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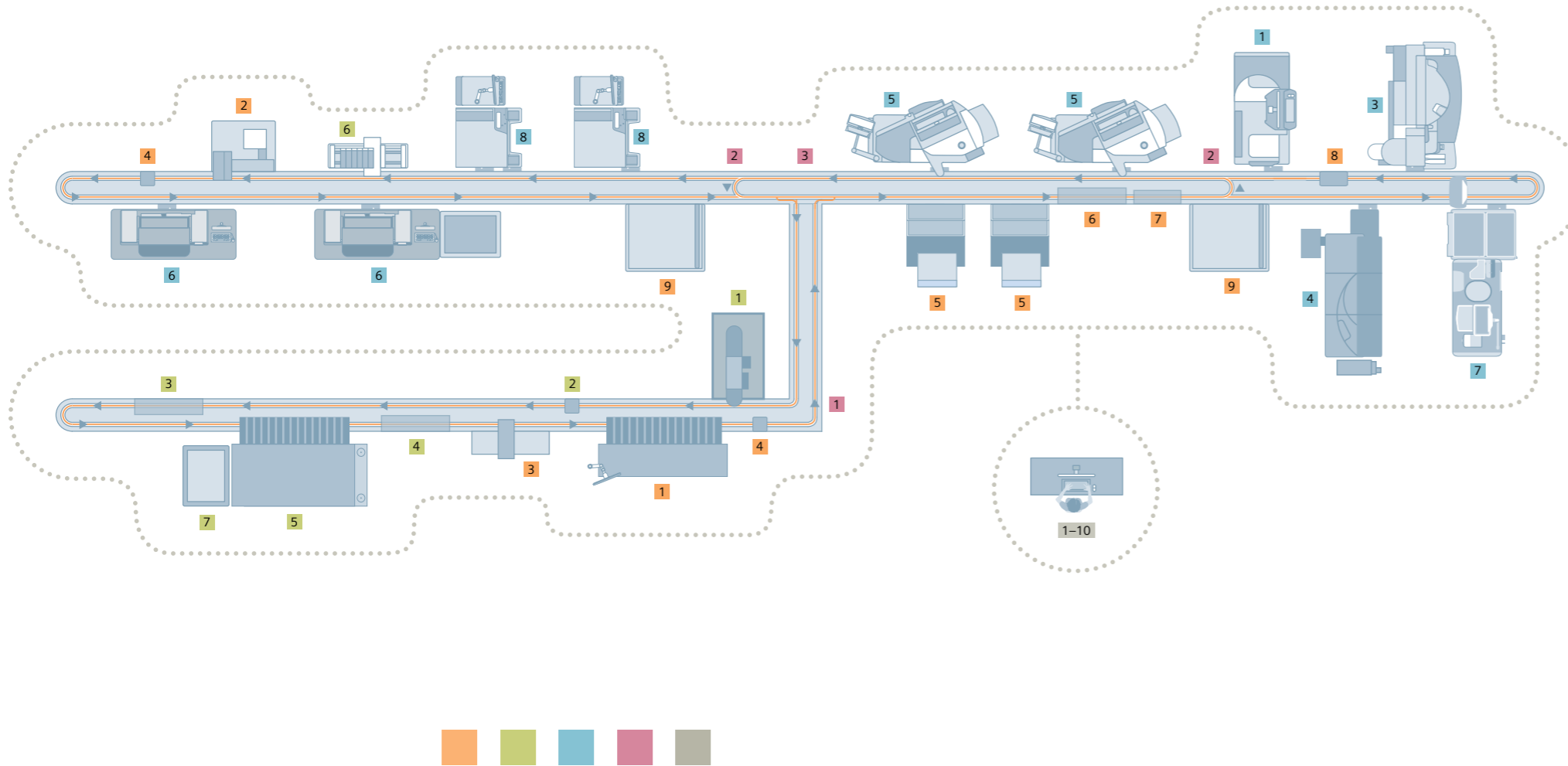**SIEMENS**
Healthineers

Automation
Partner of

inpeco
automation in healthcare

Aptio Automation
Technical Specifications

Planning Your Transformation to Increased Productivity

siemens.com/aptio

Let's Begin Planning Your Transformation

Aptio® Automation combines Siemens Healthcare's workflow expertise with intelligent technologies in flexible, track-based solutions designed to drive laboratory productivity for years to come. By providing a full complement of pre- and post-analytical sample-processing modules along with comprehensive analytics, Aptio Automation is designed to address the needs of medium- to very-high-volume laboratories.

Pre-Analytical Modules

Choose the modules that make sense for your laboratory's workload, including multiples of individual components.

1. Input/Output Module
2. Bulk Input Module*
3. Rack Input Module
4. Tube Inspection Module†
5. Centrifuge Module
6. Decapper Module
7. Sample Volume Detection Module‡
8. Sample Mixer Module
9. Wide Belt Buffer Module

*Automated tube feed options available.
†If selected, a tube inspection module will be required for each input module on the track.
‡Uncapped plasma and serum samples only.

Post-Analytical Modules

Eliminate labor-intensive, time-consuming work when distributing, storing, and/or disposing of samples.

1. Aliquotter Module
2. Aliquot Capper Module
3. Sealer Module
4. Desealer Module
5. Storage Retrieval and Disposal Module
6. Rack Output Module
7. High-capacity Waste System§

§Under development. Not available for sale. Future availability is not guaranteed.

Siemens Diagnostic Systems

Consolidate multidisciplinary core laboratory testing using instruments from a single source.

1. ADVIA® Chemistry XPT Systems
2. ADVIA 1800/2400 Clinical Chemistry System (not shown)
3. Dimension Vista® 500/1500 Intelligent Lab Systems
4. Dimension® EXL™ and Dimension EXL 200 Integrated Chemistry Systems
5. ADVIA Centaur® XPT and XP Immunoassay Systems
6. ADVIA 2120i Hematology System with/without AutoSlide
7. IMMULITE® 2000/2000 XPi Immunoassay System with VersaCell® X3 Solution
8. Sysmex® CS-5100 Hemostasis System

Flexible Track Design Options

Customize a configuration to help maximize your use of space and staff.

1. Track L (right or left turn)
2. Track U-Turn
3. Track T Intersection
4. Module Divert Lane (not shown)
5. Instrument Buffer Lane (not shown)

Integrated Data Management

Use rules-based informatics to increase productivity and ensure consistent quality.**

1. Intelligent Routing: Test Prioritization, Tube Type, Sorting, Disposal
2. STAT Prioritization
3. Reflex Testing Criteria
4. Integrated QC
5. Add-on Test Management
6. One-click Sample Retrieval
7. Autoverification
8. Exception Management
9. Instrument Status
10. Module Status, and more

**Some functionality may be subject to LIS capabilities.

Aptio Automation Module Specifications

Pre-Analytical Modules

Input/Output Module
Routine and STAT tube input, output, sort, and priority output

Weight: 642 lb (292 kg)
Dimensions (mm): 2340 L x 1515 H x 775 D
Power Consumption: 650 VA
Max. Capacity: 780 tubes, 15 racks, 48 positions (routine input, output and sort); 5 racks, 12 positions (STAT input and priority output)
Throughput (tubes/hour): Up to 750 tubes during simultaneous input and output

Bulk Input Module
High-speed tube input by bulk tube load

Weight: 315 lb (143 kg)
Dimensions (mm): 985 L x 1235 H x 790 D
Power Consumption: 160 VA
Max. Capacity: 700 tubes
Throughput (tubes/hour): Up to 1000
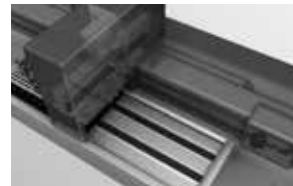
Rack Input Module
High-speed tube input by rack

Weight: 231 lb (105 kg)
Dimensions (mm): 1225 L x 1260 H x 510 D
Power Consumption: 950 VA
Max. Capacity: 288 tubes
Throughput (tubes/hour): Up to 800

Tube Inspection Module
Detects and manages mismatches between tube type and test request‡‡

Weight: N/A
Dimensions (mm): Incorporated module
Power Consumption: 150 VA
Throughput (tubes/hour): Up to 1000

Centrifuge Module

Weight: 919 lb (417 kg)
Dimensions (mm): 945 L x 1510 H x 1155 D
Power Consumption: 2950 VA
Max. Capacity: 80 tubes
Throughput (tubes/hour): Up to 300 with 10-min spin

Decapper Module

Weight: 13 lb (6 kg)
Dimensions (mm): Incorporated module
Power Consumption: 192 VA
Max. Capacity: 2000 waste caps
Throughput (tubes/hour): Up to 800

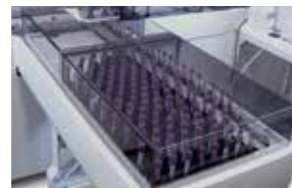## Pre-Analytical Modules (cont.)

Sample Volume Detection Module

Weight: N/A
Dimensions (mm): Incorporated module
Power Consumption: 200 VA
Max. Capacity: N/A
Throughput (tubes/hour): Up to 500

Sample Mixer Module

Weight: N/A
Dimensions (mm): Incorporated module
Power Consumption: 625 VA
Max. Capacity: 4
Throughput (tubes/hour): Up to 700††

Wide Belt Buffer Module (240)

Weight: 176 lb (80 kg)
Dimensions (mm): 535 L x 1045 H x 1200 D
Power Consumption: 300 VA
Max. Capacity: 240 tubes

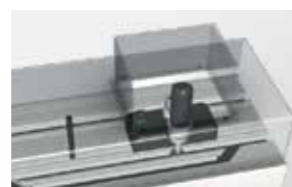**Wide Belt Buffer Module (600)**

Weight: 267 lb (121 kg)
Dimensions (mm): 1230 L x 1045 H x 1075 D
Power Consumption: 300 VA
Max. Capacity: 600 tubes

Post-Analytical Modules

Aliquotter Module

Weight: 460 lb (209 kg)
Dimensions (mm): 705 L x 1475 H x 1590 D
Power Consumption: 500 VA
Max. Capacity: 4 secondary tubes per primary tube
Throughput (per hour): Up to 500‡‡

Aliquot Recapper Module
Screw-type recapper for daughter aliquot tubes

Weight: N/A
Dimensions (mm): Incorporated module
Power Consumption: 60 VA
Max. Capacity: 1000 caps
Throughput (tubes/hour): Up to 400

Post-Analytical Modules (cont.)

Tube Sealer Module
(mandatory with RSM)

Weight: N/A
Dimensions (mm): Incorporated module
Power Consumption: 180 VA
Max. Capacity: 16,000 or 19,000 seals/cartridge
Throughput (tubes/hour): Up to 800

Tube Desealer Module
Automatic tube desealing for rerun, reflex, and add-on testing

Weight: N/A
Dimensions (mm): Incorporated module
Power Consumption: 60 VA
Max. Capacity: N/A
Throughput (tubes/hour): Up to 200

Refrigerated Storage Module (15,000)
Automatic storage, retrieval, and disposal of sealed tubes

Weight: 2,965 lb (1345 kg)
Dimensions (mm): 2460 L x 2485 H x 1405 D
Power Consumption: 3250 VA
Max. Capacity: 15,360 tubes
Throughput (tubes/hour): Up to 800

Refrigerated Storage Module (9000)
Automatic storage, retrieval, and disposal of sealed tubes

Weight: 2,255 lb (1023 kg)
Dimensions (mm): 2460 L x 2175 H x 1405 D
Power Consumption: 3250 VA
Max. Capacity: 9216 tubes
Throughput (tubes/hour): Up to 800

Rack Output Module
High-speed tube output by rack

Weight: 225 lb (102 kg)
Dimensions (mm): 1225 L x 1260 H x 510 D
Power Consumption: 950 VA
Max. Capacity: 288 tubes
Throughput (tubes/hour): Up to 800

High-capacity Waste System
Bulk tube disposal

Under development. Not available for sale. Future availability is not guaranteed.

Flexible Track Design Options

Track

Weight: Variable
Dimensions (mm): Variable
Power Consumption: Variable
Throughput (tubes/hour): Up to 3600

Track L-Turn
(Right or left turn)

Weight: 227 lb (103 kg)
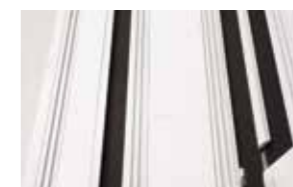Dimensions (mm): 856 L x 1045 H x 875 D

Track U-Turn
Provides shortcuts for improved workflow

Weight: N/A
Dimensions (mm): Incorporated module

Track T-Intersection
Enables spur configurations

Weight: N/A
Dimensions (mm): 975 L x 1045 H x 350 D

Module Divert Lane
Prevents congestion of samples that do not require module management

Weight: Variable
Dimensions (mm): 1000-2300 L

Instrument Buffer Lane
Ensures load balancing and STAT access to the most available analyzer

Weight: Variable
Dimensions (mm): 1000-2300 L

††Throughput based on 4 cycles with wait time for UP position set at 300ms.
‡‡Based on 100 primary tubes, 4 secondary tubes per primary tube. Secondary tube: 93 x 13 mm, 3 mL max. fill.

NOTE: Weight has been measured for all modules without samples or consumables. Some modules are incorprated into the track and weight may vary by configuration. Maximum physical dimensions have been determined from a combination of 2D drawings (length and width) and by measuring the actual height. Throughput claims have been obtained during testing, under optimal conditions.

Aptio Automation IT and Environmental Specifications

IT Requirements

1. Operating system:
   Ubuntu Server 12.04 LTS, 64-bit

2. Hardware: Dell server with hardware RAID controller in one of four sizes (see table below). The server's RAID disk controller must be a hardware controller, not a software controller. Do not install data-management software on a server equipped with anything other than a hardware RAID controller.

3. Keyboard

4. Monitor

5. Firewall: Cisco® 819 Integrated Service Router in hardened factor form

6. Serial device server: Moxa NPort 5110 (serial-to-Ethernet converter, one device for each instrument serial port to be configured as communication channel)

Server details: Size 1, 2, 3, and 4§§

Product Features	Server Size 1 (Up to 8 Analyzers)	Server Size 2 (From 9 to 14 Analyzers)	Server Size 3 (From 15 to 20 Analyzers)	Server Size 4 (From 21 to 30 Analyzers)
Type	Rack	Rack	Rack	Rack
Manufacturer	Dell	Dell	Dell	Dell
Model	PowerEdge R630	PowerEdge R630	PowerEdge R630	PowerEdge R630
Processor	Intel Xeon E5-2620 v3 6 Core @2.40 GHz	Intel Xeon E5-2620 v3 6 Core @2.40 GHz	Intel Xeon E5-2620 v3 6 Core @2.40 GHz	Intel Xeon E5-2680 v3 12 Core @2.50 GHz
Number of Processors	1	1	2	2
Memory	32 GB DDR4	64 GB DDR4	96 GB DDR4	128 GB DDR4
Internal Storage	3 x 300 GB SAS HDDs	6 x 300 GB SAS HDDs	8 x 300 GB SAS HDDs	8 x 600 GB SAS HDDs
Network Interfaces	4 x 1 GB Ethernet Ports	4 x 1 GB Ethernet Ports	4 x 1 GB Ethernet Ports	4 x 1 GB Ethernet Ports
RAID Controller	HW RAID 1 GB NV Cache (RAID 0, RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60)	HW RAID 1 GB NV Cache (RAID 0, RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60)	HW RAID 1 GB NV Cache (RAID 0, RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60)	HW RAID 1 GB NV Cache (RAID 0, RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60)
Power Supply	Dual Redundant 495 W	Dual Redundant 495 W	Dual Redundant 495 W	Dual Redundant 750W
Optical Drive	DVD-ROM SATA	DVD-ROM SATA	DVD-ROM SATA	DVD-ROM SATA
Ports	USB (2 Front, 4 Rear, 1 Internal) 1 Serial and Video	USB (2 Front, 4 Rear, 1 Internal) 1 Serial and Video	USB (2 Front, 4 Rear, 1 Internal) 1 Serial and Video	USB (2 Front, 4 Rear, 1 Internal) 1 Serial and Video
Remote Management	iDRAC8 Enterprise	iDRAC8 Enterprise	iDRAC8 Enterprise	iDRAC8 Enterprise
Support	3 Years Next Business Day On-site	3 Years 4 Hours Mission Critical On-site	3 Years 4 Hours Mission Critical On-site	3 Years 4 Hours Mission Critical On-site

§§Please consult Siemens for IT requirements needed to support Aptio Automation solutions that connect more than 30 analyzers.

Installation

Aptio Automation installation is managed by a Siemens project manager and installation team. The team determines the specific system requirements based on the laboratory needs. The final configuration is fully tested to ensure functionality.

Preventive Maintenance Frequency

There are four Siemens preventive maintenance visits per year for Aptio Automation; multiple pieces of equipment can be serviced during each visit.

Electrical Requirements

Aptio Automation, including its modules, has a single dedicated power connection. This connection must be hardwired with a main disconnect device convenient to the system. Each analyzer connected to Aptio Automation requires a separate power supply; refer to each analyzer's specifications for power requirements.

Current/Operating Power Requirements

Main Line Requirements		Value
Frequency		50/60 Hz
Voltage Fluctuations		Up to ±10%
Main Line Voltages	System Size	VA
Single Phase 230 V Nominal	Small	3680
Single Phase 230 V Nominal	Medium	9200
Three Phase 400 V Nominal	Large	3N-27600

Operating Environment

Room Temperature
Range: 60–86°F (16–30°C)

Relative Humidity
Maximum: 80% at 86°F (30°C)

Average Thermal Output
The average thermal output is calculated when the final configuration is determined.

Compressed Air

Aptio Automation requires an external source of compressed air. The flow rate requirement is calculated based on the final configuration. A shutoff valve and pressure gauge must be installed near Aptio Automation.

Code Compliance

Electromechanical Safety
The system meets the code compliance requirements of the standards listed in this section. It is marked for electromechanical safety compliance in North America and the European Union as follows:

- IEC 61010-1 (Edition 2)
- UL 61010-1 (Edition 2)
- IEC 61010-2-081 (Edition 1; A1:2003)
- IEC 61010-2-101 (Edition 1)
- CSA C22.2 No. 61010-1-04
- CSA C22.2 No. 61010-2-081-04
- CSA C22.2 No. 61010-2-101-04

Electromagnetic Compatibility (EMC)
The system complies with the emission and immunity requirements of IEC55011:2007 + A2:2007 for Group 1 Class A products.

Intentional Radiator
The system contains a radio frequency identification system for tracking sample carriers, which is an intentional radiator. The system has been tested, meets the requirements, and is licensed according to the requirements of Part 15 of the U.S. Federal Communication Commission (FCC) regulations. The system has been tested and meets the applicable requirements of EST:EN 300 330.2 V1.5.1 (2010-02) and ESTi:EN 301 489 3 V1.6.1 (2013-08).

Laser Radiation
Some modules contain Class 1 and Class 2 laser devices. Modules containing laser devices meet the requirements of IEC 60825-1 and U.S. Food and Drug Administration regulations 21 CFR 1040. Opaque barriers prevent Class 2 laser radiation from leaving the system. The system is appropriately labeled and includes the following warning in required areas: Do not stare into beam.

Acceptable Tube Types

The following tube types are compatible with Aptio Automation:

- VACUETTE, Greiner Bio-One: 13 x 100, 16 x 100, 13 x 75
- VACUTAINER HEMOGARD™ Tube Closure, BD (Becton, Dickinson and Company): 13 x 100, 16 x 100, 13 x 75
- S-MONOVETTE, Sarstedt: 13 x 100, 13 x 75, 16 x 100, 16 x 75
- VENOSAFE, Terumo: 13 x 100, 16 x 100, 13 x 75
- KIMA, Vacutest: 13 x 100, 16 x 100, 13 x 75

(Nominal measurements D x H, mm)

Diagnostic Analyzers

Interfaces for numerous diagnostic instruments from multiple vendors[***] have been established for Aptio Automation. Please consult your local Siemens Representative for a current list of connectivity interfaces available for Aptio Automation in your area. Technical specifications associated with Siemens portfolio of automation-ready, multidisciplinary instruments are published separately. Consult third party manufacturers and/or vendors for technical specifications associated with non-Siemens instrumentation.

[***]Connectivity to third-party analyzers may not be available in all countries. Analyzer availability may vary by country, and connectivity will require manufacturer agreement. Please contact your local Siemens representative for further information.