to integrate with drivers available from most integrators
- Reliable and easy to maintain
- Simple to change between reagents

## Platforms

Item	Description	Plate Positions	8-Tip Head	16-Tip Head	96-Tip Head	Syringe Channels	1,4, or 8-Tip Additions to all Wells
11638	Nanodrop II stage and fluidics	2	Yes	-	-	8	Yes
11164	Screenmaker 96+8	5	Yes	-	Yes	16	Yes
12027	Platemaker HTS	5	Yes	-	Yes	104	Yes

## Software

Item	Description
11727	Nanobuilder
10591	Nanodrop GUI (for Nanodrop only)

## Accessories

Item	Description
11193	Reagent refill system (Nanodrop)
11675	Paddle-wheel stirrer (Nanodrop)
11731	Orbital shaker (all platforms)
	Wide-bore tip set (200 $\mu$ m) (all platforms)

## Specifications (all platforms)

<b>Return-To-Spot Accuracy</b>	0.1 mm
<b>Aspiration Range, 8-Tip Head</b>	0.1-500 $\mu$ L
<b>Dispensing Range (8-Tip Non-Contact)</b>	0.1-40 $\mu$ L
<b>Dispensing Range (96-Tip)</b>	Screenmaker: 0.1-125 $\mu$ L Platemaker: 0.1-80 $\mu$ L
<b>Dispensing Precision, 8-Tip Head</b>	CV<10% at 100nL, CV<7% at 200nL, CV<5% at 1 $\mu$ L
<b>Dispensing Precision, 96-Tip Head</b>	CV<15% at 100nL, CV<10% at 200nL, CV<5% at 1 $\mu$ L
<b>Dispensing Accuracy, 8-Tip Head</b>	$\pm$ 10% at 100nL, $\pm$ 7% at 200nL, $\pm$ 5% at >1 $\mu$ L
<b>Dispensing Accuracy, 96-Tip Head</b>	Screenmaker: $\pm$ 10% at 100-500nL, $\pm$ 5% at >1 500nL Platemaker: $\pm$ 10% at 100nL, $\pm$ 7% at 200nL, $\pm$ 5% at >1 $\mu$ L
<b>Dead Volume, 8-Tip head</b>	1.5 $\mu$ L/channel at 1 $\mu$ L across 384-well plate
<b>Dead Volume, 96-Tip head</b>	<1 $\mu$ L/channel
<b>Syringe Capacity</b>	500, 1000 $\mu$ L