

SYSTEM
REVIEW SERIES

Laboratory automation systems & workcells

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| Part 1 of 11 | Abbott Laboratories Diagnostics Division Darin Leigh darin.leigh@abbott.com 100 Abbott Park Rd. Abbott Park, IL 60064-3500 972-518-7031 www.abbottdiagnostics.com | AI Scientific Pty. Ltd. Stephen Pronk stephen.pronk@aiscientific.com 91 Landsborough Ave., Scarborough 4020 Australia 617 3897 3888 www.aiscientific.com |
| Name of system/First year installed | FE 500/2000 (See also Tecan listing, page XX) | Pathfinder/1998 |
| Automation products that are available • Process control software/Transportation systems • Auto. centrifugation/Auto. input or accessioning • Auto. decapping/Auto. sorting/Auto. storage and retrieval • Specimen integrity monitor/Auto. aliquoting • Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | yes/yes yes/yes yes/yes/in development in development/yes no/in development open system 50% 15% lab automation systems Sybase SQL Anywhere/Windows NT/—/dynamic download, host query | yes/no no/no yes/yes/yes no/yes no/yes open system n/a — laboratory automation systems Paradox, Microsoft SQL server/Windows 95, 98, 2000, NT4/Windows 2000 Server, NT4 Workstation/Borland C++, Borland Delphi |
| Software features/functionality • Patient demographics & insurance data/Rules-based architecture • Supports data retrieval/Internet connectivity • Online real-time help system/QC/Stats & management reports • Evaluates validity and releasability of results from automated analyzers • Specimen tracking/Priority processing/Random-access specimen movement • Supports accession No. redundancy (duplicate specimen ID) • Supports specimen carrier and level identification • Unique bar-code number per container required • Specimen routing/Multistop routing (one tube to multiple workstations) • Specimen scheduling/Instrument scheduling • Routes test to workstation/Automatic reflex, repeat, dilutions • Supports multiple hardware config./Supports other proprietary transport. hardware • Storage retrieval & disposal/Supports proposed NCCLS standards | n/a/LAS SW feature LAS SW feature/n/a LAS SW feature/n/a/n/a n/a LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature n/a n/a LAS SW feature/LAS SW feature n/a/n/a LAS SW feature/n/a LAS SW feature/n/a LAS SW feature/— | LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/—/LAS SW feature LIS requirement LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature n/a LAS SW feature/LAS SW feature n/a/n/a LAS SW feature/— LAS SW feature/n/a LAS SW feature/LAS SW feature |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | Misys, SCC, Cerner, Citation, McKesson, Triple G, Molis/ASTM | Kestral, MelbPath, Triple G, Apollo, Bayer/ASTM, HL7 |
| No. of live sites installed in N. America/Outside N. America Transportation systems available • Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Supports automatic rerouting for reflex/repeat/dilutions • Types of containers device can accommodate • Modular hardware/Installed options/Device functions independent of track • Required utilities/Required maintenance • Carrier type/Scalable system | 34/32 yes conveyor/—/— — 16x100, 13x100, 16x75, 13x75 —/—/— compressed air, electricity/— single specimen container per carrier/— | —/— no — — — — — — |
| Automated centrifugation available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated decapping available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated sorting available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Specimen integrity monitor available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated aliquoting available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • System inspects samples for bar code/Reports clots/Reports QNS specimens | yes —/—/300 @ 10–min spin time 16x100, 13x100, 16x75, 13x75 — yes —/—/500 16x100, 13x100, 16x75, 13x75, screw cap, rubber stopper, hemoguard yes —/—/500 16x100, 13x100, 16x75, 13x75 yes —/—/500 16x100, 13x100, 16x75, 13x75, any manufacturer's rack in development yes level sensing & clot detection yes —/—/— 13x75 prepackaged secondary tubes yes/yes/yes | no — — — yes Mk2/yes/150–500 16x100, 13x100, 16x75, 13x75 yes Mk2/—/>150–500 16x100, 13x100, 16x75, 13x75, 12x75, 16x108 yes Mk2/—/>500 tubes 16x100, 13x100, 16x75, 13x75, 12x75, 16x108 no — — yes Mk2/—/150–500 16x100, 13x100, 16x75, 13x75, aliquot can be 12x75 or 16x100 yes/yes/yes |
| Instrument (analyzer) interfaces • Rules-based instrument interface control subsystem • Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface • Hematology/Chemistry/Coagulation • Immunoassay/Urinalysis | — — —/—/— —/— | no no —/—/— —/— |
| Instruments to which your system/product is interfaced Other robotic products/components to which system, product is linked | contact vendor — | n/a, interfaces LIS only — |
| Automated recapper available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate | in development — — | yes Mk2/yes/150–500 16x100, 13x100, 16x75, 13x75 |
| Automated storage and retrieval available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | in development — — — contact vendor 6 weeks/Tecan-based service and support/24/7 no/— | no — — — samples placed in storage racks can be refrigerated—manual removal & storage — 2 weeks/AI Scientific/24/7 no/no |
| List price Individual list prices for components • Process control software/Transportation systems • Auto. centrifugation/Auto. input, accessioning • Auto. decapping/Auto. sorting/Auto. storage & retrieval • Specimen integrity monitor/Automated aliquoting • Instrument (analyzer) interfaces/Automated recapping | \$450k — — — — — | — — — — — — |
| Distinguishing features * Ave. throughput in specimen containers per hr per device | • flexibility, footprint, completely configurable | • camera-based specimen container recognition • delivers capped or uncapped daughter tubes in two sizes • large automated sorting table accepts up to 30 destinations |

Tabulation does not represent an endorsement by the College of American Pathologists

Survey editors: Raymond Aller, MD; Rodney S. Markin, MD, PhD; Robin Felder, PhD





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| Part 2 of 11 <i>Please see accompanying article on page 33</i> | A&T Corp. Akira Igarashi igarashi@alice.aandt.co.jp 1799 Old Bayshore Hwy., Ste. 168 Burlingame, CA 94010-1319 650-346-6543 www.aandt.co.jp | Bayer Diagnostics Mike Iskra michael.iskra.b@bayer.com 511 Benedict Ave., Tarrytown, NY 10591 914-333-6123 bayerdiag.com and labnews.com |
| Name of system/First year installed | Clinilog/1993 | Advia LabCell/1998 |
| Automation products that are available <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input or accessioning• Auto. decapping/Auto. sorting/Auto. storage and retrieval• Specimen integrity monitor/Auto. aliquoting• Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | yes/yes yes/yes yes/yes/yes no/yes yes/no open system 10% 10% laboratory automation systems SQL/Windows NT/Windows NT/Windows NT | yes/yes yes/yes yes/yes/yes (storage & mapping) no/available 2003 yes/no open system — — laboratory solutions SQL & Progress/Windows NT/Windows NT/Bayer-user interface (proprietary) |
| Software features/functionality <ul style="list-style-type: none">• Patient demographics & insurance data/Rules-based architecture• Supports data retrieval/Internet connectivity• Online real-time help system/QC/Stats & management reports• Evaluates validity and releasability of results from automated analyzers• Specimen tracking/Priority processing/Random-access specimen movement• Supports accession No. redundancy (duplicate specimen ID)• Supports specimen carrier and level identification• Unique bar-code number per container required• Specimen routing/Multistop routing (one tube to multiple workstations)• Specimen scheduling/Instrument scheduling• Routes test to workstation/Automatic reflex, repeat, dilutions• Supports multiple hardware config./Supports other proprietary transport. hardware• Storage retrieval & disposal/Supports proposed NCCLS standards | LAS SW feature/LAS SW feature LAS SW feature/LIS requirement LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature | LIS requirement/LAS SW feature LAS SW feature/n/a LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature via error management LAS SW feature LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature (load balancing) LAS SW feature/LAS SW feature LAS SW feature/— LAS SW feature (database mgmt)/— |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | A&T, Triple G, Techni Data/ASTM, HL7 | SCL 2000, Misys, Labzis II, LMX, NetLab, Telepath-iSoft, OSI/HL7, ASTM |
| No. of live sites installed in N. America/outside N. America Transportation systems available <ul style="list-style-type: none">• Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Supports automatic rerouting for reflex/repeat/dilutions• Types of containers device can accommodate• Modular hardware/Installed options/Device functions independent of track• Required utilities/Required maintenance• Carrier type/Scalable system | 0/60 yes 2.0–3.0/yes/360 yes 16x100, 13x100, 16x75, 13x75 yes/floor & subfloor mounted/yes electricity/quarterly single, multiple specimen container per carrier/yes | 1/9 yes —/no/2,000 yes 16x100, 13x100, 16x75, 13x75, 11.5–16.2 mm (diam.) & 75–100 mm (ht.) yes/floor mounted/yes compressed air, electricity/weekly, monthly, quarterly, annually single specimen container per carrier/yes |
| Automated centrifugation available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated decapping available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated sorting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Specimen integrity monitor available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated aliquoting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• System inspects samples for bar code/Reports clots/Reports QNS specimens | yes —/yes/200 16x100, 13x100, 16x75, 13x75 yes yes —/yes/360 16x100, 13x100, 16x75, 13x75 yes —/yes/350 16x100, 13x100, 16x75, 13x75 yes —/yes/250 16x100, 13x100, 16x75, 13x75 no — — yes —/yes/250 16x100, 13x100, 16x75, 13x75 yes/yes/yes | yes —/—/240 11.5–16.2 mm (diam) & 75–100 mm (ht.) yes yes —/no/600 16x100, 13x100, 16x75, 13x75, 11.5–16.2 mm (diam.) & 75–100 mm (ht.) yes —/—/240 11.5–16.2 mm (diam) & 75–100 mm (ht.); cap, plug, screw top yes —/no/600 16x100, 13x100, 16x75, 13x75, 11.5–16.2 mm (diam.) & 75–100 mm (ht.) within each instrument — — in development — — — |
| Instrument (analyzer) interfaces <ul style="list-style-type: none">• Rules-based instrument interface control subsystem• Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface <ul style="list-style-type: none">• Hematology/Chemistry/Coagulation• Immunoassay/Urinalysis | yes yes robotic arm interface/pt.-of-reference sampling & robo. arm interface/ pt.-of-reference sampling & robo. arm interface pt.-of-reference sampling & robo. arm interface/pt.-of-reference sam- pling & robo. arm interface | yes no (high level only) robotic arm interface/pt.-of-reference sampling/robotic arm interface pt.-of-reference sampling & robotic arm interface (both avail.)/ pt.-of-reference sampling |
| Instruments to which your system/product is interfaced Other robotic products/components to which system, product is linked | Hitachi 747, 7600; Toshiba 200 FR, Dax; Bayer Advia 1650, Centaur; Coulter Gen-S; Abbott Aeroset i2000; Tosoh AI21; A&T 502X — | Bayer: Advia 120, 1650, 2400, & Centaur; Clinitek Atlas, Immuno1, Stago STA-R none |
| Automated recapper available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate | no — — | no — — |
| Automated storage and retrieval available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | yes —/yes/360 16x100, 13x100, 16x75, 13x75 no scalable modular automation can be designed from front-end automa- tion or workcell until fully integrated TLA format; step wise construction possible 1 week/A&T or designated service engineer/depends on contract no/no | software tracking retrieval — — no can contain as few as two interfaced modules/instruments & can be expanded to include up to 16 interfaced modules; instruments open system allows for instrument exchanges 1 month/Bayer Diagnostics/24/7 no/yes |
| List price Individual list prices for components <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input accessioning• Auto. decapping/Auto. sorting/Auto. storage & retrieval• Specimen integrity monitor/Automated aliquoting• Instrument (analyzer) interfaces/Automated recapping | depends on system configuration —/— —/— —/—/— —/— —/— | varies by configuration —/— —/— —/—/— —/— —/— |
| Distinguishing features * Ave. throughput in specimen containers per hr per device | <ul style="list-style-type: none">• open modular automation• high-speed single tube transportation has unique two-way option• flexible layout—from workcell/front end until fully integrated LAS | <ul style="list-style-type: none">• a menu of modules from which to design an individual solution• customizable and reconfigurable as needs change• allows customer to plan and manage around their changing needs• single LIS connection for system and instruments |

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| Part 3 of 11 <i>Please see accompanying article on page 33</i> | Bayer Diagnostics Mike Iskra michael.iskra.b@bayer.com 511 Benedict Ave., Tarrytown, NY 10591 914-333-6123 bayerdiag.com and labnews.com | Beckman Coulter Ronald Berman rberman@beckman.com 200 S. Kraemer Blvd., Brea, CA 92821 714-993-8817 www.beckmancoulter.com |
| Name of system/First year installed | Advia WorkCell (chemistry & immunoassay instruments)/2000 | Power Processor/1994 |
| Automation products that are available • Process control software/Transportation systems • Auto. centrifugation/Auto. input or accessioning • Auto. decapping/Auto. sorting/Auto. storage and retrieval • Specimen integrity monitor/Auto. aliquoting • Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | yes/yes no/yes no/yes/yes (storage & mapping) no/no yes/no closed system — — laboratory solutions SQL & Progress/Windows NT/Windows NT/Bayer-user interface (proprietary) | yes/yes yes/yes yes/yes/yes yes (available in analyzer)/yes yes/yes open system 5% 7% lab automation systems and instruments SQL/Windows NT/—/GUI |
| Software features/functionality • Patient demographics & insurance data/Rules-based architecture • Supports data retrieval/Internet connectivity • Online real-time help system/QC/Stats & management reports • Evaluates validity and releasability of results from automated analyzers • Specimen tracking/Priority processing/Random-access specimen movement • Supports accession No. redundancy (duplicate specimen ID) • Supports specimen carrier and level identification • Unique bar-code number per container required • Specimen routing/Multistop routing (one tube to multiple workstations) • Specimen scheduling/Instrument scheduling • Routes test to workstation/Automatic reflex, repeat, dilutions • Supports multiple hardware config./Supports other proprietary transport. hardware • Storage retrieval & disposal/Supports proposed NCCLS standards | LIS requirement/LAS SW feature LAS SW feature/n/a LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature via error management LAS SW feature LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature (load balancing) LAS SW feature/LAS SW feature LAS SW feature/— LAS SW feature (database mgmt)/— | LAS SW feature, LIS requirement/LAS SW feature LAS SW feature/n/a LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature n/a LAS SW feature, LIS requirement LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/LAS SW feature |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | Cerner PathLab & Citation, Ness, Safir-Wilnor, FlexLab, LMX, Per Se, Meditech, VA System, SCC Soft, Misys, PGP/ASTM, HL7 | ADAC, Cerner, Meditech, Misys, SCC, SMS, Antrim, McKesson, Per Se Technology/direct, worklist consol. download or listen on analyzer line |
| No. of live sites installed in N. America/Outside N. America Transportation systems available • Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Supports automatic rerouting for reflex/repeat/dilutions • Types of containers device can accommodate • Modular hardware/Installed options/Device functions independent of track • Required utilities/Required maintenance • Carrier type/Scalable system | 21/13 yes —/no/2,000 yes 16x100, 13x100, 16x75, 13x75, 11.5–16.2 mm (diam.) & 75–100 mm (ht.) yes/floor mounted/yes compressed air, electricity/weekly, monthly, quarterly, annually single specimen container per carrier/yes | 140/70 yes n/a/n/a/900 yes 16x100, 13x100, 16x75, 13x75 yes/floor/yes compressed air, electricity/monthly single specimen container per carrier/yes |
| Automated centrifugation available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated decapping available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated sorting available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Specimen integrity monitor available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated aliquoting available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • System inspects samples for bar code/Reports clots/Reports QNS specimens | no — — — yes —/no/600 16x100, 13x100, 16x75, 13x75, 11.5–16.2 mm (diam.) & 75–100 mm (ht.) no — — yes —/no/600 16x100, 13x100, 16x75, 13x75, 11.5–16.2 mm (diam.) & 75–100 mm (ht.) within each instrument — — no — — — | yes n/a/n/a/300 16x100, 13x100, 16x75, 13x75 yes yes n/a/n/a/900 16x100, 13x100, 16x75, 13x75 yes n/a/n/a/600 16x100, 13x100, 16x75, 13x75 yes n/a/n/a/500 16x100, 13x100, 16x75, 13x75 yes — — yes n/a/n/a/450 16x100, 13x100, 16x75, 13x75 yes/yes/yes |
| Instrument (analyzer) interfaces • Rules-based instrument interface control subsystem • Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface • Hematology/Chemistry/Coagulation • Immunoassay/Urinalysis | yes no (high level only) n/a/pt.-of-reference sampling/n/a pt.-of-reference sampling/n/a | yes yes depends on manufacturer of analyzer depends on manufacturer of analyzer |
| Instruments to which your system/product is interfaced | Bayer: Advia 1650, 2400, & Centaur | Abbott: AxSym, Architect, Aeroset; Bayer: Centaur, Atlas; Beckman Coulter: Synchron LX20, Gen-S, STKS, LH; J&J: Vitros; Roche: Modular, 747, 917; Stago Coag Analyzer CRS Arms, RoboCart |
| Other robotic products/components to which system, product is linked | none | |
| Automated recapper available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate | no — — | yes n/a/n/a/500 16x100, 13x100, 16x75, 13x75 |
| Automated storage and retrieval available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments | software tracking retrieval — — no future chemistry & immunochem systems from Bayer will be able to connect to the track and can be exchanged; designed so it can be upgraded to LabCell | yes n/a/n/a/300 16x100, 13x100, 16x75, 13x75 yes all systems may be upgraded (SW & HW) due to modular design |
| Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | 2 weeks/Bayer Diagnostics/24/7 no/yes | 7–30 days, depends on config. of system/Beckman Coulter/24/7 no/yes |
| List price Individual list prices for components • Process control software/Transportation systems • Auto. centrifugation/Auto. input, accessioning • Auto. decapping/Auto. sorting/Auto. storage & retrieval • Specimen integrity monitor/Automated aliquoting • Instrument (analyzer) interfaces/Automated recapping | varies by configuration —/— —/— —/—/— —/— —/— | \$450k for standard configuration contact vendor contact vendor contact vendor contact vendor contact vendor |
| Distinguishing features | • instruments can operate separately from track for backup • pre- and postanalytical sorting capability • single-tube carrier vs. rack carrier • upgradability allows customers to grow into a larger system or Advia LabCell • single LIS connection for system & instruments | • system design, installation, training, technical support, and service provided by Beckman Coulter • totally open—connects to any manufacturer's analyzer • intelligent aliquoting—measures serum volume and transfers based on dead volume plus requested test volume |
| * Ave. throughput in specimen containers per hr per device | | |

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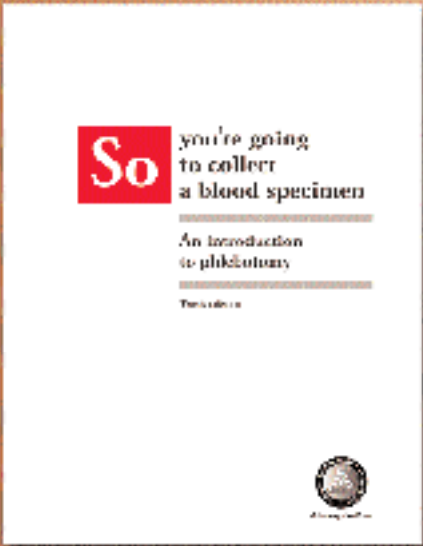




So You're
Going to
Collect a
Blood
Specimen

NEW
10th
Edition

An
Introduction
to
Phlebotomy



- The tenth edition of this comprehensive, illustrated resource manual includes information on:
- Blood collection device disposal, in compliance with OSHA's clarification to the Bloodborne Pathogens Standard, which prohibits tube holder reuse
 - Safety awareness and precautions, with an emphasis on needlestick safety and prevention
 - Fundamental techniques of phlebotomy proper laboratory practice, and professionalism
 - Standard blood collection techniques, as well as heelstick techniques for babies, finger puncture techniques for children and adults, and special techniques for difficult venipunctures and patients receiving intravenous fluids
 - Recommended order of draw for multiple specimens



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| Part 4 of 11 | Dade Behring Contact Dade Behring representative 1717 Deerfield Rd., Deerfield IL 60015 800-242-3233 www.dadebehring.com |
| Please see accompanying article on page 33 | |
| Name of system/First year installed | StreamLab Analytical Workcell/2000 |
| Automation products that are available <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input or accessioning• Auto. decapping/Auto. sorting/Auto. storage and retrieval• Specimen integrity monitor/Auto. aliquoting• Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | yes/yes yes/yes yes/yes/no no/yes yes/no open system — — instruments and reagents proprietary file system/Windows NT/n/a/Labview touchscreen guide |
| Software features/functionality <ul style="list-style-type: none">• Patient demographics & insurance data/Rules-based architecture• Supports data retrieval/Internet connectivity• Online real-time help system/QC/Stats & management reports• Evaluates validity and releasability of results from automated analyzers• Specimen tracking/Priority processing/Random-access specimen movement• Supports accession No. redundancy (duplicate specimen ID)• Supports specimen carrier and level identification• Unique bar-code number per container required• Specimen routing/Multistop routing (one tube to multiple workstations)• Specimen scheduling/Instrument scheduling• Routes test to workstation/Automatic reflex, repeat, dilutions• Supports multiple hardware config./Supports other proprietary transport. hardware• Storage retrieval & disposal/Supports proposed NCCLS standards | LAS SW feature, LIS requirement/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature/n/a LIS requirement LAS SW feature/LAS SW feature/LAS SW feature n/a LAS SW feature LAS SW feature, LIS requirement LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/LAS SW feature |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | none/ASTM |
| No. of live sites installed in N. America/Outside N. America Transportation systems available <ul style="list-style-type: none">• Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Supports automatic rerouting for reflex/repeat/dilutions• Types of containers device can accommodate• Modular hardware/Installed options/Device functions independent of track• Required utilities/Required maintenance• Carrier type/Scalable system | 2/— yes StreamLab/yes/300 yes 16x100, 13x100, 16x75, 13x75 yes/floor mounted/yes compressed air, electricity/weekly single specimen container per carrier/yes |
| Automated centrifugation available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated input/accessioning available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated decapping available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated sorting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Specimen integrity monitor available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated aliquoting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate System inspects samples for bar code/Reports clots/Reports QNS specimens | yes StreamLab/yes/300 16x100, 13x100, 16x75, 13x75, handles intermixed sizes simultaneously yes yes StreamLab/yes/300 16x100, 13x100, 16x75, handles intermixed sizes simultaneously yes StreamLab/yes/300 16x100, 13x100, 16x75, handles intermixed sizes simultaneously yes StreamLab/yes/300 16x100, 13x100, 16x75, handles intermixed sizes simultaneously no — — yes Dimension sample transfer module/yes/480 (4 analyzers) 16x100, 13x100, 16x75, 13x75 yes/yes/yes |
| Instrument (analyzer) interfaces <ul style="list-style-type: none">• Rules-based instrument interface control subsystem• Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface <ul style="list-style-type: none">• Hematology/Chemistry/Coagulation• Immunoassay/Urinalysis | — — no/pt.-of-reference sampling/no pt.-of-reference sampling/pt.-of-reference sampling |
| Instruments to which your system/product is interfaced | Dade Behring Dimension RxL Max Integrated Clinical Chemistry System |
| Other robotic products/components to which system, product is linked | none |
| Automated recapper available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate | no — — |
| Automated storage and retrieval available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | yes StreamLab/yes/300 16x100, 13x100, 16x75, 13x75 no modular systems can change/grow with user needs 5 days/Dade Behring/24/7 no/no |
| List price Individual list prices for components <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input, accessioning• Auto. decapping/Auto. sorting/Auto. storage & retrieval• Specimen integrity monitor/Automated aliquoting• Instrument (analyzer) interfaces/Automated recapping | contact Dade Behring representative for all pricing information —/— —/— —/—/— —/— —/— |
| Distinguishing features | • StreamLab is a modular system providing alternatives to different size labs seeking a wide range of automated solutions, from small-scale, preanalytical workstations to complete preanalytical processing, testing, and post-test sample management |
| * Ave. throughput in specimen containers per hr per device | |

Tabulation does not represent an endorsement by the College of American Pathologists





SYSTEM
REVIEW SERIES

Laboratory automation systems & workcells

| | | |
|---|---|--|
| Part 5 of 11 | Lab-InterLink Inc. Shannon Flynn info@labinterlink.com 1011 S. Saddle Creek Rd. Omaha, NE 68106-1943 800-449-2527/402-595-3767 www.labinterlink.com | MDS Laboratory Services Gary Hall ghall@mdsintl.com 100 International Blvd. Toronto, Ontario M9W 6J6 Canada 416-675-6777 www.mdsdx.com |
| <i>Please see accompanying article on page 33</i> | | |
| Name of system/First year installed | Lab-Frame/1996 | AutoLab System/1994 |
| Automation products that are available <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input or accessioning• Auto. decapping/Auto. sorting/Auto. storage and retrieval• Specimen integrity monitor/Auto. aliquoting• Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | yes/yes yes/yes yes/yes/yes yes/yes yes/yes open system 100% 15% laboratory automation systems | yes/yes no/yes yes/yes/yes (software only) no/no yes/yes open system n/a n/a health & life sciences |
| | Oracle/Unix/Compaq DS-10 or DS-20/Oracle Forms-GUI | MS SQL server, relational/Windows NT server & workstation/Intel-based Enterprise servers/graphical Windows based |
| Software features/functionality <ul style="list-style-type: none">• Patient demographics & insurance data/Rules-based architecture• Supports data retrieval/Internet connectivity• Online real-time help system/QC/Stats & management reports• Evaluates validity and releasability of results from automated analyzers• Specimen tracking/Priority processing/Random-access specimen movement• Supports accession No. redundancy (duplicate specimen ID)• Supports specimen carrier and level identification• Unique bar-code number per container required• Specimen routing/Multistop routing (one tube to multiple workstations)• Specimen scheduling/Instrument scheduling• Routes test to workstation/Automated reflex, repeat, dilutions• Supports multiple hardware config./Supports other proprietary transport. hardware• Storage retrieval & disposal/Supports proposed NCCLS standards | LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LIS requirement/LAS SW feature LIS requirement LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature LAS SW feature LAS SW feature/LAS SW feature n/a/n/a LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/partially | LIS requirement/LAS SW feature LAS SW feature/n/a LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature n/a LAS SW feature LAS SW feature LAS SW feature/LAS SW feature n/a/n/a LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/partially |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | Misys 5.2 & 5.2.3, Cerner, SCC, Meditech, McKesson, ALG, Rubicon, Triple G, PGP, Philips, MIPS/HL7, ASTM | Meditech, Triple G, Rubicon, LabGem, Cerner (modified)/HL7 |
| No. of live sites installed in N. America/Outside N. America Transportation systems available <ul style="list-style-type: none">• Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Supports automatic rerouting for reflex/repeat/dilutions• Types of containers device can accommodate• Modular hardware/Installed options/Device functions independent of track• Required utilities/Required maintenance• Carrier type/Scalable system | 26/4 yes current/yes/1,000 yes 16x100, 13x100, 13x75, 12x75 yes/floor, overhead, & subfloor mounted/yes electricity/quarterly single specimen container per carrier/yes | 7 HW & SW; 7 SW only/0 yes II/partially/1,000 or 2,000 per hr yes 16x100, 13x100, 16x75, 13x75, 12x75 yes/floor mounted/yes compressed air, electricity/weekly single spec. cont. carriers that can be converted into multiple/yes |
| Automated centrifugation available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated decapping available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated sorting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Specimen integrity monitor available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated aliquoting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• System inspects samples for bar code/Reports clots/Reports QNS specimens | yes current/yes/200–500 16x100, 13x100, 13x75 yes yes current/yes/800–1,000 16x100, 13x100, 13x75 yes current/yes/250–400 16x100, 13x100, 13x75, 12x75 yes current/yes/400 16x100, 13x100, 13x75 yes alpha/yes/400 16x100, 13x100, 13x75 yes current/yes/75 primaries per hr; 225 secondaries per hr; 1:3 ratio 16x100, 13x100, 13x75 yes/yes, with aliquoter/yes, with aliquoter | no — — — yes II/partially/2,000 per hr 16x100, 13x100, 16x75, 13x75, 12x75 yes II/partially/1,000 16x100, 13x100, 16x75, 13x75, 12x75 yes II/partially/1,000 16x100, 13x100, 16x75, 13x75, 12x75 no — — no — — —/—/— |
| Instrument (analyzer) interfaces <ul style="list-style-type: none">• Rules-based instrument interface control subsystem• Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface <ul style="list-style-type: none">• Hematology/Chemistry/Coagulation• Immunoassay/Urinalysis | yes yes robotic arm interface/pt.-of-reference sampling/robotic arm interface pt.-of-reference sampling, robotic arm interface/no | yes yes —/pt.-of-reference/— pt.-of-reference/— |
| Instruments to which your system/product is interfaced | Ortho Vitros 950AT & 250AT; Roche Hitachi 912; Bayer Centaur & Immuno-1; Abbott Architect 2000, Cell Dyn 4000; IL MLA 1600C; MDA 180; Sysmex HST; Diagnostica Stago STA-R; DPC Immulite 2000; others customizable to client's needs | rules-based interfaces: Sysmex 2100/LASC; OCD Vitros 750/950; Dade Dimension RXL; Bayer Centaur; Abbott AxSym & Cell Dyn 3500/4000; Roche Integra; Coulter STKS/GEN-S; Physical Interfaces: Dimension RxL n/a |
| Other robotic products/components to which system, product is linked | | |
| Automated recapper available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate | yes current/yes/750 16x100, 13x100, 13x75, 12x75 | yes II/partially/1,000 16x100, 13x100, 16x75, 13x75, 12 x 75 |
| Automated storage and retrieval available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | yes current/yes/300 16x100, 13x100, 13x75, 12x75 yes easily upgraded 2 weeks/Lab-InterLink/24/7 no/no | software only — — — SW upgrades provided annually under support agreements 4 weeks/MDS/24/7 no/no |
| List price Individual list prices for components <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input, accessioning• Auto. decapping/Auto. sorting/Auto. storage & retrieval• Specimen integrity monitor/Automated aliquoting• Instrument (analyzer) interfaces/Automated recapping | \$500k–\$2M, depending on modules, instruments, quantity \$25k–\$50k/\$15k–\$120k \$150k–\$230k/\$25k \$45k/\$125k/\$120–\$205k \$50k/\$150k \$40k–\$75k/\$45k | n/a n/a n/a n/a n/a n/a |
| Distinguishing features | <ul style="list-style-type: none">• Lab-Manager—advanced SW system yields process control for open-connectivity lab• long-term protection due to unbiased, open support from any manufacturer; convenient plug and play modularity | <ul style="list-style-type: none">• specimen transport carriers (STC) snap together for use throughout client's operation• strong belief and focus in value and development of automation SW• auto. tools and lab mgmt. expertise to customize tools for client |
| * Ave. throughput in specimen containers per hr per device | | |

Tabulation does not represent an endorsement by the College of American Pathologists





SYSTEM
REVIEW SERIES

Laboratory automation systems & workcells

| | | |
|---|--|---|
| Part 6 of 11 | Olympus America Inc. Hiroshi Sekiya hiro.sekiya@olympus.com Two Corporate Center Dr., Melville, NY 11747-3157 800-223-0125 www.olympus.com | Olympus America Inc. Hiroshi Sekiya hiro.sekiya@olympus.com Two Corporate Center Dr., Melville, NY 11747-3157 800-223-0125 www.olympus.com |
| <i>Please see accompanying article on page 33</i> | | |
| Name of system/First year installed | Olympus OLA1500/2001 | Olympus OLA2500/2001 |
| Automation products that are available <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input or accessioning• Auto. decapping/Auto. sorting/Auto. storage and retrieval• Specimen integrity monitor/Auto. aliquoting• Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | no/no yes/yes yes/yes/yes yes/yes yes/no open system — — instruments/reagents | no/no yes/yes yes/yes/yes yes/yes yes/no open system — — instruments/reagents |
| Software features/functionality <ul style="list-style-type: none">• Patient demographics & insurance data/Rules-based architecture• Supports data retrieval/Internet connectivity• Online real-time help system/QC/Stats & management reports• Evaluates validity and releasability of results from automated analyzers• Specimen tracking/Priority processing/Random-access specimen movement• Supports accession No. redundancy (duplicate specimen ID)• Supports specimen carrier and level identification• Unique bar-code number per container required• Specimen routing/Multistop routing (one tube to multiple workstations)• Specimen scheduling/Instrument scheduling• Routes test to workstation/Automatic reflex, repeat, dilutions• Supports multiple hardware config./Supports other proprietary transport. hardware• Storage retrieval & disposal/Supports proposed NCCLS standards | LAS SW feature, LIS requirement/LAS SW feature LAS SW feature/n/a LAS SW feature/LIS requirement/n/a LIS requirement LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature n/a n/a/n/a LAS SW feature/LIS requirement LAS SW feature/n/a LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature | LAS SW feature, LIS requirement/LAS SW feature, LIS requirement LAS SW feature/n/a LAS SW feature/LIS requirement/n/a LIS requirement LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature n/a n/a/n/a LAS SW feature/LIS requirement LAS SW feature/n/a LAS SW feature/n/a n/a/n/a |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | —/RS232C, Olympus interface format | Misys, Data Innovations/RS232C, Olympus interface format, conforms to ASTM 1381-91 |
| No. of live sites installed in N. America/Outside N. America Transportation systems available <ul style="list-style-type: none">• Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Supports automatic rerouting for reflex/repeat/dilutions• Types of containers device can accommodate• Modular hardware/Installed options/Device functions independent of track• Required utilities/Required maintenance• Carrier type/Scalable system | 0/7 no — — — yes/floor mounted/yes electricity/semiannual — | 2/60 no — — — yes/floor mounted/yes electricity/semiannual —/standard config. expands to twin-sorter or tandem with 2x capacity |
| Automated centrifugation available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated decapping available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated sorting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Specimen integrity monitor available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated aliquoting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate <ul style="list-style-type: none">• System inspects samples for bar code/Reports clots/Reports QNS specimens | no — — — yes —/yes/1,500 16x100, 13x100, 16x75, 13x75 & 11.5–16 mm diam., 65–110 mm ht. yes —/yes/1,500 16x100, 13x100, 16x75, 13x75, BD Vacutainer, BD Hemoguard, Sarstedt monovette, screw top closures, all at same time yes —/yes/1,500 16x100, 13x100, 16x75, 13x75, sorting to any mfr's sample holder no — — no — — yes/no/yes | no — — — yes —/yes/800 16x100, 13x100, 16x75, 13x75, 10–16 mm diam., 70–110 mm ht. yes —/yes/— 16x100, 13x100, 16x75, 13x75, 10–16 mm diam., 70–110 mm ht., BD Vacutainer, BD Hemoguard, Sarstedt monovette, screw-top closures, all at same time, Terumo foil top w/ optional unit yes —/yes/800 16x100, 13x100, 16x75, 13x75, 10–16 mm diam., 70–110 mm ht. no — — yes —/yes/650 16x100, 13x100, 16x75, 13x75, 10–16 mm diam., 70–110 mm ht. yes/yes/yes |
| Instrument (analyzer) interfaces <ul style="list-style-type: none">• Rules-based instrument interface control subsystem• Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface <ul style="list-style-type: none">• Hematology/Chemistry/Coagulation• Immunoassay/Urinalysis | no no sorts to any analyzer rack sorts to any analyzer rack sorts to any analyzer rack | no no sorts to any analyzer rack sorts to any analyzer rack sorts to any analyzer rack |
| Instruments to which your system/product is interfaced | can be interfaced w/ any automation transportation track | — |
| Other robotic products/components to which system, product is linked | — | — |
| Automated recapper available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate | no — — | no — — |
| Automated storage and retrieval available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | yes —/yes/1,500 16x100, 13x100, 16x75, 13x75 no open, modular systems are compatible with most diagnostic instruments and automation systems 1 week/Olympus America Inc. Diagnostic Systems Group/24/7 no/— | yes —/yes/800 16x100, 13x100, 16x75, 13x75, 10–16 mm diam., 70–110 mm ht. no open, modular systems are compatible with most diagnostic instruments and automation systems 1–2 weeks/Olympus America Inc. Diagnostic Systems Group/24/7 no/no |
| List price Individual list prices for components <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input, accessioning• Auto. decapping/Auto. sorting/Auto. storage & retrieval• Specimen integrity monitor/Automated aliquoting• Instrument (analyzer) interfaces/Automated recapping | \$250k n/a n/a n/a n/a n/a | \$350k — — — — — |
| Distinguishing features | <ul style="list-style-type: none">• fastest throughput of its kind currently in the market• cap color recognition and sample level detection modules• easy-to-change configurations, from sorter/decapper to archive preparation | <ul style="list-style-type: none">• fast throughput, high capacity, open system sorting to any manufacturer racks• uninterrupted processing with access to output samples• expandable configuration to fit various needs |
| * Ave. throughput in specimen containers per hr per device | | |

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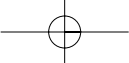
SYSTEM
REVIEW SERIES

Laboratory automation systems & workcells

| | | |
|---|---|--|
| Part 7 of 11 <i>Please see accompanying article on page 33</i> | Olympus America Inc. Hiroshi Sekiya hiro.sekiya@olympus.com Two Corporate Center Dr., Melville, NY 11747-3157 800-223-0125 www.olympus.com | Ortho-Clinical Melissa Heard 1001 US Hwy 202, Raritan, NJ 08869 908-218-8480 www.ortho-clinical.com |
| Name of system/First year installed | Olympus OLA4000/2001 | enGen Series Automation Systems, designed and built by Lab-Interlink Inc./1996 |
| Automation products that are available <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input or accessioning• Auto. decapping/Auto. sorting/Auto. storage and retrieval• Specimen integrity monitor/Auto. aliquoting• Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | no/no yes/yes yes/yes/yes yes/yes yes/no open system — — instruments/reagents Microsoft Access/Windows NT/—/touch-screen, keyboard, touch-pad | yes/yes yes/yes yes/yes/yes yes/yes yes/yes open system n/a n/a instruments/reagents Oracle/Unix/Compaq/GUI |
| Software features/functionality <ul style="list-style-type: none">• Patient demographics & insurance data/Rules-based architecture• Supports data retrieval/Internet connectivity• Online real-time help system/QC/Stats & management reports• Evaluates validity and releasability of results from automated analyzers• Specimen tracking/Priority processing/Random-access specimen movement• Supports accession No. redundancy (duplicate specimen ID)• Supports specimen carrier and level identification• Unique bar-code number per container required• Specimen routing/Multistop routing (one tube to multiple workstations)• Specimen scheduling/Instrument scheduling• Routes test to workstation/Automatic reflex, repeat, dilutions• Supports multiple hardware config./Supports other proprietary transport. hardware• Storage retrieval & disposal/Supports proposed NCCLS standards | LAS SW feature, LIS requirement/LAS SW feature, LIS requirement LAS SW feature/n/a LAS SW feature/LAS SW feature/n/a LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature, LIS requirement LAS SW feature LIS requirement LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/LAS SW feature | LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LIS requirement/LAS SW feature LIS requirement LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/LAS SW feature |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | —/— | Cerner, Misys, SCC, McKesson, Meditech, ALG, Rubicon. Triple G, PGP, Philips, MIPS/HL7, ASTM |
| No. of live sites installed in N. America/Outside N. America Transportation systems available <ul style="list-style-type: none">• Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Supports automatic rerouting for reflex/repeat/dilutions• Types of containers device can accommodate• Modular hardware/Installed options/Device functions independent of track• Required utilities/Required maintenance• Carrier type/Scalable system | 0/2 no — — — yes/floor mounted/yes electricity/semiannual —/can be configured with any combination of two AU640 and/or AU2700 analyzers | 26/4 yes current/yes/800 yes 16x100, 13x100, 13x75, 12x75 yes/floor mounted/yes electricity/quarterly single specimen container per carrier/yes |
| Automated centrifugation available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated decapping available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated sorting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Specimen integrity monitor available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated aliquoting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• System inspects samples for bar code/Reports clots/Reports QNS specimens | yes —/yes/400 16x100, 13x100, 16x75, 13x75, 13-16 mm diam., 70-110 mm ht. n/a yes —/yes/— 16x100, 13x100, 16x75, 13x75 yes —/yes/— 16x100, 13x100, 16x75, 13x75, 13-16 mm diam., 70-110 mm ht. yes —/yes/— 16x100, 13x100, 16x75, 13x75, 13-16 mm diam., 70-110 mm ht., for any manufacturer's sample rack no — — no — — yes/yes/yes | yes current/yes/200–500 16x100, 13x100, 13x75 yes yes current/yes/800–1,000 16x100, 13x100, 13x75 yes current/yes/250–400 16x100, 13x100, 13x75, 12x75 yes current/yes/400 16x100, 13x100, 13x75 yes alpha/yes/400 16x100, 13x100, 13x75 yes current/yes/75 primaries per hr; 225 secondaries per hr; 1:3 ratio 16x100, 13x100, 13x75 yes/yes, with aliquoter/yes, with aliquoter |
| Instrument (analyzer) interfaces <ul style="list-style-type: none">• Rules-based instrument interface control subsystem• Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface <ul style="list-style-type: none">• Hematology/Chemistry/Coagulation• Immunoassay/Urinalysis | yes yes no/robotic arm interface/no robotic arm interface/robotic arm interface | yes yes robotic arm interface/pt.-of-reference sampling/robotic arm interface pt.-of-reference sampling, robotic arm interface/no |
| Instruments to which your system/product is interfaced | Olympus AU640, Olympus AU2700 | Vitros 950 AT, 250 AT; Advia Centaur; DPC 2000; Cell Dyn 4000; Stago STA-R; Abbott Architect i2000; Olympus AU2700 |
| Other robotic products/components to which system, product is linked | n/a | experienced in facilitating development of OEM interfaces |
| Automated recapper available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate | no — — | yes current/yes/750 16x100, 13x100, 13x75, 12x75 |
| Automated storage and retrieval available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments | no — — — — | yes current/yes/— 16x100, 13x100, 13x75, 12x75 yes interchangeable components throughout, common software and transport for all products, adherence to NCCLS, HL7, & ASTM |
| Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | 1–2 weeks/Olympus America Inc. Diagnostic Systems Group/24/7 no/no | 2 weeks/Ortho-Clinical Diagnostics & Lab-Interlink/24/7 no/no |
| List price Individual list prices for components <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input, accessioning• Auto. decapping/Auto. sorting/Auto. storage & retrieval• Specimen integrity monitor/Automated aliquoting• Instrument (analyzer) interfaces/Automated recapping | \$500k — — — — — | \$500k–\$2M, depends on configuration available upon request available upon request available upon request available upon request available upon request |
| Distinguishing features | <ul style="list-style-type: none">• complete flexible workcell automation system with output sorting to any analyzer rack• CPU for complete sample and data management of multiple analyzers | <ul style="list-style-type: none">• autoprocessing/most advanced software design and user benefits• flexibility, upgradable, versatile, open architecture• stand-alone preanalytics through total lab automation |
| * Ave. throughput in specimen containers per hr per device | | |

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SYSTEM
REVIEW SERIES

Laboratory automation systems & workcells

| | | |
|--|---|---|
| Part 8 of 11 | PVT LabSystems LLC Reto Tietz info@pvtlabsystems.com 3741 Venture Dr., Ste. 335, Duluth, GA 30096 770-232-4527 www.pvtlabsystems.com | Roche Diagnostics Peter Stegger peter.stegger@roche.com 9115 Hague Rd., Indianapolis, IN 46250 317-521-4033 us.labsystems.roche.com |
| <i>Please see accompanying article on page 33</i> | | |
| Name of system/First year installed | Aliquoting System RSD 800A/2002 | Modular Pre-analytics/1997; Hitachi/1990 |
| Automation products that are available <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input or accessioning• Auto. decapping/Auto. sorting/Auto. storage and retrieval• Specimen integrity monitor/Auto. aliquoting• Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | yes/yes yes/yes yes/yes/via software yes/yes via software/yes open system 100% 50% (of annual investment) laboratory automation systems ISAM/QNX (Linux)/—/GUI | yes/yes yes/yes yes/yes/no yes/yes yes/yes closed system (modular systems) 15 employees n/a instruments, reagents —/Windows NT, Unix/—/— |
| Software features/functionality <ul style="list-style-type: none">• Patient demographics & insurance data/Rules-based architecture• Supports data retrieval/Internet connectivity• Online real-time help system/QC/Stats & management reports• Evaluates validity and releasability of results from automated analyzers• Specimen tracking/Priority processing/Random-access specimen movement• Supports accession No. redundancy (duplicate specimen ID)• Supports specimen carrier and level identification• Unique bar-code number per container required• Specimen routing/Multistop routing (one tube to multiple workstations)• Specimen scheduling/Instrument scheduling• Routes test to workstation/Automatic reflex, repeat, dilutions• Supports multiple hardware config./Supports other proprietary transport. hardware• Storage retrieval & disposal/Supports proposed NCCLS standards | LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature n/a n/a LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/n/a LAS SW feature/— n/a/LAS SW feature | LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/—/LAS SW feature LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature — LAS SW feature LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature —/— —/LAS SW feature |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | Cerner, MCS, LDS, Medat, Systek, Providens, Mips, Bayer, Molis, Omega, Misys, Vertex, Zavacore/ASTM | Cerner v3.x, Misys v5.2 w/o Smart, Misys v5.23 w/o Smart, Misys v5.3 w/o Smart, Misys v5.3 w/ Smart, VA Vista/DHCP, Soft v2.x, Per Se, McKesson Starlab, Department of Defense (CHCS)/ASTM/Ethernet, ASTM/serial, HL7 2.4/Ethernet, HL7 2.4/serial |
| No. of live sites installed in N. America/Outside N. America Transportation systems available <ul style="list-style-type: none">• Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Supports automatic rerouting for reflex/repeat/dilutions• Types of containers device can accommodate• Modular hardware/Installed options/Device functions independent of track• Required utilities/Required maintenance• Carrier type/Scalable system | 2 (but 5 of former version)/8 (and 70 of former version) no — — — — — — | 10/110 yes MPA system 3 or 7/yes/600 yes 16x100, 13x100, 16x75, 13x75, rubber or hemoguard yes/floor mounted/no, fully integrated automation & analytics electricity, water (for analyzers)/weekly multiple specimen container per carrier (5 positions)/yes |
| Automated centrifugation available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated decapping available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated sorting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Specimen integrity monitor available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Automated aliquoting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• System inspects samples for bar code/Reports clots/Reports QNS specimens | yes ACM/yes/400 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes yes input-sorter/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes decapping unit/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes output sorter/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes QSI module/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes aliquoting unit/yes/300 primary tubes if 100% aliquot. means 600 throughput 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 yes/yes/yes | yes system 3 or 7/yes/250 16x100, 13x100, 16x75, 13x75 yes, 2 can run at 500 per hr yes system 3 or 7/yes/600 16x100, 13x100, 16x75, 13x75 yes system 3 or 7/yes/400 16x100, 13x100, 16x75, 13x75 yes system 7/yes/500 16x100, 13x100, 16x75, 13x75 yes n/a 16x100, 13x100, 16x75, 13x75 yes system 7/yes/500 16x100, 13x100, 16x75, 13x75 yes/yes/yes |
| Instrument (analyzer) interfaces <ul style="list-style-type: none">• Rules-based instrument interface control subsystem• Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface <ul style="list-style-type: none">• Hematology/Chemistry/Coagulation• Immunoassay/Urinalysis | no no no/no/no no/no | — yes —/no, pt.-of-reference sampling/— no, pt.-of-reference sampling/— |
| Instruments to which your system/product is interfaced Other robotic products/components to which system, product is linked | — — | Roche/Hitachi Modular Systems Clin Chem & Immunoassay — |
| Automated recapper available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate | yes RCS module/yes/800 16x100, 13x100, 16x75, 13x75, 11.5x65, 13x65, 15.3x92 (no glass tubes) | yes System 7/yes/500 — |
| Automated storage and retrieval available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | no — — — modules can be upgraded 2-3 weeks/PVT LabSystems LLC/8AM-5PM M-F (24/7 avail. on request) no/no | no — — — no customers can place modules to increase capacity & functionality <2 weeks/Roche/24/7 no/no |
| List price Individual list prices for components <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input, accessioning• Auto. decapping/Auto. sorting/Auto. storage & retrieval• Specimen integrity monitor/Automated aliquoting• Instrument (analyzer) interfaces/Automated recapping | \$170-\$250k without Automatic Centrifuge \$7k-\$30k/— \$85k/included included/included/— about \$50k/included —/\$30k | \$300-\$800k, depending on system configuration n/a n/a n/a n/a n/a |
| Distinguishing features * Ave. throughput in specimen containers per hr per device | <ul style="list-style-type: none">• one platform can be assembled with all modules for so-called all-in-one system• processing of all different kinds of tubes• the Quality Module | <ul style="list-style-type: none">• fully integrated and designed to work with analytics• easy implementation, no hassles with third-party analyzers and interfaces• total hands-off results driven by reliability• high-level LIS expertise |

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SYSTEM
REVIEW SERIES

Laboratory automation systems & workcells

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|---|--|--|
| Part 9 of 11 <i>Please see accompanying article on page 33</i> | Roche Diagnostics Peter Stegger peter.stegger@roche.com 9115 Hague Rd., Indianapolis, IN 46250 317-521-4033 us.labsystems.roche.com | Sysmex Corp. or America Tammy Kutz mktcom@sysmex.com Gilmer Road, 6699 RFD Long Grove, IL 60047 847-726-3500 www.sysmex.com |
| Name of system/First year installed | PSD 1/1997; VS II/1999 | Sysmex Systemization—HST, CST/1990 |
| Automation products that are available <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input or accessioning• Auto. decapping/Auto. sorting/Auto. storage and retrieval• Specimen integrity monitor/Auto. aliquoting• Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | yes/no no/yes PSD 1 (yes), VS II (no)/yes/no PSD 1 (no), VS II (yes)/PSD 1 (no), VS II (yes) no/no open system 15 employees n/a instruments, reagents —/Windows NT, Unix/—/— | yes/yes no/yes no/yes/yes yes/no yes/no closed system 25% — lab automation systems, instruments, information systems Sybase/Windows 98, NT, Unix/—/— |
| Software features/functionality <ul style="list-style-type: none">• Patient demographics & insurance data/Rules-based architecture• Supports data retrieval/Internet connectivity• Online real-time help system/QC/Stats & management reports• Evaluates validity and releasability of results from automated analyzers• Specimen tracking/Priority processing/Random-access specimen movement• Supports accession No. redundancy (duplicate specimen ID)• Supports specimen carrier and level identification• Unique bar-code number per container required• Specimen routing/Multistop routing (one tube to multiple workstations)• Specimen scheduling/Instrument scheduling• Routes test to workstation/Automatic reflex, repeat, dilutions• Supports multiple hardware config./Supports other proprietary transport. hardware• Storage retrieval & disposal/Supports proposed NCCLS standards | LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/n/a/LAS SW feature n/a LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature n/a LAS SW feature/LAS SW feature n/a/n/a LAS SW feature/n/a LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature | LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature/LAS SW feature LAS SW feature LAS SW feature/LAS SW feature/n/a n/a LAS SW feature LAS SW feature LAS SW feature/n/a n/a/n/a LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | Cerner v3.x, Misys 5.2 w/o SMART, Misys v5.23 w/o SMART, Misys v5.3 w/o SMART, Misys v5.3 w/SMART, Soft v1.x, Soft v2.x, Per Se, Antrim 3.x, Antrim (Common Cents), McKesson Starlab, McKesson Advantage, Homegrown Systems, TopLab, Omnitech, ASTM/ Ethernet, ASTM/serial, HL7 2.4/Ethernet, HL7 2.1/Ethernet, HL7 2.4/serial | Cerner, Misys, SCC, McKesson, Triple G, Antrim/ASTM, TCP IP |
| No. of live sites installed in N. America/Outside N. America Transportation systems available <ul style="list-style-type: none">• Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Supports automatic rerouting for reflex/repeat/dilutions• Types of containers device can accommodate• Modular hardware/Installed options/Device functions independent of track• Required utilities/Required maintenance• Carrier type/Scalable system | PSD 1 45/85; VS II 25/55 no — — 16x100, 13x100, 16x75, 13x75, hemoguard, rubber, screw cap —/—/— compressed air, electricity/weekly multiple specimen container per carrier (5 positions)/yes | 180/700 yes —/yes/config. dependent; max. 600 samples per hr yes 16x100, 13x100, 16x75, 13x75 yes/floor mounted/yes electricity/daily, weekly, monthly for analyzers; quarterly, annually for auto. multiple specimen container per carrier/yes |
| Automated centrifugation available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate Automated decapping available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate Automated sorting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate Specimen integrity monitor available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate Automated aliquoting available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* Types of containers device can accommodate System inspects samples for bar code/Reports clots/Reports QNS specimens | no — — — yes PSD 1/yes/900–1,200; VS II/yes/340 with 1 aliquot per primary tube 16x100, 13x100, 16x75, 13x75, hemoguard, rubber, screw cap yes PSD 1/yes/900–1,200 16x100, 13x100, 16x75, 13x75, hemoguard, rubber, screw cap yes PSD 1/yes/900–1,200; VS II/yes/340 with 1 aliquot per primary tube 16x100, 13x100, 16x75, 13x75, hemoguard, rubber, screw cap VS II/yes n/a 16x100, 13x100, 16x75, 13x75 yes VS II/yes/340 with 1 aliquot per primary tube 16x100, 13x100, 16x75, 13x75 yes/yes/yes | no — — — yes 1.08/yes/150 per device per hr x 4 13x100, 13x75 no — — no — — no — — — — |
| Instrument (analyzer) interfaces <ul style="list-style-type: none">• Rules-based instrument interface control subsystem• Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface <ul style="list-style-type: none">• Hematology/Chemistry/Coagulation• Immunoassay/Urinalysis | no no no/no/no no/no | yes yes pt.-of-reference sampling/—/pt.-of-reference sampling —/— |
| Instruments to which your system/product is interfaced Other robotic products/components to which system, product is linked | none none | Sysmex XE-2100, SE-9500, R-3500, SP-100, CA-1500, & CA-6000 none |
| Automated recapper available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate | no — — | no — — |
| Automated storage and retrieval available <ul style="list-style-type: none">• Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput*• Types of containers device can accommodate• Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | yes PSD 1/yes/1,200; VS II/yes/340 with 1 aliquot per primary tube 16x100, 13x100, 16x75, 13x75, hemoguard, rubber, screw cap no (uses a special archive rack) can be easily configured to meet changing workloads & demands 3 days to 1 week/Roche/24/7 no/no | yes PCDPS 1.08/yes/150 per device per hr x 4 13x100, 13x75 no all upgrades for Sysmex hematology & coagulation analyzers were compatible with the automation and PC-DPS 1 week/Roche Diagnostics/24/7 no/yes |
| List price Individual list prices for components <ul style="list-style-type: none">• Process control software/Transportation systems• Auto. centrifugation/Auto. input, accessioning• Auto. decapping/Auto. sorting/Auto. storage & retrieval• Specimen integrity monitor/Automated aliquoting• Instrument (analyzer) interfaces/Automated recapping | PSD 1: \$175k; VS II: \$200k — — — — — | depends on system configuration — — — — — |
| Distinguishing features * Ave. throughput in specimen containers per hr per device | <ul style="list-style-type: none">• PSD 1: stand-alone archiving; low-cost, easy implementation; sorting, decapping, exceptional handling, archiving; VS II: archiving, aliquoting and sorting; fast, easy setup and install.; exceptional notification & separation• task targeted automation | <ul style="list-style-type: none">• able to take collected data and turn into usable information• proven implementation within 90 days of receiving purchase order, on-site implementation is successfully completed in one week• provided islands of automation in coag and hematology for 10+ years |

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Laboratory automation systems & workcells

| | |
|---|---|
| Part 11 of 11 | Thermo Electron Corp. Klas Vuorinen klas.vuorinen@thermoclinical.com Ratastie 2, P.O. Box 100 FIN 01621 Vantaa, Finland +358 9 802 766 www.thermo.com |
| Please see accompanying article on page 33 | |
| Name of system/First year installed | Thermo Clinical Automation/2000 |
| Automation products that are available • Process control software/Transportation systems • Auto. centrifugation/Auto. input or accessioning • Auto. decapping/Auto. sorting/Auto. storage and retrieval • Specimen integrity monitor/Auto. aliquoting • Instrument (analyzer) interfaces/Auto. recapping System architecture % of staff dedicated to clinical automation system % of budget dedicated to R&D for clin. auto. technology Company's primary product category Information systems technology for your automation system Database/Operating system/Server/User interface | yes/yes yes/yes yes/yes/yes no/yes yes/no open system — — lab automation systems and instruments/reagents object database/Windows NT/—/GUI |
| Software features/functionality • Patient demographics & insurance data/Rules-based architecture • Supports data retrieval/Internet connectivity • Online real-time help system/QC/Stats & management reports • Evaluates validity and releasability of results from automated analyzers • Specimen tracking/Priority processing/Random-access specimen movement • Supports accession No. redundancy (duplicate specimen ID) • Supports specimen carrier and level identification • Unique bar-code number per container required • Specimen routing/Multistop routing (one tube to multiple workstations) • Specimen scheduling/Instrument scheduling • Routes test to workstation/Automatic reflex, repeat, dilutions • Supports multiple hardware config./Supports other proprietary transport. hardware • Storage retrieval & disposal/Supports proposed NCCLS standards | LIS requirement/— LIS requirement/— n/a/—/— LIS requirement LAS SW feature/LAS SW feature/LAS SW feature LIS requirement LAS SW feature LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LAS SW feature LAS SW feature/LIS requirement LAS SW feature/— LAS SW feature/LAS SW feature |
| LIS interfaces that are live/How LISs are interfaced with auto. sys. | —/— |
| No. of live sites installed in N. America/Outside N. America Transportation systems available • Version/conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Supports automatic rerouting for reflex/repeat/dilutions • Types of containers device can accommodate • Modular hardware/Installed options/Device functions independent of track • Required utilities/Required maintenance • Carrier type/Scalable system | 0/11 yes —/yes/500 yes 16x100, 13x100, 16x75, 13x75, 11–16.8 mm diam., 110 mm ht. yes/floor mounted/— compressed air, electricity/— single specimen container per carrier/yes |
| Automated centrifugation available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • For multi-unit centrifuges, each cent. operates independently for rate and time Automated input/accessioning available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated decapping available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated sorting available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Specimen integrity monitor available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate Automated aliquoting available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • System inspects samples for bar code/Reports clots/Reports QNS specimens | yes n/a/yes/400 16x100, 13x100, 16x75, 13x75, 11–16.8 mm in diam., 110 mm ht. yes yes —/yes/500 16x100, 13x100, 16x75, 13x75, 11–16.8 mm in diam., 110 mm ht. yes —/yes/500 16x100, 13x100, 16x75, 13x75, 11–16.8 mm in diam., 110 mm ht. yes —/yes/500 16x100, 13x100, 16x75, 13x75, 11–16.8 mm in diam., 110 mm ht. no — — yes —/yes/240 secondary tubes 16x100, 13x100, 16x75, 13x75, 11–16.8 mm in diam., 110 mm ht. yes/yes/yes |
| Instrument (analyzer) interfaces • Rules-based instrument interface control subsystem • Process control of instrument via control subsystem Physical/hardware (instrument/specimen) interface • Hematology/Chemistry/Coagulation • Immunoassay/Urinalysis | — — pt.-of-reference sampling/pt.-of-reference-sampling & robotic arm interface/ pt.-of-reference sampling pt.-of-reference sampling/pt.-of-reference-sampling |
| Instruments to which your system/product is interfaced | Roche Modular, Konelab, Bayer Advia 1650, Abbott Architect |
| Other robotic products/components to which system, product is linked | — |
| Automated recapper available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate | no —/—/— — |
| Automated storage and retrieval available • Version/Conforms to NCCLS Standards Auto 1-5/Ave. throughput* • Types of containers device can accommodate • Refrigeration available Longitudinal upgrade pathway or plan to protect users' investments Ave. time to install sys./Who provides service and support/Hours support is available On-site biomedical engineer required/User group meets regularly | yes —/yes/500 16x100, 13x100, 16x75, 13x75, 11–16.8 mm in diam., 110 mm ht. no — 1–2 weeks/local distributor/depends on agreement no/no |
| List price Individual list prices for components • Process control software/Transportation systems • Auto. centrifugation/Auto. input, accessioning • Auto. decapping/Auto. sorting/Auto. storage & retrieval • Specimen integrity monitor/Automated aliquoting • Instrument (analyzer) interfaces/Automated recapping | — — — — — — |
| Distinguishing features | • modularity—the system can be extended to meet customer needs; both workcell and preanalytical part can be upgraded and linked as needed • multitube carrier with programmable chip • open—can be linked to a variety of different analyzers |
| * Ave. throughput in specimen containers per hr per device | |

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