

Architectural Approach to Achieve Throughput Goals for a New High-Volume Multi-Detector Analyzer: the Dimension Vista™ System

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The Dimension Vista™ 1500 system* is designed to process up to 200 samples/hour. Its architecture integrates four detection modules within a single platform. Three are reagent-based, sharing a common cuvette ring to support photometric/turbidimetric, nephelometric, and LOCI™ immunoassay methods. The fourth is the V-LYTE™ module, designed to process up to 500 tests/hour for electrolytes.

Reagent-based method processing is performed by three independent Servers. Server design ranges from simple one-reagent dispensing to complex multi-reagent dispensing. This allows intelligent partitioning of the test menu among Servers according to method complexity that is configurable to maximize individual laboratory workload. Overall system throughput is the sum from each Server and the V-LYTE™ module.

Server 1 is centrally located and consists of a reagent carousel, reagent probes (R1, R2), and sample probe S1. It supports various reagent dispense times and can process the entire menu of reagent-based assays with throughput of 250-500 tests/hour.

Server 2 is on the right of the cuvette ring and consists of a reagent carriage, reagent probes (R3, R4), and sample probe S2. Assays are restricted to those with two fixed reagent dispense times. Server 2 can process a subset of the test menu for photometric, turbidimetric, and nephelometric methods, with throughput of 450-500 tests/hour.

Server 3 is located farther to the right and consists of a reagent carriage, reagent probe R5, and a sample probe S3. Server 3 can process selected high-volume photometric methods, with throughput of 450-500 tests/hour.

Overall, the system design provides for simultaneously processing of 100+ methods with a typical throughput of 1500 tests/hr. The Dimension Vista 3000T system* intelligently integrates two units into a single workstation to double throughput and provide built-in active mirror backup.

* Product under development—not available for sale

