

Chemistry analyzers (for low-volume laboratories)

Part 1 of 10 <i>See accompanying article on page 56</i>	Abaxis Inc. Rick Betts rickbetts@abaxis.com 3240 Whipple Road, Union City, CA 94587 800-822-2947 www.abaxis.com	Abbott Point of Care Glen Tinevez glen.tinevez@abbott.com 104 Windsor Center Dr., East Windsor, NJ 08520 800-827-7828 www.abbottpointofcare.com	Alfa Wassermann Diagnostic Technologies LLC Lauren DiPrima ldiprima@alfawassermannus.com 4 Henderson Dr., West Caldwell, NJ 07006 800-220-4488 www.alfawassermannus.com
Name of instrument/First year sold in U.S./List price No. of units in clinical use in U.S./Outside U.S. Country where designed/Manufactured/Reagents manufactured Operational type/Reagent type	Piccolo Xpress/2006/16,500 2,500/4,000 U.S./U.S./U.S. discrete/self-contained single-use cartridges- packages-slides	i-Stat 1 analyzer/2000/— 30,000+ worldwide U.S./U.S./Canada —/self-contained single-use cartridges packages- slides	ACE/1993; ACE Alera Clinical Chemistry System/2004/— 1,300/800+ U.S./U.S./U.S. batch, random access, discrete, continuous random access/stat and closed reagent system with open reagent system channel ring with up to 5 segments (15 samples per segment)/benchtop ACE: 15.75 × 27.25 × 22.50; ACE Alera: 23 × 27.5 × 22.5/4.3 square feet
Sample handling system/Model type	disk loaded directly into instrument/benchtop	—/handheld	
Dimensions in inches (H × W × D)/Instrument footprint	12.75 × 6 × 8/<1 square foot	9.25 × 3.0 × 2.85/<1 square foot	
Tests available on instrument in U.S.	ALP, ALT, AST, GGT, amylase, albumin, total protein, bilirubin total, BUN, creatinine, calcium, cholesterol, glucose, uric acid, sodium, creatine kinase, others	tropinin I, CK-MB, lactate, BUN, creatinine, glucose, ionized calcium, sodium, potassium, chloride, hema- tocrit, pH, PCO2, PO2, TCO2, ACTC, ACTk, others	albumin, gamma GT, bilirubin direct & total, calcium, creatinine, glucose, HbA1c, phosphorus, total iron, magnesium, total protein, BUN, uric acid, many others —/enzymatic creatinine, neonatal bilirubin, hsCRP, urine applications (creatinine, urea, calcium, phosphorous) open-channel bottles are available for user-derived or third-party reagents
Research-use-only assays/Tests in development	—	—	
Analytes for which user-defined methods have been implemented	—	—	
Methods supported/Immunoassay methods	photometry, enzymatic/—	potentiometry, amperometric, conductometric/—	photometry, potentiometry (ion-selective electrode), turbidimetric homogeneous EIA
No. of direct ion selective electrode channels	0 (system is enzymatic)	10	3
• Must load separate reagent pack for each specimen	yes	no (unit-use cartridge based)	no
• Separate reagent pack for each test run	no	yes	no
No. of different measured assays onboard simultaneously	CLIA-waived CMP has 14 analytes	—	40
• No. of different assays programmed and calibrated at once	14	18	200
• No. of user-definable (open) channels/No. active simultaneously	0/—	—	15/15
No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set	29/up to 14	—/unit use	40/30–250 tests per bottle
• Shortest/Median onboard reagent stability/Refrigerated onboard	—/—/yes (0°–8°C)	—/14 days/no	5 days/30 days/yes (10°–14°C)
• Multiple reagent configurations supported	yes	no	yes
Reagent container placed directly on system for use	yes	—	yes
Instrument has same capabilities when third-party reagent used	—	—	yes
Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	30 seconds hands-on; 12 minutes to printed result/1/up to 29 available analytes in menu, up to 14 per reagent disk	2/1/up to 18	75/75/248
System is liquid chemistry, dry chemistry, or reconstituted onboard	liquid reconstitutes onboard	—	liquid
• Uses disposable cuvettes/Maximum No. stored	no/28 cuvettes per reagent disk	no/—	yes/248
• Uses washable cuvettes/Replacement frequency	no/—	no/—	no/—
Minimum sample volume aspirated precisely at one time	requires 80–100 µL of whole blood, serum, or plasma	16 µL	3 µL
System supplied with UPS (backup power)/Requires floor drain	yes/no	no/no	yes/no
Requires dedicated water system/Water consumption in L per hour	no/—	no/—	no/—
Noise generated in decibels	none	none	55
Dedicated pediatric sample cup/Dead volume	no/—	no/—	no/—
Primary tube sampling/Pierces caps on primary tubes	no/no	no/no	yes/yes
Sample bar-code reading capability/Autodiscrimination	Intelligent Quality Control system automatically reads bar code on disk/—	yes (reads operator, cartridge, and patient bar code)/yes	yes, as sample is being aspirated (2 of 5 interleaved, UPC, Codabar, code 39, code 128 set B and C)/yes
• Reagent bar-code reading capability	yes	yes	yes, proprietary dot coding
Onboard test auto inventory (determines volume in container)	—	—	yes
• Measures No. of tests remaining/Short sample detection/ Clot detection	—/yes/yes	—/yes/yes	yes/yes/no
• Automatic detection of adequate reagent for aspiration and analysis	yes	yes	yes
• Hemolysis/Turbidity detection-quantitation	yes/yes	no/no	—
Dilution of patient samples onboard	yes	no	yes
Automatic rerun capability	no	no	yes
• Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results	—/—	no/no	yes/no
Autocalibration or autocalibration alert	yes	yes	yes
• Calibrants stored onboard/Multipoint calibration supported	yes/yes	no/yes	no/yes
Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/ Drugs of abuse	self-calibrated onboard/self-calibrated onboard/—/—	each test/each test/—/—	3 hours/30 days/45 days with 48-hour updates/—
Automatic shutdown/Startup programmable	yes/yes	yes/yes	—
Stat time to completion of all analytes/throughput per hour for:			
• Sodium, potassium, chloride, TCO2	30 seconds hands-on, 10–12 minutes to printed result/2–14 tests per disk	2 minutes/—	4 minutes/35 specimens
• Sodium, potassium, chloride, TCO2, glucose, urea, creatinine	30 seconds hands-on, 10–12 minutes to printed result, 2–14 tests per disk	2 minutes, —	7 minutes, 20 specimens
• Albumin, direct and total bilirubin, AST, ALT, ALP	30 seconds hands-on, 10–12 minutes to printed result, 2–14 tests per disk	—	10 minutes, 12 specimens
• Typical time delay from ordering stat test to aspiration of sample	none	none	immediate response, as soon as 10 seconds
Frequency of QC required/Onboard SW capability to review QC	shortest: automatic QC onboard with every run; longest: external high/low QC required monthly, according to CLIA guidelines/yes	shortest interval: 24 hours; longest interval: each new lot or reagent/yes	daily/yes
Onboard real-time QC/Support multiple QC lot Nos. per analyte QC results transferred automatically to LIS	yes/yes yes	yes/yes yes	yes/yes yes
Data-management capability/Instrument vendor supplies LIS interface	onboard/no	optional add-on (<\$30,000, SW mfr: Abbott Point of Care)/yes (additional cost)	onboard/no
• LISs with which system interfaces in active user sites	many	all systems	Antek, Apex, LabPak, Schuyler House, others
Bidirectional interface capability	yes (broadcast download and host query)	yes (broadcast download and host query)	yes (broadcast download)
LIS interface operates simultaneously with running assays	yes	yes	yes
Uses LOINC to transmit orders and results	yes	yes	no
• How labs get LOINC codes for reagent kits	Web site, package insert, e-mail query	customized on site	—
Lab can control analyzer remotely	yes	yes	no
Modem servicing available/System can diagnose own malfunctions	yes/yes	yes/yes	no/yes
On-site time of service engineer/Onboard error codes for troubleshooting	not necessary, 24-hour RMA turnaround of loaner instruments/yes	replacement within 24 hours/yes	24 hours/yes
• Mean time between failures/To repair failures	none/replacement within 24 hours	not determined/replacement within 24 hours	8 months/1 hour
Onboard maintenance records/Maintenance training demo module	yes/yes	—	yes/no
Training provided with purchase/Advanced operator training	1–2 hours (supplemented by free Webcast)/yes	—/yes	4.5 days at manufacturer's facility/yes
Annual service contract cost (24 h/7 d)	1-year warranty standard; 3 years often free through distribution partners; \$1,195 for additional years	based on volume	several programs available
Distinguishing features (supplied by company)	comprehensive CLIA-waived menu of tests; 15 disks (11 CLIA-waived) represent commonly ordered chem- istry panels; works with three simple steps; intranet connectivity extends reach to the point of care, while maintaining centralized control of test data	handheld portable analyzer; unit use system can perform chemistry, blood gas, cardiac marker, and coagulation tests with two drops of whole blood or plasma	closed-tube sampling; stat interrupt capability; onboard sample and reagent refrigeration; onboard reagent inventory management; ready-to-use reagents; integrated ISE module; self-contained analyzer; no external water source or waste drainage

Note: a dash in lieu of an answer means company did not answer question or question is not applicable

Chemistry analyzers (for low-volume laboratories)

Part 2 of 10	AMS Diagnostics, LLC Bruno Borganti bb@amsdiagnostics.com 2410 Settlers Street, Charleston, SC 29492 866-419-7839 www.amsdiagnostics.com	Awareness Technology Rob Guerin info@awaretech.com 1935 S.W. Martin Highway, Palm City, FL 34990 772-283-6540 www.awaretech.com	Awareness Technology Rob Guerin info@awaretech.com 1935 S.W. Martin Highway, Palm City, FL 34990 772-283-6540 www.awaretech.com
Name of instrument/First year sold in U.S./List price No. of units in clinical use in U.S./Outside U.S. Country where designed/Manufactured/Reagents manufactured Operational type/Reagent type	LIASYS (330)/2009/— 37/1,487 Europe-U.S./Europe-U.S./Europe-U.S. batch, random access, discrete, continuous random access/self-contained single-use cartridges-packages-slides	ChemWell-T/2010/\$12,500 5/250 U.S./U.S./open system batch, random access, continuous random access/open reagent system	Stat Fax 4500/2009/\$2,695 150/1,500 U.S./U.S./open system —/open reagent system
Sample handling system/Model type	5 sliding racks for primary tubes from 10–16 mm diameter, from 40–100 mm height, short cups 1 mL, short cups 3 mL, conical/benchtop	custom-configurable rack/benchtop	tube, cuvette, or flowcell/benchtop
Dimensions in inches (H × W × D)/Instrument footprint	16.5 × 39.3 × 25.6/4.4 square feet	20 × 21 × 16/3 square feet	5 × 9 × 13.5/<1 square feet
Tests available on instrument in U.S.	general chemistries, electrolytes, enzyme assays, lipid assays, HbA1c, lipase, microalbumin, microprotein, rheumatoid factor, DOA, others	open system	open system
Research-use-only assays/Tests in development	—/vitamin D	—	—
Analytes for which user-defined methods have been implemented	—	—	—
Methods supported/Immunoassay methods	photometry, potentiometry (ion-selective electrode)/turbidimetry	photometry	photometry
No. of direct ion selective electrode channels	3	—	—
• Must load separate reagent pack for each specimen	no	—	—
• Separate reagent pack for each test run	—	—	—
No. of different measured assays onboard simultaneously	36	40	—
• No. of different assays programmed and calibrated at once	36	—	1
• No. of user-definable (open) channels/No. active simultaneously	200/36	PC-based	99/1
No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set	36/250–400	variable/—	—
• Shortest/Median onboard reagent stability/Refrigerated onboard	7 days/20 days/yes (2°–8°C)	—/—/yes (9°–12°C below ambient)	—/no
• Multiple reagent configurations supported	yes	yes	—
Reagent container placed directly on system for use	yes	yes	—
Instrument has same capabilities when third-party reagent used	yes	yes	yes
Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	240/64/36	—/—/40	—
System is liquid chemistry, dry chemistry, or reconstituted onboard	liquid	liquid	liquid
• Uses disposable cuvettes/Maximum No. stored	no/60	yes/40	yes/12
• Uses washable cuvettes/Replacement frequency	yes/40,000 tests	yes/variable	yes/supplier-dependent
Minimum sample volume aspirated precisely at one time	2 µL	2 µL	250 µL
System supplied with UPS (backup power)/Requires floor drain	no/no	no/no	no/no
Requires dedicated water system/Water consumption in L per hour	no/0.5	no/—	no/—
Noise generated in decibels	45	—	<45
Dedicated pediatric sample cup/Dead volume	yes/50 µL	no/—	no/—
Primary tube sampling/Pierces caps on primary tubes	yes/no	yes/no	—
Sample bar-code reading capability/Autodiscrimination	yes/yes	no/no	no/—
• Reagent bar-code reading capability	yes	no	—
Onboard test auto inventory (determines volume in container)	yes	yes	—
• Measures No. of tests remaining/Short sample detection/Clot detection	yes/yes/no	—/yes/no	—
• Automatic detection of adequate reagent for aspiration and analysis	yes	yes	—
• Hemolysis/Turbidity detection-quantitation	no/no	no/no	—
Dilution of patient samples onboard	yes	yes	—
Automatic rerun capability	yes	—	—
• Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results	yes/yes	yes/yes	—
Autocalibration or autocalibration alert	yes	yes	no
• Calibrants stored onboard/Multipoint calibration supported	yes/yes	no/yes	—/yes
Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/Drugs of abuse	autocalibrate/14 days/14 days/14 days	—	—
Automatic shutdown/Startup programmable	no/no	no/no	no/no
Stat time to completion of all analytes/throughput per hour for:			
• Sodium, potassium, chloride, TC02	122 specimens per hour (first result after 7 minutes, 12 seconds) namely 488 tests per hour	—	—
• Sodium, potassium, chloride, TC02, glucose, urea, creatinine	35 specimens per hour (first result after 8 minutes, 6 seconds) namely 245 tests per hour	—	—
• Albumin, direct and total bilirubin, AST, ALT, ALP	24 specimens per hour (first result after 9 minutes, 20 seconds) namely 144 tests per hour	—	—
• Typical time delay from ordering stat test to aspiration of sample	18 seconds	—	—
Frequency of QC required/Onboard SW capability to review QC	8–24 hours/yes	—/yes	—
Onboard real-time QC/Support multiple QC lot Nos. per analyte	no/yes	yes/yes	—
QC results transferred automatically to LIS	no	yes	—
Data-management capability/Instrument vendor supplies LIS interface	onboard (AMS)/yes, included	onboard/—	no/no
• LISs with which system interfaces in active user sites	Antek, Fletcher, Flora, others	—	—
Bidirectional interface capability	yes (broadcast download and host query)	yes	no
LIS interface operates simultaneously with running assays	yes	yes	—
Uses LOINC to transmit orders and results	no	no	—
• How labs get LOINC codes for reagent kits	—	—	—
Lab can control analyzer remotely	yes	no	no
Modem servicing available/System can diagnose own malfunctions	yes/yes	yes/yes	—
On-site time of service engineer/Onboard error codes for troubleshooting	engineers are on standby/yes	—/yes	—/yes
• Mean time between failures/To repair failures	11.5 months/90 minutes	—	—
Onboard maintenance records/Maintenance training demo module	no/—	yes/no	—
Training provided with purchase/Advanced operator training	3 days on site, 1 day at vendor offices/yes	—/yes	—
Annual service contract cost (24 h/7 d)	\$8,900 (M-F), warranty extension	varies per distributor	—
Distinguishing features (supplied by company)	monitors cuvette cleanliness, flags its replacement; cuvettes can change immediately; displays all system and patient tests status on first screen; at-a-glance interface design saves time running chemistry panels; precision data comparison; runs three reagent methods; suitable for more esoteric testing in development; automatic samples predilution, postdilution, and post-concentration	versatile open system, runs biochemistry and turbidimetric assays; universal rack for reagent containers, controls, and calibrators for regular, stat, and pediatric samples; user decides which ones and how many rack positions to allocate for each; compact, economical instrument designed to bring automation to lower-throughput labs, and for use as a backup to larger systems	cost-effective with long-life IAD filters; self-prompting touchscreen with mouse-compatible interface for easy selections and entries; optional built-in flowcell for reduced sample volumes

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Part 3 of 10	Beckman Coulter, Inc. Burcin Ekener bekener@beckman.com 250 S. Kraemer Blvd., Brea, CA 92821 800-526-3821 www.beckmancoulter.com	Carolina Liquid Chemistries Patricia Shugart contactsales@carolinachemistries.com 391 Technology Way, Suite 2, Winston Salem, NC 27101 877-722-8910 www.carolinachemistries.com	Carolina Liquid Chemistries Patricia Shugart contactsales@carolinachemistries.com 391 Technology Way, Suite 2, Winston Salem, NC 27101 877-722-8910 www.carolinachemistries.com
Name of instrument/First year sold in U.S./List price No. of units in clinical use in U.S./Outside U.S. Country where designed/Manufactured/Reagents manufactured Operational type/Reagent type	AU480 Clinical System/2009/— 120/>300 Japan/Japan/Ireland continuous random access/open reagent system	BioLis 24i/2008/\$60,000 >200/3,000 Japan/Japan/U.S. batch, random access, continuous random access/ open reagent system	CLC 480/—/\$75,000 — Japan/Japan/U.S. batch, random access, discrete, continuous random access/self-contained single-use cartridges-pack- ages-slides, open reagent system
Sample handling system/Model type	continuous loading rack feeder holds up to 80 samples, while 22 samples are accommodated via stat turntable/floor-standing	sample ring/benchtop	sample ring/benchtop
Dimensions in inches (H × W × D)/Instrument footprint	47.5 × 57.1 × 30/11.9 square feet	20 × 31 × 25/5 square feet	31.5 × 26.5 × 20.5/5 square feet
Tests available on instrument in U.S.	>125 tests, including complete general chemistry, proteins/serology (including reformulated ferritin assay), thyroid, esoterics (including lithium), TDM (including methotrexate), DAT panels (including oxycodone; multiple cutoffs, qualitative, and semi- quantitative methods available for most assays)	100, GlycoMark	>80 different chemistries, including drugs of abuse and adulterants; reads at 10 different wavelengths between 340 and 800 nm
Research-use-only assays/Tests in development Analytes for which user-defined methods have been implemented	—/HbA1c (fully automated) total open system, unlimited	—/vitamin D —	vitamin D/vitamin D application —
Methods supported/Immunoassay methods	photometry, potentiometry (ion-selective electrode), homogenous EIA, turbidimetry, latex agglutination/—	photometry, potentiometry/—	photometry, potentiometry, ISE
No. of direct ion selective electrode channels • Must load separate reagent pack for each specimen	3 electrodes, indirect method no	3 no	3 no
• Separate reagent pack for each test run No. of different measured assays onboard simultaneously • No. of different assays programmed and calibrated at once • No. of user-definable (open) channels/No. active simultaneously No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set	no 63 63 60/all up to 60 different assays/50–1,500 (per vial)	no 39 39 39/39 39/3 × 300	no 39 39 39/39 39/3 × 300
• Shortest/Median onboard reagent stability/Refrigerated onboard • Multiple reagent configurations supported Reagent container placed directly on system for use Instrument has same capabilities when third-party reagent used Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	5 days/30 days/yes (4°–12°C) yes yes yes varies/up to 102/varies	7 days/14 days/yes (2°–8°C) yes yes yes 4 hours/40/39	7 days/14 days/yes (<10°C) yes yes yes 4 hours/40/39
System is liquid chemistry, dry chemistry, or reconstituted onboard • Uses disposable cuvettes/Maximum No. stored • Uses washable cuvettes/Replacement frequency Minimum sample volume aspirated precisely at one time System supplied with UPS (backup power)/Requires floor drain Requires dedicated water system/Water consumption in L per hour Noise generated in decibels Dedicated pediatric sample cup/Dead volume Primary tube sampling/Pierces caps on primary tubes Sample bar-code reading capability/Autodiscrimination	liquid no/— yes/permanent 1 µL no (optional)/yes (no with optional water pump) yes/20 average peak consumption <60 no/— yes/no yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codebar, codes 39 and 128)/yes	liquid no/— yes/— — yes/no yes, water system provided with instrument/— — yes/30 µL yes/no yes (on sample transport, shortly before sample is aspirated, codes 39 and 128)/yes	liquid no/— yes/annual or as needed 3 µL no/no yes/3.5 <60 yes/30 µL yes/no yes (on sample transport, shortly before sample is aspirated, codes 39 and 128, ITF, NW-7)/yes
• Reagent bar-code reading capability Onboard test auto inventory (determines volume in container) • Measures No. of tests remaining/Short sample detection/ Clot detection	yes yes yes/yes/yes	yes yes/yes yes yes/yes/yes	yes yes/yes yes yes/yes/yes
• Automatic detection of adequate reagent for aspiration and analysis • Hemolysis/Turbidity detection-quantitation Dilution of patient samples onboard Automatic rerun capability • Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results	yes yes/yes yes yes yes/yes	yes yes/yes yes yes yes/yes	yes yes/yes yes yes yes/no
Autocalibration or autocalibration alert • Calibrants stored onboard/Multipoint calibration supported Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/ Drugs of abuse	yes yes/yes 1 day/30 days/14 days/14–20 days	no yes/yes 24 hours/14 days/4–7 days/7 days	no yes/yes 24 hours/14 days/4–7 days/7 days
Automatic shutdown/Startup programmable	yes/yes	yes/yes	yes/yes
Stat time to completion of all analytes/throughput per hour for: • Sodium, potassium, chloride, TC02 • Sodium, potassium, chloride, TC02, glucose, urea, creatinine	<9 minutes (includes TC02), 200 specimens <9 minutes (includes photometric assays), 80 specimens	12 minutes, 160 specimens 1 hour, 60 specimens	12 minutes, 160 specimens 1 hour, 60 specimens
• Albumin, direct and total bilirubin, AST, ALT, ALP • Typical time delay from ordering stat test to aspiration of sample	<9 minutes, 67 specimens <2 minutes	14 minutes, 240 specimens 5 minutes	14 minutes, 240 specimens 5 minutes
Frequency of QC required/Onboard SW capability to review QC Onboard real-time QC/Support multiple QC lot Nos. per analyte QC results transferred automatically to LIS	per CLIA and laboratory's decision/yes yes/yes yes	8–24 hours/yes yes/yes yes	8–24 hours/yes yes/yes yes
Data-management capability/Instrument vendor supplies LIS interface • LISs with which system interfaces in active user sites	onboard/no (optional) all common interfaces, including Cerner, Antrim, CCA, Chemware, Dawning Technology, ADAC, Dynamic Healthcare, Antek, Siemens, McKesson (Data Innovations), CPSI, Mediatech, Misys, Citation, SCC	onboard/yes (additional cost) Fletcher Flora, Lab Track, and several other common systems	onboard/yes (additional cost) Lab Track, Lab DAQ, Fletcher-Flora, Orchard, and other systems
Bidirectional interface capability LIS interface operates simultaneously with running assays Uses LOINC to transmit orders and results • How labs get LOINC codes for reagent kits	yes (broadcast download and host query) yes no —	yes (broadcast download and host query) yes — —	yes (broadcast download and host query) yes yes by contacting technical support
Lab can control analyzer remotely	yes	no	yes
Modem servicing available/System can diagnose own malfunctions	yes/yes	no/yes	yes/no
On-site time of service engineer/Onboard error codes for troubleshooting • Mean time between failures/To repair failures Onboard maintenance records/Maintenance training demo module Training provided with purchase/Advanced operator training Annual service contract cost (24 h/7 d)	<24 hours/yes average two calls per year/<24 hours yes/yes 3–5 days on site, 5 days at vendor offices/yes contract-dependent	24 hours/yes — yes (includes audit trail)/no 5 days on site/yes —	24 hours/yes — — installation on site, 3.5 days at vendor offices/yes \$8,500
Distinguishing features (supplied by company)	standardization with family of chemistry and immunoassay systems—the AU680, AU2700, and AU5400; broad test menu of 130 methods provides standardized results for improved patient management and streamlined operation	water system eliminates need to purchase, ship, and store cubes of water; HbA1c performed directly onboard w/results equivalent to HPLC, don't need separate HbA1c analyzer; small size, large menu, 39 onboard chemistries; runs general and special chem- istries from CMPs to D-dimer, cystatin C, insulin, more	comprehensive test menu; cost-effective water sys- tem eliminates need for daily cuvette changes and costs associated with cuvette wash solutions; runs drugs of abuse in a qualitative or semiquantitative mode, providing an actual number in ng/mL

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Chemistry analyzers (for low-volume laboratories)

Part 4 of 10	ELITech Clinical Systems Patrice Babineau elitechNA@elitechgroup.com 101 College Road East, Princeton, NJ 08540 609-216-7360 www.elitechgroup.com	ELITech Clinical Systems Patrice Babineau elitechNA@elitechgroup.com 101 College Road East, Princeton, NJ 08540 609-216-7360 www.elitechgroup.com	HORIBA Medical Jim Knowles jim.knowles@horiba.com 34 Bunsen Drive, Irvine, CA 92618 888-903-5001 www.horiba.com/us/en/medical
Name of instrument/First year sold in U.S./List price No. of units in clinical use in U.S./Outside U.S. Country where designed/Manufactured/Reagents manufactured Operational type/Reagent type	Selectra ProM Chemistry System/2011/\$41,500 —/300 Netherlands/Netherlands/France continuous random access/self-contained multi-use cartridges-packages-slides	Selectra ProS Chemistry System/2011/\$34,500 —/70 Netherlands/Netherlands/France continuous random access/self-contained multi-use cartridges-packages-slides	ABX Pentra 400/2006/\$95,319 176/1,003 France/France/France and U.S. batch, random access, discrete, continuous random access/self-contained single-use cartridges-pack- ages-slides, open reagent system rack/benchtop
Sample handling system/Model type	ring/benchtop	ring/benchtop	
Dimensions in inches (H × W × D)/Instrument footprint	30 × 48 × 24.4/8.1 square feet	30 × 32.5 × 24/5.4 square feet	25 × 40 × 28 in/7.7 square feet
Tests available on instrument in U.S.	albumin, ALT/GPT, ALKP, AST/GOT, bilirubin (direct and total BUN), calcium, carbon dioxide, chloride cholesterol, cholesterol (HDL and LDL), creatinine, glucose, GGT, hemoglobin A1c, LDH, phosphorus, potassium, sodium, total protein, triglycerides, uric acid	albumin, ALT/GPT, ALKP, AST/GOT, bilirubin (direct and total BUN), calcium, carbon dioxide, chloride cholesterol, cholesterol (HDL and LDL), creatinine, glucose, GGT, hemoglobin A1c, LDH, phosphorus, potassium, sodium, total protein, triglycerides, uric acid	albumin, calcium, sodium, alk phos, ALT, carbon dioxide, glucose (PAP), lipase, total protein, chloride, glucose (hexokinase), magnesium, triglycerides, amylase, cholesterol, nitrogen, iron, myoglobin, uric acid, total bilirubin, creatinine, lactic acid, more
Research-use-only assays/Tests in development	—/TxB cardio, hyaluronic acid, D-dimer, TIMP-1, PIIINC, amylase, CK, iron, TIBC, magnesium, multi-range CRP, microprotein	—/TxB cardio, hyaluronic acid, D-dimer, TIMP-1, PIIINC, amylase, CK, iron, TIBC, magnesium, multi-range CRP, microprotein	—/TDMs, DAUs
Analytes for which user-defined methods have been implemented	APO A1, APO B, CRP, haptoglobin, IgA, IgG, IgM, microalbumin, microprotein, orosomucoid, prealbumin, more	APO A1, APO B, CRP, haptoglobin, IgA, IgG, IgM, microalbumin, microprotein, orosomucoid, prealbumin, more	alcohol, apolipoprotein A1, apolipoprotein B, beta 2, microglobulin, ferritin, fructosamine, GlycoMark, more
Methods supported/Immunoassay methods	photometry, potentiometry/turbidimetric homogeneous, EIA	photometry, potentiometry/turbidimetric homogeneous, EIA	photometry, potentiometry (ion-selective electrode), turbidimetric/—
No. of direct ion selective electrode channels	4	4	3
• Must load separate reagent pack for each specimen	no	no	no
• Separate reagent pack for each test run	no	no	no
No. of different measured assays onboard simultaneously	36	34	55
• No. of different assays programmed and calibrated at once	96	90	55
• No. of user-definable (open) channels/No. active simultaneously	10/10	10/10	15/15
No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set	36/34–83	34/34–83	55/100 to 400
• Shortest/Median onboard reagent stability/Refrigerated onboard	24 hours/28 days/yes (10°C)	24 hours/28 days/yes (10°C)	8 hours/30 days/yes (15°–32°C)
• Multiple reagent configurations supported	yes	yes	yes
Reagent container placed directly on system for use	yes	yes	yes
Instrument has same capabilities when third-party reagent used	yes	yes	yes
Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	240/62/720	120/25/285	2 hours/60/—
System is liquid chemistry, dry chemistry, or reconstituted onboard	liquid	liquid	liquid
• Uses disposable cuvettes/Maximum No. stored	no/48 in semi-disposable rotor	no/48 in semi-disposable rotor	yes/432
• Uses washable cuvettes/Replacement frequency	yes/10,000 tests	yes/10,000 tests	no/—
Minimum sample volume aspirated precisely at one time	1 µL	1 µL	2 µL
System supplied with UPS (backup power)/Requires floor drain	yes/no	yes/no	no/no
Requires dedicated water system/Water consumption in L per hour	no/up to 0.5	no/up to 0.9	no/0.5 average
Noise generated in decibels	62	62	<66
Dedicated pediatric sample cup/Dead volume	yes/100 µL	yes/100 µL	no/—
Primary tube sampling/Pierces caps on primary tubes	yes/no	yes/no	yes/no
Sample bar-code reading capability/Autodiscrimination	yes, on sample transport, shortly before sample is aspirated (2 of 5 interleaved, Codebar, codes 4, 11, 39, 93 and 128)/yes	yes, on sample transport, shortly before sample is aspirated (2 of 5 interleaved, Codebar, codes 4, 11, 39, 93 and 128)/yes	yes/no
• Reagent bar-code reading capability	yes	yes	yes
Onboard test auto inventory (determines volume in container)	yes	yes	yes
• Measures No. of tests remaining/Short sample detection/Clot detection	yes/yes/no	yes/yes/no	yes/yes/yes
• Automatic detection of adequate reagent for aspiration and analysis	yes	yes	yes
• Hemolysis/Turbidity detection-quantitation	no/no	no/no	yes/yes
Dilution of patient samples onboard	yes	yes	yes
Automatic rerun capability	yes	yes	yes
• Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results	yes/no	yes/no	yes/yes
Autocalibration or autocalibration alert	yes	yes	yes
• Calibrants stored onboard/Multipoint calibration supported	no/yes	no/yes	yes/yes
Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/Drugs of abuse	4–8 hours/28 days/—/—	4–8 hours/28 days/—/—	2 hours/14 days/—/—
Automatic shutdown/Startup programmable	yes/yes	yes/yes	no/yes
Stat time to completion of all analytes/throughput per hour for:			
• Sodium, potassium, chloride, TCO2	5 minutes, 66 specimens	5 minutes, 66 specimens	<5 minutes, —
• Sodium, potassium, chloride, TCO2, glucose, urea, creatinine	12 minutes, 33 specimens	12 minutes, 26 specimens	7.5 minutes, 35 specimens
• Albumin, direct and total bilirubin, AST, ALT, ALP	14 minutes, 22 specimens	14 minutes, 19 specimens	<11 minutes, 23 specimens
• Typical time delay from ordering stat test to aspiration of sample	3 minutes	3 minutes	1–2 minutes
Frequency of QC required/Onboard SW capability to review QC	0.5–1 day/yes	0.5–1 day/yes	8 hours/yes
Onboard real-time QC/Support multiple QC lot Nos. per analyte	yes/no	yes/no	yes/yes
QC results transferred automatically to LIS	yes	yes	yes
Data-management capability/Instrument vendor supplies LIS interface	onboard/no	onboard/no	onboard/no
• LISs with which system interfaces in active user sites	—	—	Antek, Fletcher Flora, Meditech, Orchard, Schuyler House, Sunquest, Technidata
Bidirectional interface capability	yes	yes	yes
LIS interface operates simultaneously with running assays	broadcast download and host query	broadcast download and host query	yes
Uses LOINC to transmit orders and results	no	no	no
• How labs get LOINC codes for reagent kits	—	—	—
Lab can control analyzer remotely	yes	yes	no
Modem servicing available/System can diagnose own malfunctions	no/yes	no/yes	yes/yes
On-site time of service engineer/Onboard error codes for troubleshooting	24 hours/yes	24 hours/yes	<24 hours/yes
• Mean time between failures/To repair failures	10–12 months/1 hour	12–14 months/1 hour	—/ <24 hours
Onboard maintenance records/Maintenance training demo module	yes (includes audit trail)/yes	yes (includes audit trail)/yes	yes/yes
Training provided with purchase/Advanced operator training	3 days on site/yes	3 days on site/yes	4 days at corporate office in California/yes
Annual service contract cost (24 h/7 d)	\$4,200 (M-F, 9 AM–5 PM)	\$3,500 (M-F, 9 AM–5 PM)	—
Distinguishing features (supplied by company)	intuitive software; touchscreen interface guides operator through daily workflow, including onboard checklists that track start and end of daily tasks; combined onboard PSID, host-query LIS, and programmable result checks improve walkaway and reduce errors; liquid-stable, ready-to-use, and packaged to fit benchtop laboratory needs	intuitive software; touchscreen interface guides operator through daily workflow, including onboard checklists that track start and end of daily tasks; combined onboard PSID, host-query LIS, and programmable result checks improve walkaway and reduce errors; liquid-stable, ready-to-use, and packaged to fit benchtop laboratory needs	benchtop design runs more than 53 assays with room for 55 onboard tests; user-friendly, color-coded touchscreen validation station; high throughput (420 tests per hour); clot level and crash protection; auto rerun, autocalibration, autodilution; runs three reagents on a single assay; most reagents in plug-and-play cassettes

Note: a dash in lieu of an answer means company did not answer question or question is not applicable

Chemistry analyzers (for low-volume laboratories)

Part 5 of 10	Medica Corp. Charlene Soley csoley@medicacorp.com 5 Oak Park Drive, Bedford, MA 01730 781-275-7425 www.medicacorp.com	MedTest DX Randy Rusz rrusz@medtestdx.com 510 Furnace Dock Road, Cortlandt Manor, NY 10567 866.540.2715 www.medtestdx.com
Name of instrument/First year sold in U.S./List price No. of units in clinical use in U.S./Outside U.S. Country where designed/Manufactured/Reagents manufactured Operational type/Reagent type	Easy RA/2009/— 36/70 U.S./U.S./U.S. batch, random access, discrete, continuous random access/self-contained multi-use cartridges-packages-slides	Poly-Chem/2002/\$58,500 153/— Japan/Japan/U.S. batch, random access/open reagent system
Sample handling system/Model type	two sample rings (up to 48 samples)/benchtop	rack/benchtop
Dimensions in inches (H × W × D)/Instrument footprint	15 × 40 × 26/7.2 square feet	22 × 30 × 24/—
Tests available on instrument in U.S.	albumin, alk phos, alanine aminotransferase (ALT, SGPT), aspartate aminotransferase (AST, SGOT), calcium, chloride, cholesterol, CK, creatinine (serum & urine), GGT, glucose-trinder, HDL cholesterol, LDH, lithium, potassium, sodium, total protein, microalbumin, many more	albumin, ALK, ALT, amylase, apolipoprotein A1, apolipoprotein B, ASO, AST, C3, C4, calcium, full range CRP, cholesterol, CO2, creatinine, CRP, direct bilirubin, direct LDL, ferritin, fructosamine, gamma GT, glucose, HbA1c, HDL cholesterol, IGA, IGG, more
Research-use-only assays/Tests in development	—/HbA1c, CK-MB, lipase, hsCRP, UIBC, TIBC, drugs of abuse	APOA11, APOE, APOC11, APOC111/—
Analytes for which user-defined methods have been implemented	creatinine (jaffe)	glutamine, glutamate, lactate, ammonia
Methods supported/Immunoassay methods	photometry, potentiometry, turbidimetric immunoassay, enzymatic immunoassay	photometry, RISE
No. of direct ion selective electrode channels	4	3
• Must load separate reagent pack for each specimen	no	no
• Separate reagent pack for each test run	no	no
No. of different measured assays onboard simultaneously	28	43
• No. of different assays programmed and calibrated at once	140	43
• No. of user-definable (open) channels/No. active simultaneously	6/6	60/60
No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set	28/80–250	40/200
• Shortest/Median onboard reagent stability/Refrigerated onboard	168 hours/30 days/yes	4 hours/28 days/yes (8°C)
• Multiple reagent configurations supported	yes	yes
Reagent container placed directly on system for use	yes	yes
Instrument has same capabilities when third-party reagent used	—	no
Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	36/24/28	18 to first result/40/1,000
System is liquid chemistry, dry chemistry, or reconstituted onboard	liquid	liquid
• Uses disposable cuvettes/Maximum No. stored	yes/72	no/—
• Uses washable cuvettes/Replacement frequency	no/—	yes/50,000 tests
Minimum sample volume aspirated precisely at one time	2 µL	2 µL
System supplied with UPS (backup power)/Requires floor drain	no/no	yes/yes
Requires dedicated water system/Water consumption in L per hour	no/—	yes/7
Noise generated in decibels	minimal	60
Dedicated pediatric sample cup/Dead volume	no/—	yes/—
Primary tube sampling/Pierces caps on primary tubes	yes/no	yes/no
Sample bar-code reading capability/Autodiscrimination	yes	on sample transport, shortly before sample is aspirated (2 of 5 interleaved, UPC, Codabar, codes 39 and 128)/no
• Reagent bar-code reading capability	no, uses RFID	yes
Onboard test auto inventory (determines volume in container)	yes	yes
• Measures No. of tests remaining/Short sample detection/Clot detection	yes/yes/no	yes/yes/no
• Automatic detection of adequate reagent for aspiration and analysis	yes	yes
• Hemolysis/Turbidity detection-quantitation	no/no	no/no
Dilution of patient samples onboard	yes	yes
Automatic rerun capability	no	yes
• Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results	yes/no	yes/yes
Autocalibration or autocalibration alert	yes	no
• Calibrants stored onboard/Multipoint calibration supported	no/yes	no/yes
Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/Drugs of abuse	8 hours/30 days/—/—	daily/7–14 days/—/—
Automatic shutdown/Startup programmable	no/no	no/yes
Stat time to completion of all analytes/throughput per hour for:		
• Sodium, potassium, chloride, TCO2	3 minutes, 200 specimens	2 minutes, 450 specimens
• Sodium, potassium, chloride, TCO2, glucose, urea, creatinine	8 minutes, 100 specimens	10 minutes, 180 specimens
• Albumin, direct and total bilirubin, AST, ALT, ALP	9 minutes, —	11 minutes, 180 specimens
• Typical time delay from ordering stat test to aspiration of sample	<1 minute	—
Frequency of QC required/Onboard SW capability to review QC	CLIA minimum/yes	per shift-daily/yes
Onboard real-time QC/Support multiple QC lot Nos. per analyte	no/yes	yes/no
QC results transferred automatically to LIS	yes	yes
Data-management capability/Instrument vendor supplies LIS interface	onboard/yes	onboard/no
• LISs with which system interfaces in active user sites	Orchard, Antek, J&S, Fletcher Flora	LabDAQ, Data Innovations, Soft Computer, Misys
Bidirectional interface capability	yes	broadcast download and host query
LIS interface operates simultaneously with running assays	yes	yes
Uses LOINC to transmit orders and results	no	no
• How labs get LOINC codes for reagent kits	—	—
Lab can control analyzer remotely	no	no
Modem servicing available/System can diagnose own malfunctions	no/yes	no/no
On-site time of service engineer/Onboard error codes for troubleshooting	<24 hours/yes	24 hours/yes
• Mean time between failures/To repair failures	1 year/—	—
Onboard maintenance records/Maintenance training demo module	no/no	no/no
Training provided with purchase/Advanced operator training	yes/—	3 days on site, 3 days at vendor office/yes
Annual service contract cost (24 h/7 d)	varies	varies
Distinguishing features (supplied by company)	simplified user interface accessed through a touchscreen display; RFID-tagged reagents allow for reading and writing capability; all reagent parameters programmed on the wedge, no data entry; easy-to-replace components all located in a slide-out drawer; comprehensive inventories of all system components	small benchtop analyzer for physician office laboratory, as primary system in small lab, or back-up system in large lab; onboard reusable cuvettes provide cost savings on disposables; large reagent menu

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Chemistry analyzers (for low-volume laboratories)

Part 6 of 10	MedTest DX Randy Ruzs rruz@medtestdx.com 510 Furnace Dock Road, Cortlandt Manor, NY 10567 866-540-2715 www.medtestdx.com	Nova Biomedical Corp. info@novabiomedical.com 200 Prospect St., Waltham, MA 02454-9141 800-458-5813 www.novabiomedical.com	Nova Biomedical Corp. info@novabiomedical.com 200 Prospect St., Waltham, MA 02454-9141 800-458-5813 www.novabiomedical.com
Name of instrument/First year sold in U.S./List price No. of units in clinical use in U.S./Outside U.S. Country where designed/Manufactured/Reagents manufactured Operational type/Reagent type	SPOTCHEM EZ/2006/\$12,500 95/— Japan/Japan/U.S. discrete/single-use strips	Stat Profile pHox Ultra/2011/— —/— U.S./U.S./U.S. discrete/self-contained multi-use cartridges	Stat Profile pHox series/1998/— —/— U.S./U.S./U.S. discrete/self-contained multi-use cartridges-packages-slides
Sample handling system/Model type	tray/benchtop	sample automatically drawn from syringe, capillary, or open tube/benchtop	sample automatically drawn from syringe, capillary, or open tube/benchtop
Dimensions in inches (H × W × D)/Instrument footprint	6.5 × 13.5 × 8/—	17.2 × 17.3 × 22.3/2.7 square feet	15 × 15 × 18/1.9 square feet
Tests available on instrument in U.S.	albumin, ALT, amylase, AST, ALP, BUN, calcium, CPK, creatinine, GGT, LDH, magnesium, phosphorous, total bilirubin, total protein, uric acid, panel 1 (BUN, glu, cre, cal, alb), panel 2 (ALP, T-BIL, T-ALT, T-protein, AST), lipid panel (chol, trig, HDL, CLDL)	pH, PCO2, PO2, SO2%, hematocrit, hemoglobin, sodium, potassium, chloride, ionized calcium, ionized Mg, glucose, BUN, creatinine, lactate, bilirubin, deoxyhemoglobin, oxyhemoglobin, methemoglobin, carboxyhemoglobin	pH, PCO2, PO2, SO2%, hematocrit, hemoglobin, sodium, potassium, chloride, ionized calcium, glucose, lactate
Research-use-only assays/Tests in development	—/LDL	—	—
Analytes for which user-defined methods have been implemented	—	—	—
Methods supported/Immunoassay methods	optical measurement of reflection intensity of reagent color reaction	potentiometry (ISE), optical, reflectance/—	potentiometry (ISE), optical, reflectance/—
No. of direct ion selective electrode channels	—	12	5
• Must load separate reagent pack for each specimen	yes	no	no
• Separate reagent pack for each test run	yes	no	no
No. of different measured assays onboard simultaneously	9	20	11
• No. of different assays programmed and calibrated at once	card calibration, 21	20	11
• No. of user-definable (open) channels/No. active simultaneously	—	0/—	0/—
No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set	—	20/200–500 samples (2,600–6,500 tests), depending on lab	11/varies by analyzer and laboratory use pattern
• Shortest/Median onboard reagent stability/Refrigerated onboard	—/—/no	45 days/45 days/no	45 days/45 days/no
• Multiple reagent configurations supported	no	—	—
Reagent container placed directly on system for use	yes	yes	yes
Instrument has same capabilities when third-party reagent used	no	—	—
Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	up to 15/1/up to 9	—	—
System is liquid chemistry, dry chemistry, or reconstituted onboard	dry	ISE	ISE
• Uses disposable cuvettes/Maximum No. stored	no/—	no/—	no/—
• Uses washable cuvettes/Replacement frequency	no/—	no/—	no/—
Minimum sample volume aspirated precisely at one time	5 µL	60 µL	45 µL
System supplied with UPS (backup power)/Requires floor drain	no/no	no (optional)/no	no (optional)/no
Requires dedicated water system/Water consumption in L per hour	no/—	no/—	no/—
Noise generated in decibels	—	minimal	minimal
Dedicated pediatric sample cup/Dead volume	no/—	no/—	no/—
Primary tube sampling/Pierces caps on primary tubes	no/no	yes/no	yes/no
Sample bar-code reading capability/Autodiscrimination	by handheld scanner as tubes are loaded onto instrument (2 of 5 interleaved, UPC, Codabar, codes 39 and 128)/yes	yes (optional), by handheld scanner as tubes are loaded onto instrument (2 of 5 interleaved, UPC, Codabar, codes 39 and 128)/yes	yes, by handheld scanner as tubes are loaded onto instrument (2 of 5 interleaved, UPC, Codabar, codes 39 and 128)/yes
• Reagent bar-code reading capability	yes	yes	yes
Onboard test auto inventory (determines volume in container)	no	yes	yes
• Measures No. of tests remaining/Short sample detection/Clot detection	no/yes/no	yes/yes/yes	yes/yes/yes
• Automatic detection of adequate reagent for aspiration and analysis	no	yes	yes
• Hemolysis/Turbidity detection-quantitation	no/no	yes (on co-oximeter module)/yes (on co-oximeter module)	no/no
Dilution of patient samples onboard	no	yes (on co-oximeter module)	no
Automatic rerun capability	—	no	no
• Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results	no/no	no/no	no/no
Autocalibration or autocalibration alert	no	yes	yes
• Calibrants stored onboard/Multipoint calibration supported	no/no	yes/yes	yes/yes
Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/Drugs of abuse	—/per box/—/—	30–120 minutes/30–120 minutes/—/—	30–120 minutes/30–120 minutes/—/—
Automatic shutdown/Startup programmable	no/no	yes/yes	yes/yes
Stat time to completion of all analytes/throughput per hour for:	—	50 seconds, 26–36, depending on use mode	50 seconds, 44 specimens
• Sodium, potassium, chloride, TCO2	—	123 seconds, 21–24, depending on use mode	—
• Sodium, potassium, chloride, TCO2, glucose, urea, creatinine	9 minutes, 48 samples per hour	—	—
• Albumin, direct and total bilirubin, AST, ALT, ALP	9 minutes, 48 samples per hour	—	—
• Typical time delay from ordering stat test to aspiration of sample	—	<2 seconds	<2 seconds
Frequency of QC required/Onboard SW capability to review QC	daily/no	8 hours/yes	8 hours (CLIA)/yes
Onboard real-time QC/Support multiple QC lot Nos. per analyte	no/no	yes/yes	yes/yes
QC results transferred automatically to LIS	no	yes	yes
Data-management capability/Instrument vendor supplies LIS interface	onboard/no	onboard/no	no/no
• LISs with which system interfaces in active user sites	—	most LIS vendors	virtually all
Bidirectional interface capability	—	yes	yes (broadcast download and host query)
LIS interface operates simultaneously with running assays	yes	yes	yes
Uses LOINC to transmit orders and results	no	no	no
• How labs get LOINC codes for reagent kits	—	—	—
Lab can control analyzer remotely	no	yes	yes
Modem servicing available/System can diagnose own malfunctions	no/no	yes/yes	yes/yes
On-site time of service engineer/Onboard error codes for troubleshooting	depot service/yes	<8 business hours/yes	<8 business hours/yes
• Mean time between failures/To repair failures	—/—	—	—
Onboard maintenance records/Maintenance training demo module	no/no	yes (includes audit trail of who replaced parts)/yes	yes/yes
Training provided with purchase/Advanced operator training	1 day on site/no	yes/yes	yes/yes
Annual service contract cost (24 h/7 d)	—	varies	—
Distinguishing features (supplied by company)	small analyzer for stat labs, small POLs, ERs, and imaging centers; analyzer and reagent test strips are CLIA-waived; dry chemistry strips, effective stability, and shelf life; single test strips and panel strips available; customizable testing	comprehensive 20-test critical care profile, including ionized Mg, BUN, and creatinine; color touchscreen; integrated co-oximeter; open software architecture; onboard data management; automated onboard quality control; sealed waste system; auto-monitoring of QC and reagent packs; tankless gas calibration; automated maintenance	onboard quality control; liquid calibration eliminates gas tanks; remote control; remote review; space-saving design

Note: a dash in lieu of an answer means company did not answer question or question is not applicable

Chemistry analyzers (for low-volume laboratories)

Part 7 of 10	Nova Biomedical Corp. info@novabiomedical.com 200 Prospect St., Waltham, MA 02454-9141 800-458-5813 www.novabiomedical.com	Ortho-Clinical Diagnostics Sales Support 1001 U.S. Highway 202, Raritan, NJ 08869 800-828-6316 www.orthoclinical.com	Randox Laboratories Graeme McNeill graeme.mcneill@randox.com 515 Industrial Blvd., Kearneysville, WV 25430 304-728-2890 www.randox.com
Name of instrument/First year sold in U.S./List price	Nova 16/1995/—	Vitros DT 60 II Chemistry System (DT 60 II, DTE, DTSC)/1993/—	Rx Daytona/2005/—
No. of units in clinical use in U.S./Outside U.S.	—	15,000 units worldwide	>1,000 units worldwide
Country where designed/Manufactured/Reagents manufactured	U.S./U.S./U.S.	U.S./U.S./U.S.	Japan/Japan/U.K.
Operational type/Reagent type	batch, random access/self-contained multiuse cartridges	batch, random access, discrete/self-contained single-use cartridges-packages-slides	random access/self-contained multi-use cartridges-packages-slides
Sample handling system/Model type	40-position tray, stat sampling directly from sample container/benchtop	—/benchtop	ring/benchtop
Dimensions in inches (H × W × D)/Instrument footprint	20.5 × 19.2 × 20.7/2.75 square feet	6.75 × 18.75 × 13.75/1.8 square feet (DT 60 II)	30.3 × 24.4 × 19.7/3.338 square feet
Tests available on instrument in U.S.	sodium, potassium, chloride, total CO ₂ , glucose, BUN, creatinine, Hct	ammonia, cholesterol, HDL cholesterol, neonatal bilirubin, total protein, amylase, creatinine, lactate, phosphorus, triglycerides, BUN, glucose, Mg, total bilirubin, uric acid, albumin, AST, CK, GGT, lipase, ALP, calcium, iron, lithium, ALT, cholinesterase, Na ⁺ , K ⁺ , Cl ⁻ , CO ₂ , many others	acetic acid, acid phosphatase, albumin, aldolase, ALK PHOS, alpha 1 acid glycoprotein, alpha 1 antitrypsin, ALT, ammonia, amphetamines, amylase, amylase pancreatic, APO A-1, APO AII, APO B, APO CII, APO CIII, APO E, ASO, AST, B2 microglobulin, more
Research-use-only assays/Tests in development	—	—	acetic acid, Apo E, apo CIII, apo AII, alpha-1-anti-trypsin, alpha-1-acid glycoprotein, bile acids, butyryl cholinesterase, enzymatic chloride, glutamate, more/haptoglobin, oxycodone, propoxyphene, more
Analytes for which user-defined methods have been implemented	—	—	acetaminophen, salicylate, cyclosporin, alcohol, glycerol-3-phosphate, oxidase, phospholipids, maltose, T4, T-uptake, aldehyde, chromate, cyclosporin, more
Methods supported/Immunoassay methods	potentiometry/—	potentiometry, colorimetric, enzymatic/—	photometry, potentiometry (ISE), latex-enhanced immunoturbidimetry/—
No. of direct ion selective electrode channels	8	4	3
• Must load separate reagent pack for each specimen	no	yes	no
• Separate reagent pack for each test run	no	yes	no
No. of different measured assays onboard simultaneously	8	6, 1, 1 (DT60 II, DTE II, DTSC II)	43
• No. of different assays programmed and calibrated at once	8	>30	60
• No. of user-definable (open) channels/No. active simultaneously	0/—	none	10/10
No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set	8/(at 8,000 tests/month): 2,700	—	43/50–11,250
• Shortest/Median onboard reagent stability/Refrigerated onboard	21 days/21 days/no	—/—/no	8 hours/28 days/yes (8°–15°C)
• Multiple reagent configurations supported	—	no	yes
Reagent container placed directly on system for use	no, requires prehandling (remove clip from sealed bag and mix)	no	yes
Instrument has same capabilities when third-party reagent used	—	—	yes
Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	60 per tray/40 per tray/280 per tray	—	664/40/76,115
System is liquid chemistry, dry chemistry, or reconstituted onboard	—	dry	liquid
• Uses disposable cuvettes/Maximum No. stored	no/—	no/—	no/45
• Uses washable cuvettes/Replacement frequency	—	no/—	yes/minimum 5 years
Minimum sample volume aspirated precisely at one time	50 µL	10 µL	2 µL
System supplied with UPS (backup power)/Requires floor drain	no/no	no/no	no/no
Requires dedicated water system/Water consumption in L per hour	no/—	no/no	yes/7.5
Noise generated in decibels	minimal	—	60
Dedicated pediatric sample cup/Dead volume	—	—	yes/50 µL
Primary tube sampling/Pierces caps on primary tubes	yes/no	no/no	yes/no
Sample bar-code reading capability/Autodiscrimination	handheld scanner as tubes loaded onto instrument (2 of 5 interleaved, UPC, Codabar, codes 39 and 128)/yes	no/—	on sample transport, shortly before sample is aspirated (2 of 5 interleaved, UPC, Codabar, codes 39 and 128)/yes
• Reagent bar-code reading capability	—	yes	yes
Onboard test auto inventory (determines volume in container)	yes	—	yes
• Measures No. of tests remaining/Short sample detection/Clot detection	no/yes/yes	—	yes/yes/no
• Automatic detection of adequate reagent for aspiration and analysis	yes	—	yes
• Hemolysis/Turbidity detection-quantitation	no/no	no/no	yes/yes
Dilution of patient samples onboard	yes	no	yes
Automatic rerun capability	yes	no	yes
• Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results	no/no	no/no	yes/yes
Autocalibration or autocalibration alert	yes	no	yes
• Calibrants stored onboard/Multipoint calibration supported	yes/—	no/yes	yes/yes
Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/Drugs of abuse	2 hours/2 hours/—/—	reagent lot changes	daily/28 days/7 days/28 days
Automatic shutdown/Startup programmable	—	no/no	yes/yes
Stat time to completion of all analytes/throughput per hour for:			
• Sodium, potassium, chloride, TC02	52 seconds, 69 specimens	15 tests	13 minutes, 50 seconds, —
• Sodium, potassium, chloride, TC02, glucose, urea, creatinine	85 seconds, 45 specimens	75 tests	14 minutes, 50 seconds, —
• Albumin, direct and total bilirubin, AST, ALT, ALP	—	20 tests	14 minutes, 30 seconds, —
• Typical time delay from ordering stat test to aspiration of sample	9 seconds	none	30 seconds
Frequency of QC required/Onboard SW capability to review QC	CLIA minimum/yes	every 24 hours/no	shortest: daily; longest: customer discretion/yes
Onboard real-time QC/Support multiple QC lot Nos. per analyte	no/yes	no/no	yes/yes
QC results transferred automatically to LIS	yes	yes	yes
Data-management capability/Instrument vendor supplies LIS interface	onboard and optional add-on/no	—/no	onboard/no
• LISs with which system interfaces in active user sites	most LIS vendors including Cerner, Misys, McKesson, Soft, others	—	—
Bidirectional interface capability	yes	no	yes (host query)
LIS interface operates simultaneously with running assays	no	yes	yes
Uses LOINC to transmit orders and results	no	—	no
• How labs get LOINC codes for reagent kits	—	—	—
Lab can control analyzer remotely	yes	no	no
Modem servicing available/System can diagnose own malfunctions	no/yes	no/yes	yes/yes
On-site time of service engineer/Onboard error codes for troubleshooting	<8 business hours/yes	—/yes	within 24 hours/yes
• Mean time between failures/To repair failures	—	—	2 per 3 years/within 8 working hours
Onboard maintenance records/Maintenance training demo module	no/no	no/no	no/no
Training provided with purchase/Advanced operator training	yes/yes	yes/—	3 days on site/yes
Annual service contract cost (24 h/7 d)	—	—	varies on level
Distinguishing features (supplied by company)	whole blood analyzer for creatinine and TC02; can analyze whole blood, serum, plasma, urine, CSF, and dialysate	disposable tips eliminate sample carryover; random access testing (runs in any order, with no reagent preparation); individual packaged test slides eliminate waste and facilitate rapid analysis; dry-slide technology minimizes the effects of interferences	benchtop analyzer provides consolidation of testing in an established compact platform; dedicated multi-speed paddle mixers allow optimum mixing for each assay; direct ISE module prevents pseudohyponatremia

Note: a dash in lieu of an answer means company did not answer question or question is not applicable

Chemistry analyzers (for low-volume laboratories)

Part 8 of 10	Roche Diagnostics Corp. Adam Sterle adam.sterle@roche.com 9115 Hague Rd. Indianapolis, IN 46256 317-521-3099 www.mylabonline.com	Roche Diagnostics Corp. Adam Sterle adam.sterle@roche.com 9115 Hague Road Indianapolis, IN 46256 317-521-3099 www.mylabonline.com	SDI Biomed Robert Silverberg rs@sdiomed.com 23679 Calabasas Road, #241 Calabasas, CA, 91302 818-349-4464 www.sdiomed.com
Name of instrument/First year sold in U.S./List price No. of units in clinical use in U.S./Outside U.S. Country where designed/Manufactured/Reagents manufactured Operational type/Reagent type	cobas c311/2009/\$125,000 >100/>750 Japan/Japan/Germany continuous random access/self-contained multi-use cassettes	COBAS INTEGRA 400 Plus/1999/\$145,000 550/>2,000 Switzerland/Switzerland/U.S. and Germany continuous random access/self-contained multi-use cassettes	SDI CA 480 Clinical Chemistry System/2004/\$65,000 >50/>600 Europe/Europe/U.S. random access/self-contained single-use cartridges/packages-slides
Sample handling system/Model type Dimensions in inches (H × W × D)/Instrument footprint	sample rotor/floor-standing 50 × 52 × 34/8.5 square feet	rack/benchtop 28.5 × 53 × 26/9.6 square feet	wheel, with 4 independent segments/benchtop 40.5 × 25.4 × 17.7/7.2 square feet
Tests available on instrument in U.S.	>90 tests available for anemia, diabetes, cardiac markers, TDM, DAT, general chemistries, ISE, and D-dimer	>100 tests available for anemia, diabetes, cardiac markers, TDM, DAT, general chemistries, ISE, thyroid function and D-dimer	albumin, alkaline phosphatase, ALT, amylase, AST, CO ₂ , direct bilirubin, total bilirubin, calcium, cholesterol, CK, creatinine, Gamma-GT, glucose-HK, D-HDL, iron, phosphorus, LDH-L, magnesium, total protein, triglycerides, urea nitrogen, uric acid, more —/drugs of abuse
Research-use-only assays/Tests in development	DAT oral fluids, LSD, microalbumin, syphilis and lidocaine	—	—
Analytes for which user-defined methods have been implemented	—	—	none
Methods supported/Immunoassay methods	photometry, potentiometry	photometry, potentiometry, fluorescence polarization/turbidimetric, latex particle enhanced	photometry, potentiometry/selected methodologies
No. of direct ion selective electrode channels • Must load separate reagent pack for each specimen	no no	4 no	3 no
• Separate reagent pack for each test run No. of different measured assays onboard simultaneously • No. of different assays programmed and calibrated at once • No. of user-definable (open) channels/No. active simultaneously No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set • Shortest/Median onboard reagent stability/Refrigerated onboard • Multiple reagent configurations supported Reagent container placed directly on system for use Instrument has same capabilities when third-party reagent used Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	— 45 >130 10/10 42 cassettes plus 3 ISE/75-800 tests each, depending on reagent 120 hours/84 days/yes (5°–15°C) yes yes yes 173/108/45	no 40 up to 999 10/10 36 cassettes plus 4 ISE/75-800 tests each, depending on reagent 2 weeks/8–12 weeks/yes (12°C) yes yes yes 176/90/40	no 33 33 0/— 30/150 per container 14 days/30 days/yes (14°C) yes yes yes 165/40/33
System is liquid chemistry, dry chemistry, or reconstituted onboard • Uses disposable cuvettes/Maximum No. stored • Uses washable cuvettes/Replacement frequency Minimum sample volume aspirated precisely at one time System supplied with UPS (backup power)/Requires floor drain Requires dedicated water system/Water consumption in L per hour Noise generated in decibels Dedicated pediatric sample cup/Dead volume Primary tube sampling/Pierces caps on primary tubes Sample bar-code reading capability/Autodiscrimination	liquid no/66 yes/monthly 1 µL yes/yes yes/12 <65 yes/50 µL yes/no yes (2 of 5 interleaved, Codabar, codes 39 and 128)/yes	liquid yes/1,000 no/— 2 µL yes/no no/2 maximum <61 yes/50 µL yes/no yes (2 of 5 interleaved, Codabar, codes 39 and 128)/yes	liquid no yes/analyzer uses permanent quartz cuvettes 3 µL yes/no no/1 — no/— yes/no yes/yes
• Reagent bar-code reading capability Onboard test auto inventory (determines volume in container) • Measures No. of tests remaining/Short sample detection/ Clot detection • Automatic detection of adequate reagent for aspiration and analysis • Hemolysis/Turbidity detection-quantitation Dilution of patient samples onboard Automatic rerun capability • Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results Autocalibration or autocalibration alert • Calibrants stored onboard/Multipoint calibration supported Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/ Drugs of abuse Automatic shutdown/Startup programmable	yes yes yes/yes/yes yes yes/yes yes yes yes/yes yes no/yes 24 hours/lot/lot/lot yes/yes	yes yes yes/yes/yes yes yes/yes yes yes/yes yes yes/yes 5 hours/lot/lot plus 20–26 weeks/lot plus 3–12 weeks yes/yes	yes yes yes/yes/no yes no/no yes yes yes/no yes yes/yes 30 minutes/once per week/once per week/once per week no/no
Stat time to completion of all analytes/throughput per hour for: • Sodium, potassium, chloride, TC02 • Sodium, potassium, chloride, TC02, glucose, urea, creatinine • Albumin, direct and total bilirubin, AST, ALT, ALP • Typical time delay from ordering stat test to aspiration of sample Frequency of QC required/Onboard SW capability to review QC Onboard real-time QC/Support multiple QC lot Nos. per analyte QC results transferred automatically to LIS	5 minutes, 150 specimens 8 minutes, 38 specimens 11 minutes, 22 specimens <1 minute daily/yes yes/yes yes	5 minutes 8 minutes 11 minutes <1 minute daily/yes yes/yes yes	1.5 minutes, 60 specimens 6 minutes, 48 seconds, 60 specimens 7 minutes, 12 seconds, 50 specimens 3 minutes 8 hours/yes yes/yes yes
Data-management capability/Instrument vendor supplies LIS interface • LISs with which system interfaces in active user sites	onboard/no all major LIS providers	onboard/no all major LIS vendors	onboard/— SchuyLab, LabDaq, Fletcher Flora, Medcom
Bidirectional interface capability LIS interface operates simultaneously with running assays Uses LOINC to transmit orders and results • How labs get LOINC codes for reagent kits	yes (broadcast download and host query) yes yes Web site (MyLab Online)	yes (broadcast download and host query) yes — —	yes yes no —
Lab can control analyzer remotely	no	no	no
Modem servicing available/System can diagnose own malfunctions	yes/yes	yes/yes	yes/yes
On-site time of service engineer/Onboard error codes for troubleshooting • Mean time between failures/To repair failures Onboard maintenance records/Maintenance training demo module Training provided with purchase/Advanced operator training Annual service contract cost (24 h/7 d)	<8 hours/yes 190 days/3 hours yes (includes audit trail of who replaced parts)/no 2 days on site; 5 days at vendor offices/yes varies	<8 hours/yes 130 days/<3 hours yes (includes audit trail of who replaced parts)/yes 5 days at vendor offices/yes varies	yes, guaranteed within 24 hours/yes 10,000 hours/2 hours yes/no 4 days on site or 4 days at vendor offices/yes \$7,500
Distinguishing features (supplied by company)	convenience and stability of cobas c pack reagents, standardized operator interface and reagents with other cobas chemistry platforms, Hitachi reliability	unique reagent cassette eliminates reagent preparation; menu consolidates testing, including direct LDL, whole blood, HbA1c, and lithium	permanent cuvettes, onboard jet wash/dry system, six minutes to first result, notebook-like operator interface, small footprint

Note: a dash in lieu of an answer means company did not answer question or question is not applicable

Chemistry analyzers (for low-volume laboratories)

Part 9 of 10	Siemens Healthcare Diagnostics Jason Ong jason.f.ong@siemens.com 1717 Deerfield Road Deerfield, IL 60015 800-242-3233 www.usa.siemens.com/diagnostics	Siemens Healthcare Diagnostics Jason Ong jason.f.ong@siemens.com 1717 Deerfield Road Deerfield, IL 60015 800-242-3233 www.usa.siemens.com/diagnostics	Vital Diagnostics Dianna Poissant USsales@vitaldiagnostics.com 27 Wellington Road Lincoln, RI 02865 800-345-2822 www.vitaldiagnostics.com
Name of instrument/First year sold in U.S./List price	Dimension Xpand Plus Integrated Chemistry System/2004/—	Dimension EXL 200/2011/—	Envoy 500 Chemistry Analyzer/2005/—
No. of units in clinical use in U.S./Outside U.S. Country where designed/Manufactured/Reagents manufactured Operational type/Reagent type	— U.S./U.S./U.S. batch, random access, continuous random access/ self-contained single-use and multi-use cartridges racks/floor-standing	— U.S./U.S./U.S. batch, random access, continuous random access/ self-contained multi-use cartridges segmented sample wheel	270/— Italy/Italy/Australia random access/self-contained multi-use cartridges- packages-slides rotor/benchtop
Sample handling system/Model type Dimensions in inches (H × W × D)/Instrument footprint	45 × 51 × 31 (without monitor)/10.6 square feet	56 × 49 × 41/16 square feet	27 × 40 × 23/6 square feet
Tests available on instrument in U.S.	thyronine uptake, total T4/thyroxine, triiodothyronine, cardiac troponin I, ferritin, free PSA, free T4/thyroxine, human chorionic gonadotropin hormone, mass CK-MB, myoglobin, NT-pro BNP, thyroid stimulating hormone, total PSA CardioPhase hsCRP, complement C3, more	>90	general chemistry, albumin, bilirubin, direct, HbA1c, bilirubin, total, calcium, creatinine, glucose, iron, total, magnesium, phosphorus, protein, total, urea nitrogen (BUN), uric acid, enzyme, alanine aminoTransferase (ALT), alkaline phosphatase, more
Research-use-only assays/Tests in development	—/mycophenolic acid	—/LOCI free T3, LOCI B12, LOCI folate, mycophenolic acid	—
Analytes for which user-defined methods have been implemented	—	—	CRP wide range, hsCRP, digoxin, ferritin, fructosamine, lipase, phenobarbital, UIBC, glycoMark, cystatin C, valproic acid, carbamazepine, IgA, IgG, IgM, ethanol
Methods supported/Immunoassay methods	photometry, potentiometry (ISE)/colorimetric, immunoturbidimetric, potentiometric, EMIT (homogeneous IA), ACMA (heterogeneous IA)	photometry, potentiometry, LOCI, ACMA, EMIT, PETINIA, turbidimetric	photometry, potentiometry, turbidimetric
No. of direct ion selective electrode channels • Must load separate reagent pack for each specimen	3 no	3 no	4 no
• Separate reagent pack for each test run No. of different measured assays onboard simultaneously • No. of different assays programmed and calibrated at once • No. of user-definable (open) channels/No. active simultaneously No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set	no 47 >90 10/10 47/72–1,440	no 47 47 10/47 47/15–240	no 40 40 500/40 40/150
• Shortest/Median onboard reagent stability/Refrigerated onboard • Multiple reagent configurations supported Reagent container placed directly on system for use Instrument has same capabilities when third-party reagent used Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	72 hours/30 days/yes (2°–8°C) yes yes yes can be hours/60/>1,000	24 hours/30 days/yes (2°–8°C) yes yes yes can be hours/60/<2,000	80 hours/21 days/yes (12°–15°C) yes yes no 240/52/> 1,000
System is liquid chemistry, dry chemistry, or reconstituted onboard • Uses disposable cuvettes/Maximum No. stored • Uses washable cuvettes/Replacement frequency Minimum sample volume aspirated precisely at one time System supplied with UPS (backup power)/Requires floor drain Requires dedicated water system/Water consumption in L per hour Noise generated in decibels Dedicated pediatric sample cup/Dead volume Primary tube sampling/Pierces caps on primary tubes Sample bar-code reading capability/Autodiscrimination	liquid, reconstitutes onboard yes/12,000 no/— 2 µL yes/no yes/up to 2 maximum <70 no/20 µL yes/no on sample transport, shortly before sample is aspirated (2 of 5 interleaved, Codabar, codes 39 and 128)/yes	liquid, reconstitutes onboard yes/12,000 no/— 2 µL yes/no yes/5 <75 yes/30 µL yes/no shortly after tubes are loaded onto instruments (2 of 5 interleaved, Codabar, codes 39 and 128)/—	liquid no yes/never 1 µL yes/no no/2 >60 no/— yes/no sample loaded on the analyzer by internal bar-code scanner (2 of 5 interleaved, UPC, Codabar, codes 39 and 128)/no
• Reagent bar-code reading capability Onboard test auto inventory (determines volume in container) • Measures No. of tests remaining/Short sample detection/ Clot detection	yes yes yes/yes/no	yes yes yes/yes/yes	yes yes yes/yes/no
• Automatic detection of adequate reagent for aspiration and analysis • Hemolysis/Turbidity detection-quantitation Dilution of patient samples onboard Automatic rerun capability • Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results	yes yes/yes yes yes yes/no	yes yes/yes yes yes yes/no	yes no/no yes yes yes/yes
Autocalibration or autocalibration alert • Calibrants stored onboard/Multipoint calibration supported Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/ Drugs of abuse	yes yes/yes every 2 hours, autocalibrate/—/60–90 days/30 days	yes yes/yes —/90 days/30 days/30 days	yes no/yes 4 hours/7–31 days/—/—
Automatic shutdown/Startup programmable	no/no	no/no	yes/yes
Stat time to completion of all analytes/throughput per hour for: • Sodium, potassium, chloride, TC02 • Sodium, potassium, chloride, TC02, glucose, urea, creatinine • Albumin, direct and total bilirubin, AST, ALT, ALP • Typical time delay from ordering stat test to aspiration of sample Frequency of QC required/Onboard SW capability to review QC Onboard real-time QC/Support multiple QC lot Nos. per analyte QC results transferred automatically to LIS	2 minutes, 62 specimens 4 minutes, 60 specimens 8 minutes, 40 specimens 60 second steady state, 2 minutes from standby daily/yes yes/yes yes	— — — — 24 hours/yes yes/yes yes	3 minutes, 45 seconds, 37 specimens 6 minutes, 10 seconds, 45 specimens 9 minutes, 26 seconds, 26 specimens >1 minute 4–24 hours yes/yes yes
Data-management capability/Instrument vendor supplies LIS interface • LISs with which system interfaces in active user sites	optional add-on/yes (additional cost) interfaces available for all major LIS vendors	onboard (EasyLink data management system optional add-on)/yes (additional cost) —	no/no Antek, Fletcher Flora, Orchard, Skyler Lab, Data Innovations, Sunquest broadcast download
Bidirectional interface capability LIS interface operates simultaneously with running assays Uses LOINC to transmit orders and results • How labs get LOINC codes for reagent kits	yes (broadcast download and host query) yes no —	yes (broadcast download and host query) yes yes —	yes no no e-mail inquiry
Lab can control analyzer remotely	no	—	no
Modem servicing available/System can diagnose own malfunctions	yes/yes	yes/yes	yes/yes
On-site time of service engineer/Onboard error codes for troubleshooting • Mean time between failures/To repair failures Onboard maintenance records/Maintenance training demo module Training provided with purchase/Advanced operator training Annual service contract cost (24 h/7 d)	2–8 hours/yes — no/no 5 days on site, 4 days at vendor offices/no multiple types	2–8 hours/— — — 3 days at vendor offices/yes —	within 24 hours/yes — yes/yes yes/yes \$8,995 (M-F, 8 am–8 pm)
Distinguishing features (supplied by company)	integrated chemistry, specialty, and immunoassay workstation; back-up system for other Dimension systems; niche testing platform for no pre-treat immuno-suppressive drug testing; no reagent preparation; minimal operator maintenance	integrates general chemistry with homogeneous LOCI and heterogeneous immunoassays onboard; allows a single platform for >95 percent of most requested tests; eliminates sample splitting between general chemistry tests and immunoassays; fully automated onboard ISD assays; QCC PowerPak onboard; reagent management system standard	C02 performed as an electrolyte; four-parameter onboard dry ISE; 570 tests per hour; reusable glass cuvettes; small footprint

Note: a dash in lieu of an answer means company did not answer question or question is not applicable

Chemistry analyzers

Part 10 of 10	Vital Diagnostics Dianna Poissant USsales@vitaldiagnostics.com 27 Wellington Road Lincoln, RI 02865 800-345-2822 www.vitaldiagnostics.com
Name of instrument/First year sold in U.S./List price	Eon 100 Automated Chemistry Analyzer/2011/—
No. of units in clinical use in U.S./Outside U.S. Country where designed/Manufactured/Reagents manufactured Operational type/Reagent type	21/15 Italy/Italy/Australia random access, continuous random access/self-contained multi-use cartridges-packages-slides ring/benchtop
Sample handling system/Model type Dimensions in inches (H × W × D)/Instrument footprint	ring/benchtop 30 × 29 × 25.5/10 square feet
Tests available on instrument in U.S.	general chemistry, albumin, bilirubin (direct), bilirubin (total), calcium, carbon dioxide, creatinine, glucose, iron (total), magnesium, phosphorus, protein (total), urea nitrogen (BUN), uric acid, direct LDL, triglycerides, direct HDL, cholesterol, alanine aminotransferase (ALT), alkaline phosphatase (ALP), amylase (AMY), aspartate transaminase (AST), creatine phosphokinase (CPK), more
Research-use-only assays/Tests in development	—/CRP wide range, CRP high sensitivity, hemoglobin A1c, microalbumin, UIBC
Analytes for which user-defined methods have been implemented	—
Methods supported/Immunoassay methods	photometry, potentiometry
No. of direct ion selective electrode channels • Must load separate reagent pack for each specimen	3 no
• Separate reagent pack for each test run	no
No. of different measured assays onboard simultaneously	28
• No. of different assays programmed and calibrated at once	28
• No. of user-definable (open) channels/No. active simultaneously	—
No. of different analytes for which system accommodates reagent containers onboard at once/Tests per container set	28/100
• Shortest/Median onboard reagent stability/Refrigerated onboard	168 hours/21 days/yes (12°–14°C below room temperature)
• Multiple reagent configurations supported	yes
Reagent container placed directly on system for use	yes
Instrument has same capabilities when third-party reagent used	no
Walkaway capacity in minutes/Based on No. of specimens/Based on No. of tests-assays	93/9/17
System is liquid chemistry, dry chemistry, or reconstituted onboard	liquid
• Uses disposable cuvettes/Maximum No. stored	no
• Uses washable cuvettes/Replacement frequency	yes/1 year
Minimum sample volume aspirated precisely at one time	1 µL
System supplied with UPS (backup power)/Requires floor drain	yes/no
Requires dedicated water system/Water consumption in L per hour	no/—
Noise generated in decibels	>60
Dedicated pediatric sample cup/Dead volume	no/—
Primary tube sampling/Pierces caps on primary tubes	yes/no
Sample bar-code reading capability/Autodiscrimination	yes, after loading samples and immediately prior to execution of run (2 of 5 interleaved, UPC, Codabar, codes 39 and 128)/no
• Reagent bar-code reading capability	yes
Onboard test auto inventory (determines volume in container)	yes
• Measures No. of tests remaining/Short sample detection/Clot detection	yes/yes/no
• Automatic detection of adequate reagent for aspiration and analysis	yes
• Hemolysis/Turbidity detection-quantitation	no/no
Dilution of patient samples onboard	yes
Automatic rerun capability	yes
• Sample volume can be reduced to rerun out-of-linear-range high results/Increased to rerun out-of-linear-range low results	yes/no
Autocalibration or autocalibration alert	yes
• Calibrants stored onboard/Multipoint calibration supported	no/yes
Typical calibration frequency for ISE/Metabolites/Therapeutic drugs/Drugs of abuse	8 hours/7–28 days/—/—
Automatic shutdown/Startup programmable	yes/yes
Stat time to completion of all analytes/throughput per hour for: • Sodium, potassium, chloride, TC02 • Sodium, potassium, chloride, TC02, glucose, urea, creatinine • Albumin, direct and total bilirubin, AST, ALT, ALP • Typical time delay from ordering stat test to aspiration of sample	35 seconds, 90 specimens 5 minutes, 21 seconds, 20 specimens 7 minutes, 18 specimens <1 minute
Frequency of QC required/Onboard SW capability to review QC	4–24 hours/yes
Onboard real-time QC/Support multiple QC lot Nos. per analyte	yes/no
QC results transferred automatically to LIS	yes
Data-management capability/Instrument vendor supplies LIS interface • LISs with which system interfaces in active user sites	onboard/no Antek's LabDAQ
Bidirectional interface capability	broadcast download and host query
LIS interface operates simultaneously with running assays	yes
Uses LOINC to transmit orders and results	no
• How labs get LOINC codes for reagent kits	e-mail inquiry
Lab can control analyzer remotely	no
Modem servicing available/System can diagnose own malfunctions	yes/yes
On-site time of service engineer/Onboard error codes for troubleshooting • Mean time between failures/To repair failures	<24 hours/yes —/ <4 hours
Onboard maintenance records/Maintenance training demo module	no/no
Training provided with purchase/Advanced operator training	yes/yes
Annual service contract cost (24 h/7 d)	via distributor
Distinguishing features (supplied by company)	long-use cuvettes eliminate waste; intuitive software; fast, accurate ISE's; small footprint; virtually maintenance free

Note: a dash in lieu of an answer means company did not answer question or question is not applicable