



**DSX<sup>®</sup>**  
4-Plate ELISA  
Processing System

Modular.  
Flexible.  
Reliable.

A Perfect Combination



*Pioneering Microplate  
Technology for more  
than 50 Years*

## About Dynex Technologies

Dynex™ is a leading manufacturer of microplate instrumentation, seamlessly integrating advanced detection with fully-automated sample handling, consumables and accessories. As of 2014, over 2,800 DSX® systems and 1,600 DS2® systems are in use worldwide in numerous applications including clinical diagnostics, drug discovery, biomedical research and industrial operations, among others. Headquartered in Chantilly, Virginia, Dynex has a proven track record of high quality products and excellent service and support.

**The trusted standard – DSX®.** An open, modular ELISA processing system by Dynex Technologies, designed specifically for busy laboratories that require advanced automation.

DSX takes microplate analysis to the next level. Powerful, yet cost-effective, DSX can handle virtually any automatable ELISA immunoassay delivering all you need to ensure the rigorous, repeatable analyses required in critical applications.

The most advanced and user-friendly control system available, designed with full walkaway capability. DSX is raising the bar.





## The Leader in Microplate Automation

The DSX® is a fully-automated, 4-plate processing system that is capable of performing multiple assays per plate. The DSX's modular design provides flexible configuration and was developed with ease-of-use in mind. The DSX incorporates many features that ensure the quality and security of results and has the performance to handle a wide variety of assays. Simply put, the DSX offers flexible and reliable sample-in/result-out processing for true walkaway automation.



## Modularity

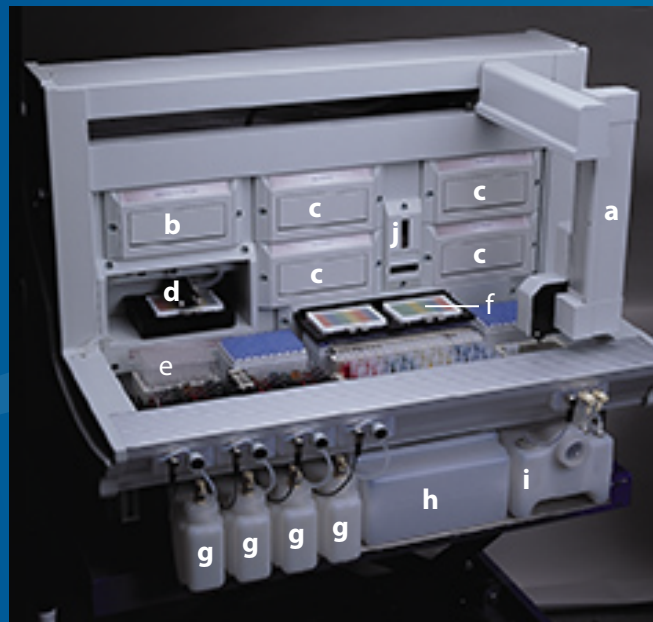
DSX's modular design facilitates upgrades, repairs and reconfiguration. The following modules, which can be quickly and easily removed and/or installed, are available for the DSX:

- Reader
- Washer
- Incubators (space for four)
- Sample ID
- Ambient Drawer
- Electronics Pod (standard)

### The Benefits of Modularity:

**Simple Upgrades...** As your laboratory needs grow, the DSX can be easily upgraded by sliding a new module into an existing position. The DSX software automatically recognizes the new module.

**Simple Repairs...** Minimize the impact on your lab's operations and throughput with Dynex's rapid global delivery service of replacement modules. Most DSX repairs do not require a service technician and literally take minutes to complete, saving you both time and money. Just call Dynex and tell us what you need. We'll ship the new module to you by express.



### The DSX System:

- a. Robotic arm
- b. Reader
- c. Incubators
- d. Washer
- e. Samples
- f. Ambient drawer
- g. Washer bottles
- h. Tip disposal
- i. Liquid waste disposal
- J. Sample identification



## Ease-of-Use

The DSX® is simplicity at its finest. Installation, programming, assay set-up and daily maintenance are all designed to keep you focused on your results, not on the instrument.

- **Installation** – Factory trained Dynex technicians can have your DSX up and running in just a few hours.
- **Software** – Revelation® data analysis software offers a graphical user interface with intuitive Windows®-based operation. The following advanced features facilitate assay performance:
  - The Data Reduction Wizard simplifies the programming of even the most complex assay configurations and calculations.
  - Online Help is available to assist with assay set-up and programming.
- **Worklist Set-Up** – The Worklist Load Wizard walks you through the process of setting up the DSX worklist, graphically showing where to place reagents, samples and plates at the beginning of each run.
- **Maintenance** – Daily maintenance can be completed in just a few minutes, including removal of consumables and rinsing the washer.

## Assay Performance

Pipetting Precision. The pipette uses disposable tips to ensure zero carryover.

Pipette precision and accuracy measures:

	Precision (relative to SD)	Accuracy (delivered volume within 2% nominal)
Sample Tip	<3% above 10 µl	± 2% above 10 µl accuracy
Reagent Tip	<3% @ 50 µl	± 2% @ 50 µl accuracy

Rapid pipetting speed minimizes assay drift, ensuring consistent results across the plate and plate-to-plate.

**Consistent Washing.** DSX's unique washer synchronization feature ensures consistent results across the plate, eliminating plate drift issues and lowering overall CVs. Several user-definable options provide significant programming flexibility:

- Plate-specific height settings
- Super Sweep mode that aspirates liquid in both the X- and Y-axis of plate wells, leaving minimal residual volume
- Well-bottom washing lowers the dispensers to more thoroughly "clean" the base of each well
- Critical washer timing that mimics manual wash steps

**Environmental Control.** The dark, protective cover extends over the entire work area of the DSX, locking in place during operation. This cover:

- Protects samples, reagents and reactions from exposure to common environmental contaminants such as light, dust or alkaline phosphatase
- Eliminates assay interruptions required to place or remove light-sensitive reagents
- Contains potential washer aerosols



*The DSX's robotic arm moves microplates and pipettes all samples and reagents.*

## Dynex Certified Consumables and Service

The DSX® system's innovations include more than just the instrument – the controlled system also includes the sample and reagent tips used. ONLY Dynex Certified Consumables are specifically designed and produced for Dynex instruments, ensuring proper tip fit with superior accuracy and performance. Beware of imitators who have tried and failed to replicate Dynex's tip designs, leading to unreliable results.

Dynex is known for building robust systems built to last many years with frequent use, but regular maintenance and servicing are also essential to sustain peak performance. Dynex offers several tiers of service contracts to help

keep your DSX running like new for years to come. Contact Dynex or your authorized Dynex distributor for more details.



## QC Features/Process Security

**Revelation® Software.** Revelation offers powerful QC equations that monitor daily assays. Revelation incorporates Levey-Jennings statistical analysis as part of the onboard comprehensive QC monitoring of assay performance.

**LIMS Interface.** The LIS-Link application is an optional software package that can be installed on the DSX PC. The LIS-Link application allows the DSX to communicate with the laboratory host computer to download pending test orders and to upload completed assay results.

**Learned Error Recovery.** To support walkaway automation, the DSX can be trained to perform appropriate error recovery actions if an error condition is detected.

**Cover Lock.** The dark cover locks automatically when the DSX begins to run, protecting reagents from room light and protecting both samples and reagents from interference.

**Sample Identification.** An on-board barcode reader tracks samples and plates in process.

**Alarms.** "Wash Buffer Low" and "Waste Full" alarms.

**Pipette Security.** Fluid level sensing, tip detection, tip-ejection and clot detection functions protect assays as well as the DSX robotic pipette.

Dynex support is just an email or phone call away:  
techservice@dynextechnologies.com  
800.288.2354 or 703.631.7800  
press option 4



# DSX® Specifications

## Physical Specifications

### Dimensions

Width:	<1060 mm	42 in
Depth:	<910 mm	36 in
Height:	<800 mm	32 in
Footprint:	<1060 x 610 mm	42 x 24 in
Bench weight:	136 kg (max)	300 lbs (max)
Ship weight:	244 kg (max)	537 lbs (max)

## Power Supply

Voltage:	100 – 240 V automatic conversion
Frequency:	50/60 Hz
Power consumption:	<800 VA "online" UPS recommended

## Reader Specifications

Photometric range:	0.000 to 3.000 OD
Spectral range:	405 nm to 690 nm
Precision:	±0.010 OD at 0.000 to 0.500 OD <1% CV at 0.501 to 2.000 OD <1.5% at 2.001 to 2.500 OD
Accuracy:	±0.01 OD or 2.5% (0.000 to 3.000 OD) whichever is greater
Read time:	<10 seconds, single wavelength# <20 seconds, dual wavelength#

## Washer Specifications

Manifold configuration:	8-way
Programmable volumes:	50 – 999 µL
Wash containers:	4 wash bottles at 2.0 L, with level-sensing
Waste container:	8 L with waste full sensor
Residual wash volume:	<3 µl per well with dual-axis sweep in a flat-bottom plate
Dispense precision:	≤5% CV (with 300 µl in a 96 well plate)

## Incubator Specifications

Number of incubators:	Up to 4
Temperature range:	RT + 7° C to 50° C
Temperature accuracy:	± 1° C
Shaking:	>15 Hz periodic or continuous

## Pipetting Specifications

Number of plates:	4
Number of assays:	1 assay per strip or up to 12 assays per plate
Number of sample tubes:	96
Number of reagents:	24
Number of standard/control bottles:	33
Number of pipettes:	1

## Reagent Pipetting

Reagent tip size:	1300 µl
Number of reagent tips:	41
Reagent pipetting volume:	25 – 1000 µl
Reagent pipetting precision:	≤3% CV at 10 shots at any volume in operating range above 50 µl
Reagent pipetting accuracy:	+/- 2% of target volume at 50 µL or greater in operating range (single-shot mode)

## Ordering Information

65100	DSX Ambient System (no incubators)
65200	DSX System with 2 incubators
65400	DSX System with 4 incubators
65600	Incubator Module
65700	Sample ID Barcode Scanner Module

### Consumables

65930	1mL Deep Well Microplate
62910	Deep-well strips (250/box)
62920	Reagent tubes, 25 mL (10/pack)
65950	Reagent tubes, 25 mL (24/Pack)
65920	Reagent tips (432/box)
65910	Sample tips (432/box)
65940	Control vials w/caps (33/pack)

## Process Security

Liquid-level sensing:	Yes (reagents, controls and samples)
Level-sensor system:	Pressure differential
Clot detection:	Yes
Dispense-anomaly detection:	Yes
Tip detection:	Yes
Well-fill verification:	Yes
Alarms:	Yes

## Sample Pipetting

Sample tip size:	300 µl
Sample pipetting volume:	10 – 250 µl 10 – 250 µl single-shot 25 – 100 µl multi-shot
Estimated cycle time for sample pickup to delivery on plate:	<8 seconds^
Time to dispense:	19 minutes (typical)^ 50 µl of 96 samples to plate from sample tubes or deep well plates
Sampling time w/dilutions: Example:	<26 minutes (typical)^ 2 stage dilution, 20 µl sample to 400 µl buffer in <26 minutes
Single-shot sample pipetting precision:	≤3% CV at any operating volume above 10 µl
Single-shot sample pipetting accuracy:	±2% of target volume at any operating volume above 10 µl
Dilution range:	1 part in 190 one-stage dilution, 1 part in 36,100 two-stage dilution
Number of sample tips loaded:	4 racks of 108
Sample tube dimensions:	Sample Rack Options Short: 40-75 mm Tubes Long: 75-100 mm Tubes



OEM capability for assay development



IEC/EN 61010-1:2001  
IEC/EN 61010-2-010:2003  
IEC/EN 61010-2-081:2002  
IEC/EN 61010-2-101:2002  
UL 61010-1:2001  
CSA C22.2 No. 61010-1  
EMC: IEC 61326-1:2005(EN 61326-1:2006)  
IEC61326-2-6:2005(EN61326-2-6:2006)



ISO 13485 CERTIFIED. SFDA REGISTERED

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Specifications are subject to change without notice.

# Measured reading time is an average depending upon run conditions.

^ Typical pipetting time is an average. For any given system, the result may vary, either shorter or longer than 15 minutes.

\* Factory calibration of the pipette module are carried out using a calibration fluid.

DSX is a general purpose microplate processor. It is the customer's sole responsibility to determine the DSX system's suitability for a particular application, including any clinical application, and validate the product for that use in compliance with all applicable legal requirements and policies.

Dynex makes no representations, warranties, or performance claims with respect to the performance of DSX for any specific application, including clinical application, or for the use of the DSX system with any reagents, assays, or other products.

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