Access™ Laboratory Workstation: A Novel Approach to Quickly and Easily Add Automation to Echo® Liquid Handlers

Randy Dyer, Brent Browning, Harry Vlahos
Labcyte Inc., Sunnyvale, CA, USA www.labcyte.com

Abstract

As researchers begin to utilize the Echo liquid handler in areas new to automation, a need for a small scale automation platform that is easy to use and implement is critical. The Access laboratory workstations is a novel solution to quickly transform protocols created with the EchO® software applications into fully optimized automation routines. With a compact footprint, the Access system can be configured to integrate the Echo liquid handler with plate handling devices and accessories directly on the bench top. This poster examines the key attributes of the Access workstation allowing researchers to quickly adapt Echo application protocols into routines for fully automated assay plate processing.

Features of a Multi-Function Benchtop System

The Echo software applications guide researchers through the development of liquid handling protocols for the Echo platform with a combination of application-specific questions and interactive graphical plate maps. Researchers can select from a wide range of options to create custom protocols from templates for plate reformatting, cherry picking, and reversion assays. To fully enable automated support of protocols created using the Echo software applications the following features empower an automated system:

- Plan and access plate storage
- Echo liquid handler
- Accessory Options: Barcode reader, - Lid removal stations, - Insert stations
- Integration Options: - Pipets, - Centrifuge, - Bulk dispenser

Plate Storage Options

Mix and match up to four:
- Skiplate random access rack
- Skiplate sequential access stacks

Plate Storage Options:

- 2140 mm [84 2.5 inches]
- 2625 mm [96.54 inches]
- 131.8 mm [44.56 inches]

Dynamic plate storage control

The built-in plate storage control tracks all plates loaded onto the Access workstation and is updated in real-time as plates are added to, removed from, or processed by all system plates simultaneously. The plate storage control software is designed to operate without conflict and, in the event of an error, can rapidly return plates to storage. With just a click, users can initiate protocol setup to process plates through the barcode reading station and automatically generate barcode TO the plate storage control as the system continues.

Simplified error recovery

The Access workstation leverages plate maps from location to location geographic positioning of the robot is tracked. If an error occurs with any part of the system, this information allows the robot to continue from a paused state without homing or retrieving. Additionally, the automation control software provides a list of options to guide users through appropriate steps to reset devices, restart or bypass specific tasks and continue run or choose to suspend run and continue with the next run in the queue.

Real time event tracking

The Access workstation leverages plate mapping and liquid handling events that occur during a protocol run. From the run progress view, users see real-time display of events as they occur as well as a list of events scheduled to occur in parallel set at right. The mapping feature allows users to view detailed information for every event and the devices involved. Survey and transfer data for every Echo liquid transfer is recorded and organized easily identify any missteps.

Summary

- Access all required devices and accessories in a compact system
- Directly import all Echo application protocols
- Use all EchO® qualified plates and reagents
- Interchange random-access and sequential-access racks
- Automatically inventory plates and verify barcodes
- Create protocols on-the-fly or from a remote client
- Recover quickly from unexpected errors
- Use immediately after installation