July 2001 CAP TODAY / 31

Part 1 of 10	Beckman Coulter Inc. 200 South Kraemer Blvd.	Beckman Coulter Inc. 200 South Kraemer Blvd.
	P.O. Box 8000	P.O. Box 8000
	Brea, CA 92822-8000 800-526-3821	Brea, CA 92822-8000 800-526-3821
See related comments, page 49	www.beckmancoulter.com	www.beckmancoulter.com
Name of instrument/first year sold in U.S.	Synchron CX4 Pro/2001	Synchron CX5 Pro/2001
List price No. units in clinical use in U.S./outside U.S.	\$162,400 —/—	\$193,500 —/—
Country where designed/manufactured/where reagents mftd. Operational type/reagent type	U.S./U.S. & Ireland continuous random access/open reagent system	U.S./U.S. & Ireland continuous random access/open reagent system
Sample handling system/model type Dimensions (H x W x D)/instrument footprint	sectors, centrifugable/floor-standing 69 x 27 x 30 in/5.6 sq ft	sectors, centrifugable/floor-standing 69 x 61 x 30 in/12.7 sq ft
No. of tests for which analyzer has FDA-cleared applications	96	100
Tests cleared but not clinically released	none	none
Tests not available in U.S. but submitted for 510(k) clearance	none	none
Tests not available in U.S. but available in other countries Research-use-only assays Tests in development	none none	none none
User-defined methods implemented for what analytes	UIBC, vancomycin, LDL direct	UIBC, vancomycin, LDL direct
Methods supported/immunoassay methods	photometry, potentiometry, turbidimetric/bidentate turbidimetric, direct turbidimetric, particle enhanced turbidimetric, enzyme immunoassay	photometry, potentiometry, turbidimetric/bidentate turbidimetric, direct turbidimetric, particle enhanced turbidimetric, enzyme immunoassay
No. of direct ion selective electrode channels No. of different measured assays onboard simultaneously	0 24	5 (indirect) 29
No. of different assays programmed, calibrated at once	50	50
No. of user-definable (open) channels/no. active simultaneously No. of different analytes for which system accommodates	96/24 24/4,800-30,000 (200-1,500 tests per container)	100/29 29/25–2,500
reag. containers onboard at once/tests per container set Shortest/median onboard reag. stability/refrigerated onboard	168 hr/30 d/yes (2–8°C)	168 hr/30 d/yes (2–8°C)
Multiple reag. configurations supported	yes	yes
Reag. container placed directly on system for use Instrument has same capabilities when 3rd-party reag. used	yes yes	yes yes
Walkaway capacity in minutes/specimens/tests-assays System is liquid or dry	400/63/1,512 liquid	400/63/1,827 liquid
Uses disposable cuvettes/max. no. stored	no/n/a	no/n/a
Uses washable cuvettes/replacement frequency Minimum sample volume aspirated precisely at one time	yes/permanent-2-yr warranty (80 stored on instrument) 3 μL	yes/permanent–2-yr warranty (80 stored on instrument) 3 μL
Supplied with UPS (backup power)/requires floor drain Requires dedicated water system/water consumption	yes/no yes/7 L per hr	yes/no yes/7 L per hr
Noise generated	70 decibels	70 decibels
Dedicated pediatric sample cup/dead volume Primary tube sampling/pierces caps on primary tubes	yes/40 μL yes/no	yes/40 µL yes/no
Sample bar-code reading capability	yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination	yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination
Reagent bar-code reading capability Bar code placement per NCCLS standard Auto2A	yes yes	yes yes
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection	yes yes/yes/yes	yes yes/yes
Automatic detection of adequate reag. for aspir. & analysis	yes	yes
Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability	yes/yes yes/no	yes/yes yes/no
Sample volume can be reduced/increased to rerun out-of-linear- range high/low results	yes/no	yes/no
Autocalibration or autocalibration alert	yes	yes
Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse	no/yes n/a/up to 90 d/60 d/14 d	no/yes 24 hr/up to 90 d/60 d/14 d
Automatic shutdown/startup programmable	none required	none required
Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TC02	n/a, n/a	52 sec, 75 specimens
Sodium, potassium, chloride, TCO2, glucose, urea, creatinine     Album., bili. direct & total, AST, ALT, ALP	n/a, n/a 10 min, 32 specimens	8 min, 75 specimens 10 min, 32 specimens
Typical time delay from ordering stat test to aspir. of sample How often QC required/onboard SW capability to review QC	45 sec	45 sec 24 hr/yes
Onboard real-time QC/support multiple QC lot nos. per analyte	24 hr/yes yes/yes	yes/yes
QC results transferred automatically to LIS	yes	yes
Data mgmt. capability/instrument vendor supplies LIS interface	onboard & optional add-on (SW mftr: Beckman Coulter DataLink/yes (addt'l cost)	onboard & optional add-on (SW mftr: Beckman Coulter DataLink)/yes (addt'l cost)
Interfaces up and running in active user sites with	Cerner, Sunquest, Meditech, Citation, MedLab, CHC, SMS, HBOC, Labquest, CCA, VA-Mumps, others	Cerner, Sunquest, MEDITECH, Citation, MedLab, CHC, SMS, HBOC, Labquest, CCA, VA-Mumps, others
Bidirectional interface capability	yes (broadcast download & host query)	yes (broadcast download & host query)
Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays	yes yes	yes yes
Uses LOINC to transmit orders & results	NOC.	NOC.
Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/	yes/yes/no	yes/yes/no
determine malfunctioning component		
On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures	metro: same day; rural: same or next day/yes —/—	metro: same day; rural: same or next day/yes —/—
Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module	daily: 5 min; weekly: 15 min; monthly: 20 min no/no	daily: 5 min; weekly: 15 min; monthly: 20 min no/no
Training provided with purchase/advanced oper. training avail.  Annual service contract cost (24 h/7 d)	1 d on-site, 5 d at vendor offices/no —	1 d on-site, 5 d at vendor offices/no —
Distinguishing features	serum indices; centrifugable sectors; clot detection; bar-coded calibrators & controls; host query; reagent load while running; ready-to-use liquid reagents; Peltier thermal ring; pulsed xenon light source; polychromatic correction; semipermanent glass cuvettes; DataLink Sample Manager	serum indices; centrifugable sectors; clot detection; bar-coded calibrators & controls; host query; reagent load while running; ready to-use liquid reagents; Peltier thermal ring; ISE system; pulsed xenor light source; polychromatic correction; semipermanent glass cuvettes; DataLink Sample Manager

Part 2 of 10	Beckman Coulter Inc.	Dade Behring Inc.
	200 South Kraemer Blvd. P.O. Box 8000	P.O. Box 6101 Newark, DE 19714-6101
	Brea, CA 92822-8000	302-631-0433
See related comments, page 49	800-526-3821 www.beckmancoulter.com	www.dadebehring.com
Name of instrument/first year sold in U.S. List price	Synchron CX9 Pro/2001 \$220,600	Dimension AR <sup>X</sup> Clinical Chemistry System/1999 \$179,000
No. units in clinical use in U.S./outside U.S.	—/—	35/25
Country where designed/manufactured/where reagents mftd.  Operational type/reagent type	U.S./U.S./U.S. & Ireland continuous random access/open reagent system	U.S./U.S.
орегацина туре/геадент туре	continuous random access/open reagent system	continuous random access/self-contained multiuse cartridges- packages-slides
Sample handling system/model type	sectors, centrifugable/floor-standing	sample segments/floor-standing
Dimensions (H x W x D)/instrument footprint	69 X 74 X 30 in/15.4 sq ft	_/_
No. of tests for which analyzer has FDA-cleared applications	100	67
Tests cleared but not clinically released	none	C <sub>3</sub> , C <sub>4</sub> , transferrin, IgG, IgA, IgM, digitoxin, non-pretreat iron
		binding capacity
Tests not available in U.S. but submitted for 510(k) clearance	none	none
Tests not available in U.S. but available in other countries	none	none
Research-use-only assays Tests in development	none none	none HbA1c, cyclosporin A
·		
User-defined methods implemented for what analytes	UIBC, vancomycin, LDL direct	none
Methods supported/immunoassay methods	photometry, potentiometry, turbidimetric/bidentate turbidimetric,	photometry, potentiometry/PETINIA
	direct turbidimetric, particle enhanced turbidimetric, enzyme immunoassay	
No. of direct ion selective electrode channels	5 (indirect)	4 indirect ISE methods
No. of different measured assays onboard simultaneously No. of different assays programmed, calibrated at once	33 59	48 75+
No. of user-definable (open) channels/no. active simultaneously	102/33	10/10
No. of different analytes for which system accommodates reag. containers onboard at once/tests per container set	33/25–2,500	48/10–480
Shortest/median onboard reag. stability/refrigerated onboard	168 hr/30 d/yes (2–8°C)	24 hr/5 d/yes
Multiple reag. configurations supported Reag. container placed directly on system for use	yes yes	no yes
Instrument has same capabilities when 3rd-party reag. used	yes	yes
Walkaway capacity in minutes/specimens/tests-assays	400/63/2,079	—/60/1,200
System is liquid or dry Uses disposable cuvettes/max. no. stored	liquid no/n/a	reconstitutes onboard yes/12,000
Uses washable cuvettes/replacement frequency	yes/permanent-2-yr warranty (80 stored on instrument)	no/n/a
Minimum sample volume aspirated precisely at one time Supplied with UPS (backup power)/requires floor drain	3 µL yes/yes	2 μL yes/yes
Requires dedicated water system/water consumption	yes/7 L per hr	yes/2 L per hr
Noise generated Dedicated pediatric sample cup/dead volume	70 decibels yes/40 μL	no
Primary tube sampling/pierces caps on primary tubes	yes/no	yes/no
Sample bar-code reading capability	yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination	yes, as sample is being aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination
	intern, obdabar, codes 55 & 125//autodiscrimination	120// datodisoriiiiilatioii
Reagent bar-code reading capability Bar code placement per NCCLS standard Auto2A	yes yes	yes yes
Bar code placement per NCCLS standard Auto2A	yes	yes
Bar code placement per NCCLS standard Auto2A  Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis	yes yes yes/yes/yes yes	yes yes/no/no yes
Bar code placement per NCCLS standard Auto2A  Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability	yes yes yes/yes/yes	yes yes/no/no
Dibution of patient samples onboard/automatic rerun capability  Sample volume can be reduced/increased to rerun out-of-linear-	yes  yes yes/yes/yes yes yes yes/yes	yes yes/no/no yes no/yes
Bar code placement per NCCLS standard Auto2A  Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability	yes  yes yes/yes/yes yes yes/yes yes/yes	yes yes/no/no yes no/yes yes/yes
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported	yes  yes/yes/yes yes/yes yes/yes yes/yes yes/no  yes no/yes	yes  yes yes/no/no yes no/yes yes/yes yes/yes yes no/yes
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse	yes  yes yes/yes yes yes/yes yes/yes yes/no  yes no/yes 24 hr/up to 90 d/up to 60 d/14 d	yes  yes yes/no/no yes no/yes yes/yes yes/yes yes yes yes 2 hr/3 mo/2 mo/2 mo
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable	yes  yes/yes/yes yes/yes yes/yes yes/yes yes/no  yes no/yes	yes  yes yes/no/no yes no/yes yes/yes yes/yes yes no/yes
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse	yes  yes yes/yes yes yes/yes yes/yes yes/no  yes no/yes 24 hr/up to 90 d/up to 60 d/14 d	yes  yes yes/no/no yes no/yes yes/yes yes/yes yes yes yes 2 hr/3 mo/2 mo/2 mo
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2 Sodium, potassium, chloride, TCO2, glucose, urea, creatinine	yes  yes yes/yes/yes yes yes/yes yes/yes yes/no  yes no/yes 24 hr/up to 90 d/up to 60 d/14 d none required  52 sec, 75 specimens 52 sec, 75 specimens	yes  yes yes/no/no yes no/yes yes/yes yes/yes  yes no/yes 2 hr/3 mo/2 mo/2 mo yes/yes  -, 240 specimens -, 788 specimens
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2	yes  yes yes/yes/yes yes yes/yes yes/yes yes/no  yes no/yes 24 hr/up to 90 d/up to 60 d/14 d none required	yes  yes yes/no/no yes no/yes yes/yes yes/yes  yes yes  yes no/yes 2 hr/3 mo/2 mo/2 mo yes/yes , 240 specimens
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2 Sodium, potassium, chloride, TCO2, glucose, urea, creatinine Album., bili. direct & total, AST, ALT, ALP Typical time delay from ordering stat test to aspir. of sample How often QC required/onboard SW capability to review QC	yes  yes yes/yes/yes yes yes/yes yes/yes yes/no  yes no/yes 24 hr/up to 90 d/up to 60 d/14 d none required  52 sec, 75 specimens 52 sec, 75 specimens 10 min, 32 specimens 45 sec 24 hr/yes	yes  yes yes/no/no yes no/yes yes/yes yes/yes  yes no/yes 2 hr/3 mo/2 mo/2 mo yes/yes  -, 240 specimens -, 788 specimens -, 300 specimens -, 300 specimens -60 sec in steady state, ~2 min from standby shortest interval: 8 hr; longest: 24 hr/yes
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2 Sodium, potassium, chloride, TCO2, glucose, urea, creatinine Album., bili. direct & total, AST, ALT, ALP Typical time delay from ordering stat test to aspir. of sample	yes  yes yes/yes/yes yes yes/yes yes/yes yes/no  yes no/yes 24 hr/up to 90 d/up to 60 d/14 d none required  52 sec, 75 specimens 52 sec, 75 specimens 10 min, 32 specimens 45 sec	yes  yes yes/no/no yes no/yes yes/yes yes/yes  yes no/yes 2 hr/3 mo/2 mo/2 mo yes/yes  -, 240 specimens -, 788 specimens -, 300 specimens -, 300 specimens -60 sec in steady state, ~2 min from standby
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Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2 Sodium, potassium, chloride, TCO2 Sodium, potassium, chloride, TCO2, glucose, urea, creatinine Album., bili. direct & total, AST, ALT, ALP Typical time delay from ordering stat test to aspir. of sample How often 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	yes  yes/yes/yes yes/yes yes/yes yes/yes yes/yes yes/no  yes no/yes 24 hr/up to 90 d/up to 60 d/14 d none required  52 sec, 75 specimens 52 sec, 75 specimens 10 min, 32 specimens 10 min, 32 specimens 45 sec 24 hr/yes yes/yes yes  onboard & optional add-on (SW mftr: Beckman Coulter DataLink)/yes (addt'l cost) Cerner, Sunquest, Meditech, Citation, MedLab, CHC, SMS, HBOC,	yes yes/no/no yes no/yes yes/yes yes/yes  yes yes yes yes  yes
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for: Sodium, potassium, chloride, TC02 Sodium, potassium, chloride, TC02, glucose, urea, creatinine Album., bili. direct & total, AST, ALT, ALP Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface	yes yes/yes/yes yes yes/yes yes/yes yes/yes yes/yes yes/no  yes no/yes 24 hr/up to 90 d/up to 60 d/14 d none required  52 sec, 75 specimens 52 sec, 75 specimens 10 min, 32 specimens 10 min, 32 specimens 45 sec 24 hr/yes yes/yes yes onboard & optional add-on (SW mftr: Beckman Coulter DataLink)/yes (addt'I cost)	yes yes/no/no yes no/yes yes/yes yes/yes  yes yes yes yes  yes
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TC02 Sodium, potassium, chloride, TC02, glucose, urea, creatinine Album., bili. direct & total, AST, ALT, ALP Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface Interfaces up and running in active user sites with	yes  yes/yes/yes yes/yes yes/yes yes/yes yes/yes yes/no  yes no/yes 24 hr/up to 90 d/up to 60 d/14 d none required  52 sec, 75 specimens 52 sec, 75 specimens 10 min, 32 specimens 10 min, 32 specimens 45 sec 24 hr/yes yes/yes yes  onboard & optional add-on (SW mftr: Beckman Coulter DataLink)/yes (addt'l cost) Cerner, Sunquest, Meditech, Citation, MedLab, CHC, SMS, HBOC, Labquest, CCA, VA-Mumps, all LISs yes (broadcast download & host query)	yes yes/no/no yes no/yes yes/yes yes/yes  yes no/yes 2 hr/3 mo/2 mo/2 mo yes/yes  -, 240 specimens -, 788 specimens -, 300 specimens -, 300 specimens -60 sec in steady state, ~2 min from standby shortest interval: 8 hr; longest: 24 hr/yes yes/yes  onboard/no  yes (broadcast download & host query)
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Section of the content of the Cont	See related comments, page 49	www.olympus.com	
List price of the control of the List Excellent List Control of the Control of th	77.0	AHA00/1009	Cohoo Integro 700/1006 /Integro 900 introduced 9001
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Table cale and but not distinish periased in the CRUP (coloration periased fine 2000), coloration periased fine 2000, coloration periased fine 2000), coloration periased fine 2000, coloration periased fine	Dimensions (H x W x D)/instrument footprint	47.6 x 57.1 x 29.9 in/62.7 sq ft	46 x 57 x 32 in/46 sq ft
Black   Securio services of what satisfies   Black   Securio services   Black   Securio services   Securio services of section of section services of section of section section of section section section of section secti	Tests cleared but not clinically released  Tests not available in U.S. but submitted for 510(k) clearance Tests not available in U.S. but available in other countries Research-use-only assays	none cotinine none	cyclosporine (released 4th qtr 2000), cholinesterase dibucaine, digitoxin, D-dimer (released June 2001), soluble transferrin receptor (released June 2001) none LDH (P→L), ALP (DGKC)
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No. of different assessing control inclusional collisional of a control including collision of a co	Methods supported/immunoassay methods	photometry, potentiometry, calculated tests/homogeneous	photometry, potentiometry, fluorescence
Calibrants stored onboard/multipoint calibration supported Typical calibr. Teleproper for Effernéebiles (Pint-rugs/drug of abuse prize and 14/30 d/14 d/14-20 d yes/yes  Automatic shutdown/startup programmable  Automatic shutdown/startup progr	No. of different measured assays onboard simultaneously No. of different assays programmed, calibrated at once No. of user-definable (open) channels/no. active simultaneously No. of different analytes for which system accommodates reag. containers onboard at once/tests per container set Shortest/median onboard reag. stability/refrigerated onboard Multiple reag. configurations supported Reag. container placed directly on system for use Instrument has same capabilities when 3rd-party reag. used Walkaway capacity in minutes/specimens/tests-assays System is liquid or dry Uses disposable cuvettes/max. no. stored Uses washable cuvettes/replacement frequency Minimum sample volume aspirated precisely at one time Supplied with UPS (backup power)/requires floor drain Requires dedicated water system/water consumption Noise generated Dedicated pediatric sample cup/dead volume Primary tube sampling/pierces caps on primary tubes Sample bar-code reading capability  Reagent bar-code reading capability  Reagent bar-code reading capability Bar code placement per NCCLS standard Auto2A  Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results	up to 76 99 95/— 76/100–1,333  120 hr/30 d/yes (4–12°C) yes yes yes varies/up to 102/varies liquid no/n/a yes/permanent 2 µL no (optional)/yes (no w/ optional water pump) yes/26 L per hr peak consumption 65 decibels no/n/a yes/no yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination yes yes  yes yes/yes/yes yes/yes yes/yes yes/yes yes/yes yes/yes yes/yes	4 72 72 72 0/n/a 72/50–800  336 hr/84 d/yes (8°C) yes yes no 450/120/4,500 liquid, reconstitutes onboard yes/4,500 no/n/a 2 μL yes/yes no (direct connection, type I NCCLS)/5–7 L per h — yes/approx. 50–70 μL yes/no yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination yes yes  yes yes/yes/no no no/no yes/yes yes/yes
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Stat time to completion of all analytes, throughput per hr. for:  * Sodium, potassium, chloride, TOC2  * Sodium, potassium			• •
* Sodium, potassium, chloride, TOO2 (sucose, uea, creatiline * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, direct & total, AST, ALT, ALP * John, bill, b	Automatic shutdown/startup programmable	yes/yes	yes/yes
Interfaces up and running in active user sites with  all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation  Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays Uses £10/NC to transmit orders & results  no  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/inoboard derror codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. Training demo module  Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)  Distinguishing features  all common interfaces including Cerner, Anterim, CCA, Chemware, Dawning Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation (Data Innov.), CPSI, Meditech, Sunquest, Citation Northern Soft, Orsys, Sacoasst, SMS, Soft Computer, Sunquest yes (proadcast download & host query) yes yes yes yes Interface capability yes (proadcast download & host query) yes yes yes yes Interface capability yes (proadcast download & host query) yes yes yes Interface capability yes (proadcast download & host query) yes yes yes Interface capability yes (proadcast download & host query) yes yes yes Interface operates simultaneously with running assays yes yes Interface operates simultaneously and the proadcast download & host query) yes yes yes Interface operates simultaneously with running assays yes (proadcast download & host query) yes yes yes yes yes yes/yes/yes 42 hr/yes avrage 2 calls per yr/<24 hr daily: 3 min; methy! 45 min yes (includes audit trail of who replaced parts)/yes variable  Distinguishing features  Distinguishing features  Olympus is a leader in standardization w	Sodium, potassium, chloride, TCO2     Sodium, potassium, chloride, TCO2, glucose, urea, creatinine     Album., bili. direct & total, AST, ALT, ALP     Typical time delay from ordering stat test to aspir. of sample     How often QC required/onboard SW capability to review QC     Onboard real-time QC/support multiple QC lot nos. per analyte	<5 min, 80 specimens <9 min, 67 specimens <2 min per CLIA & laboratory's decision/yes yes/yes	8.6 min, 99 specimens 9.8, 118 specimens 1 min shortest interval: 8 hr–DAT, longest: 24 hr/yes yes/yes
Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (ALG, Path.Labs, Start.abs), HMS, Intellillats, (Data Innov.), CPSI, Meditech, Sunquest, Citation  Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays yes yes yes no  Interface avail. (or will be) to automated specimen handling system  Modern servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance record/smaint. training demo module  Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)  Distinguishing features  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700 & AU5400. Broad test menu of 120+ methods delivers standardized requirements based on history; operator maintenance lating, regular, requirements based on history; operator maintenance lating, regular, requirements based on actual use, not by calendar schedule; (800 has clot detection, bubble detection & can accommodate university system, based on actual use, not by calendar schedule; (800 has clot detection, bubble detection & can accommodate university 5-position Historia can be commodate university 5-position Historia can accommodate university 5-position Historia can accommodate university 5-position Historia can be commodate university 5-position Historia can be commodate university 5-position Historia can be commodate university 5-posi	Data mgmt. capability/instrument vendor supplies LIS interface	onboard/no (optional)	onboard/yes (addt'l cost)
Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail.  Training provided with purchase/advanced oper. training avail.  Distinguishing features  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700 & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management & cassette requires no operator prep. or special handling (can go straight from refrigerator to system with no warmup time); 97% of reagents are liquid, ready to use, system automatically reconstitutes if necessary, system forecasts daily reagent requirements based on history; operator maintenance automatically scheduled by system, based on actual use, not by calendar schedule; (800 has clot detection, bubble detection & can accommodate universal 5-position Hitachi rack for modular	Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays	Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation  yes (broadcast download & host query) yes yes	Fletcher Flora, HBOC (ALG, PathLabs, StarLabs), HMS, Intellilabs, Isys, LabDaq, Labforce, Labfusion, LabSoft, LCI, Meditech, Northern Soft, Orsys, Seacoast, SMS, Soft Computer, Sunquest yes (broadcast download & host query) yes yes
Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component  On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module  Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)  Distinguishing features  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700 & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operators. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in industry today  Distinguishing seatures  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700 & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operator. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in industry today  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU6400, AU6700 & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operator. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in industry today  On the provided with purchase/yes (includes audit trail of who replaced parts)/yes (onscreen help with diagrams & haintenance wizard)  1 d on-site/5 d at vendor offices/yes variable  Comprehensive test menu including hemoglobin A1c; reagent cassette requires no operator prep. or special handling (can go straight from refrigerator to system with no warmup time); 97% of reagents are liquid, ready to use, system of reconstitutes if necessary, system forecasts daily reagent requ			
determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/ to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Onboard maintenance records/maint. training demo module Ordinary (includes audit trail of who replaced parts)/yes Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700 & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & unprecedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in industry today  Augreedented onboard automation for the best walkaway in ind	, , ,		
chemistry immuno systems, the AU400, AU600, AU640, AU2700 & Cassette requires no operator prep. or special handling (can go straight from refrigerator to system with no warmup time); 97% of reagents are liquid, ready to use, system automatically operation. Speed, reliability, advanced data management, & Compressedented onboard automation for the best walkaway in industry today industry today calendar schedule; (800 has clot detection, bubble detection & Commodate universal 5-position Hitachi rack for modular	determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module  Training provided with purchase/advanced oper. training avail.	<24 hr/yes average 2 calls per yr/<24 hr daily: 3 min; weekly: 7 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 3–5 d on-site, 5 d at vendor offices/yes	8 hr or next business d/yes / daily: <1 min; weekly: <5 min; monthly: none yes (includes audit trail of who replaced parts)/yes (onscreen help with diagrams & maintenance wizard) 1 d on-site/5 d at vendor offices/yes
	Distinguishing features	chemistry immuno systems, the AU400, AU600, AU640, AU2700 & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in	cassette requires no operator prep. or special handling (can go straight from refrigerator to system with no warmup time); 97% of reagents are liquid, ready to use, system automatically reconstitutes if necessary, system forecasts daily reagent requirements based on history; operator maintenance automatically scheduled by system, based on actual use, not by calendar schedule; (800 has clot detection, bubble detection & can accommodate universal 5-position Hitachi rack for modular

Part 4 of 10	Abbott Diagnostics Jack Kenny jack.kenny@abbott.com 100 Abbott Park Road Abbott Park, IL 60031 800-323-9100 www.abbott.com	Bayer Corp., Diagnostics Div. Denise Pastore denise.pastore.b@bayer.com 511 Benedict Ave. Tarrytown, NY 10591 914-333-6122 www.bayerds.com
See related comments, page 49		
Name of instrument/first year sold in U.S. List price No. units in clinical use in U.S./outside U.S. Country where designed/manufactured/where reagents mftd. Operational type/reagent type	Abbott Aeroset/1998 \$345,000 200+/400+ Japan/Japan/U.S. continuous random access/open reagent system	Advia 1650/1999 \$289,000 20/400 Japan/Japan/Ireland batch, random access, discrete, continuous random access/open reagent
Sample handling system/model type Dimensions (H x W x D)/instrument footprint	rack, carousel/floor-standing 42.7 x 74.4 x 44.1 in/22.7 sq ft	system automated rack handler, sample carousel/floor-standing 45 x 59 x 34 in/14 sq ft
No. of tests for which analyzer has FDA-cleared applications	62	37
Tests cleared but not clinically released	none	none
Tests not available in U.S. but submitted for 510(k) clearance	none	microalbumin, transferrin, glucose hexokinase II
Tests not available in U.S. but available in other countries	none	transferrin
Research-use-only assays Tests in development	none CRP, RF, digox., amphet., barbit., benzo., THC, cocaine, ethanol, methadone, opiates, PCP, propoxy	none cholinesterase, total protein II, HDL direct, LDL direct
User-defined methods implemented for what analytes	TDMs, drugs of abuse, GHb	ammonia, alcohol, lactate, C3, C4, HbA1c, acetaminophen, salicylate, CK-MB, myoglobin, fructosamine, pancreatic amylase, $\beta$ 2-microglobulin, TDM, DAU
Methods supported/immunoassay methods No. of direct ion selective electrode channels No. of different measured assays onboard simultaneously No. of different assays programmed, calibrated at once No. of user-definable (open) channels/no. active simultaneously	photometry, potentiometry/— 3 59 100 100/59	photometry, potentiometry, turbidimetrics/— 3 49 100 62/62
No. of different analytes for which system accommodates reag. containers onboard at once/tests per container set	59/400	49/650–700
Shortest/median onboard reag. stability/refrigerated onboard Multiple reag. configurations supported Reag. container placed directly on system for use	7 d/28 d/yes yes yes	72 hr/28 d/yes yes yes
Instrument has same capabilities when 3rd-party reag. used Walkaway capacity in minutes/specimens/tests-assays	yes 60/231/50,000+	yes 90-470/200/20,000+
System is liquid or dry Uses disposable cuvettes/max. no. stored	liquid no/n/a	liquid no/n/a
Uses washable cuvettes/replacement frequency Minimum sample volume aspirated precisely at one time Supplied with UPS (backup power)/requires floor drain	yes/minimum 1 yr guaranteed 2 μL no/no	yes/4 mo (221 stored on instrument) 2 μL yes/no
Requires dedicated water system/water consumption Noise generated	yes/45 L per hr —	yes/25 L per hr —
Dedicated pediatric sample cup/dead volume Primary tube sampling/pierces caps on primary tubes Sample bar-code reading capability	yes/50 µL yes/no yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination	yes/50 µL yes/no yes (2 of 5 interl., Codabar [NW7], codes 39 & 128)/auto- discrimination
Reagent bar-code reading capability Bar code placement per NCCLS standard Auto2A	yes yes	yes yes
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability	yes yes/yes/no yes yes/yes yes/yes	yes yes/yes/in development yes yes/yes yes/yes yes/yes
Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert	yes/yes	yes/yes
Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable	yes yes/yes 8 hr/28 d/28 d yes/yes	yes yes/yes daily/30 d/30 d/daily yes, yes
Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2  • Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often QC required/onboard SW capability to review QC  Onboard real-time QC/support multiple QC lot nos. per analyte	10 min, 200+ specimens 10 min, 200+ specimens 10 min, 200+ specimens <15 sec shortest interval: 8 hr (ISE), longest: 24 hr/yes yes/yes	10 min, 150 samples, 600 tests 10 min, 150 samples, 1,050 tests 10 min, 200 samples, 1,200 tests 3 sec per CLIA and laboratory's decision/yes yes/yes
QC results transferred automatically to LIS	yes	yes anhaowites
Data mgmt. capability/instrument vendor supplies LIS interface Interfaces up and running in active user sites with	no/yes (addt'l cost) all major vendors	onboard/no Soft, Sunquest, Cerner, Meditech, Multidata, Seacoast
Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays Uses LOINC to transmit orders & results	yes (b <sup>r</sup> oadcast download & host query) yes yes no	yes (broadcast download & host query) yes yes yes
Interface avail. (or will be) to automated specimen handling system	in development	yes (all systems)
Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)	no/no/no <24 hr/yes >2 mo/varies daily: 5 min; weekly: 10 min; monthly: 30 min no/no 5 d on-site, 4 d at vendor offices/no \$23,000	yes/yes/yes  4–8 hr/yes —/4-8 hr daily: 10 min; weekly: 45 min; monthly: 1 hr yes/yes ongoing on-site, 5 d at vendor offices/— \$20,803
Distinguishing features	workstation consolidation; high throughput; large capacity; extremely reliable; open, flexible system	system will aspirate every 3 sec & retain aliquot onboard. Original sample is available to leave system. All testing performed with aliquot of sample remaining on Advia 1650. All reruns/repeats/dilutions automatically performed with aliquot on system without user intervention. Microvolume technology allows 700 tests out of a 250-test wedge of reagent. Reflex testing available

Date Serving lack Serving and Community, page 40  Serving and Community			
See pristed comments, page 49  ***Rance of intermediation year side in U.S. Large in the principal of the pr	Part 6 of 10	Christine Larriva christine_larriva@dadebehring.com P.O. Box 6101 Newark, DE 19714-6101	Terry Giacomo terry.giacomo@olympus.com Two Corporate Center Dr. Melville, NY 11747
Since the company to a sead in U.S.  All policy of the company to			
Monitor of control or wise in 15.2 Avoided 15.5.  Lincollina of circle class are in 15.2 Avoided 15.5.			
In the tests for which multipure than PDA chared applications  Tests clasmed to and cell-incidently relaxable  In the contractable in IS. Sub resultable in this countries  In the contractable in IS. Sub resultable in this countries  In the contractable in IS. Sub resultable in this countries  In the contractable in IS. Sub resultable in this countries  In the contractable in IS. Sub resultable in this countries  In the contractable in IS. Sub resultable in this countries  In the contractable in IS. Sub resultable in this countries  In the contractable in IS. Sub resultable in this countries  In the contractable in IS. Sub resultable in IS. Sub resultab	List price No. units in clinical use in U.S./outside U.S. Country where designed/manufactured/where reagents mftd. Operational type/reagent type Sample handling system/model type	Module (HM)/1997 \$239,400 w/ HM 1,500/600 U.S./U.S./U.S. random access, continuous random access/self-contained multiuse cartridges-packages-slides segmented sample wheel/floor-standing	\$185,000 275/600 Japan/Japan/U.S. & Ireland random access, discrete, continuous random access/open reagent system rack & stat carousel/floor-standing
Tests not available in U.S. but submitted for 2000) clearmone Tests not available in U.S. but submitted for 2000) clearmone Tests not available in U.S. but submitted for 2000) clearmone Tests not available in U.S. but submitted for 2000) clearmone Tests not available in U.S. but submitted for 2000) clearmone Tests not available in U.S. but submitted for 2000 clearmone Tests not available in U.S.		•	
Test not or variable in U.S. but substituted to their countries of displaced transport of present beautiful processes of the process of displaced transport of present beautiful processes of the process of displaced transport of present beautiful process of the process of displaced transport of present beautiful process of the process	No. of tests for which analyzer has FDA-cleared applications	93	122
Ties of monitories in LS, but particulate in other countries  Federactive Cast-only support  Test in development  Federactive Cast-only support  Federactiv	Tests cleared but not clinically released	none	ceruloplasmin
Package   Pack	Tests not available in U.S. but submitted for 510(k) clearance	none	none
Facilitation of the information is implemented for what analytics on one of the control is implemented for what analytics on one of the control is implemented for what analytics of the control is implemented for what analytic of the control is implemented fo		<u> </u>	
Refined a supported diminional in a contractive described charmeds   Patricia section of extended charmed charmeds   Patricia section of extended charmeds   Patricia section of extended charmed charmed and extended charmed charmed charmed in extended charmed charmed charmed charmed and extended charmed			
In all direction in estercitive described channels  Not of infection received season or observations as a control disease in the control of t	User-defined methods implemented for what analytes	none	HbA1c, fructosamine, cholinesterase
No. of efficient resource assays onloaned arisual temocrations of all filtering assignations, calculated in combination of the company of the		(IMT)/heterogeneous EIA using HM, EMIT latex particle turbidimetric, latex turbidimetric	
No. of cell-freshable (popel) channels, for which system commissions  - interact 200  - intera	No. of different measured assays onboard simultaneously	48/93 with optional inventory management system	up to 51
Tasp, container on incord at non-fisters per constainer early container and container placed from the per container early container placed from the per container early container placed from the per container placed properties with the per container placed from the per container placed from the per container placed properties with the per container placed properties placed properties with the per container placed properties with th	No. of user-definable (open) channels/no. active simultaneously	10/10	95/—
Shoriest whether on board reag, shallhilly-frequent od sourced (3.0 d seated)/1 d (3.0 d seated)/19 (2.0 f (3.0 d seated)/19 (2.0 d (3.0 d seated)/19 (3.0 d		—/max. 240	48 x 2/100–1,333
Reag- container painced directly on system for use introduced the container painced directly on system for use introduced the container painced directly on system for use introduced the container painced directly on system for use introduced the container painced directly on system for use introduced the container painced the co	Shortest/median onboard reag. stability/refrigerated onboard		* * *
Walksaws capacity in minutes/especimens/feets-seesys Systems in liquid of a "minutes/especimens/feets-seesys" larged, reconstitution of minutes/especimens/feets-seesys larged, and minutes/especimens/feets-seesys larged, reconstitution of minutes/especimens/feets-seesys larged, and minutes/especimens/fee	Reag. container placed directly on system for use	yes	yes
Uses displaceable curetter/mar. no. stored Uses washable	Walkaway capacity in minutes/specimens/tests-assays	60/1,200/n/a	variable/up to 172/variable
Minimum sample volume aspirated procisely of one time Supplied with IPS Charles provent/requires from drain Requires self-dicated water system/site foot-make the self-dicated water system should be self-dicated water should be self-dicate		· ·	
Singlified with UPS (hackup power/requires floor drain   yearly age (quires dedicated) with UPS (hackup power/requires floor drain   year)   year   y			
Noise generated Celicitate pledictic sample cupl dead volume Primary the sampling/pilet cet caps on primary tubes Simple bar-ode reading capability Sample bar-ode reading capability Service of the complete of the sample of the complete of	Supplied with UPS (backup power)/requires floor drain	yes/yes	no (optional)/yes (no w/ optional water pump)
Primary tube sampliny pierzos caps on primary tubes Simple Sample	Noise generated	<70 decibels	65 decibels
Sinterl, Colabar, codes 39 & 128)/autodiscrimination yes Policard test and investory (offormines volume in containory) Measures no. tests remaining/short sample detection/cloid otdection Automatic detection of adequate reas, for sagis. A analysis Hemolysis/furbidity detection-quantitation policy for sagis. A sample solution of patient samples containory Measures no. tests remaining/short sample detection/cloid otdection Non Non Non Non Non Non Non Non Non N	Primary tube sampling/pierces caps on primary tubes	yes/no	yes/no
Bis rode placement per ROCKS standard AutoZA  Obloard lest auto invertory (determines volume in container)  Rossaures no. texts transiming/short sample deterdion/claf deterdion  Rossaures no. texts transiming/short sample deterdion/claf deterdion  Rossaures no. texts transiming/short sample deterdion/claf deterdion  Romany Standard Standard Standard Rossaures no. texts transiming/short sample submard and marked in a part of the standard Rossaures no. texts transiming/short sample submard round and past part of the standard Rossaures no. texts transiming/short cannot transplain/short and tra	Sample bar-code reading capability		
Onboard list auto inventory (determines volume in container)  Measures no. Itests remaining/short sample detection/dot detection Automated detection of adequate range (or spir): a samples showed valuable (or spir): a sample (or spir): a s			
Measures no. tests remaining/short sample detection/dot detection Automatic detection adequate reag. for saipt. & analysis Homolysis/furbidity detection-quantitation Ultrion of patient amplies onboard/automatic rerun capability Sample voltume can be reduced/increased to rerun out-of-linear- range light/four results Sample voltume can be requery for ISE/metabolites/ther, drugs/drugs of abuse Automatic shutdown/startup programmable Calibrania stored onboard/multipoint calibration supported Calibrania stored on Calibrania stored Calibrania stored on Calibrania Calibrania stored on Calibrania Calibrania stored on Calibrania Calibrania stored calibrania Calibrani	Onboard test auto inventory (determines volume in container)	ves	·
Hemolysis/furbidity detection-quantitation Dilution of patients amples onboard/automatic rerun out-of-linear-range light/low results Auto-califoration or autocalibration alter Autocaliforation or autocalibration supported Calibratis stored, chugal/drugs of abuse Automatic shuldown/startup programmable  Stat time to completion of all analytes, throughput per hr. for: Sodium, potassium, chloride, TOD2 Sodium, potassium, chloride, TO	Measures no. tests remaining/short sample detection/clot detection	yes/yes/yes	yes/yes/yes
Sample volume can be reduced/increased to rerun out-of-linear-range high/flow results Autocalibration or autocalibration and under the completion of all analytes, throughput per hr. for:  - Sodilum, potassium, chibride, TOZO praminable  Stat time to completion of all analytes, throughput per hr. for:  - Sodilum, potassium, chibride, TOZO praminable  Stat time to completion of all analytes, throughput per hr. for:  - Sodilum, potassium, chibride, TOZO praminable  - Sodilum, potassium, chibride, TOZO praminable praminable  - Sodilum, potassium, chibride, TOZO praminable praminable  - Sodilum, potassium, chibride, TOZO praminable praminable  - Sodilum, potassium, chibride, potassium, chibride, potassium, chibride, potassium, chibride, potassium, chibride, potassium	Hemolysis/turbidity detection-quantitation	no/no	yes/yes
Autocalibration or autocalibration alert Calibrants store donobard/multipolit calibration supported Typical calib. frequency for ISE/metabolites/firer. drugs/drugs of abuse and calibration or autocalibrate/—ISE-0-90 d/30 d no/yes  Stat time to completion of all analytes, throughput per Inr. for:  Sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 5.0 sept. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassium, chiloride, TOD2 Sos exp. 288 tests 4.5 min, 500 tests 7.5 sodium, potassi	Sample volume can be reduced/increased to rerun out-of-linear-	• •	
Typical calib. frequency for ISE/metabolites/ther, drigs/drugs of abuse and/monites/thurp or ISE/metabolites/ther, drigs/drugs of abuse and/monites/thereoffices/		yes	yes
Automatic shutdown/startup programmable no/yes yes/yes  Stat time to completion of all analytes, throughput per hr. for:  - Sodium, potassium, chloride, TGC2 - Sodium, potassium, chloride, TGC2, glucose, urea, creatinine - Album, Bill. direct & tatal, AST, ALT, ALP - Typical time delay from ordering stat test to aspir. of sample - Album, Bill. direct & tatal, AST, ALT, ALP - Typical time delay from ordering stat test to aspir. of sample - Album, Bill. direct & tatal, AST, ALT, ALP - Typical time delay from ordering stat test to aspir. of sample - Album, Bill. direct & tatal, AST, ALT, ALP - Typical time delay from ordering stat test to aspir. of sample - Album, Bill. direct & tatal, AST, ALT, ALP - Typical time delay from ordering stat test to aspir. of sample - Album, Bill. direct & tatal, AST, ALT, ALP - Typical time delay from ordering stat test to aspir. of sample - Album, Bill. direct & tatal, AST, ALT, ALP - Typical time delay from ordering stat test to aspir. of sample - Album, Bill. direct & tatal, AST, ALT, ALP - Typical time delay from ordering stat test to aspir. of sample - Album, Bill. direct & tatal, AST, ALT, ALP - State status transferred automatically to LIS  - Sound, State states transferred automatically to LIS - Sunquest, Cemer, Lablet, HBOC, SMS, Meditech - Sunduest, State, St			• •
Sodium, potassium, chloride, TCO2 Sodium, potassium, chloride, TCO2 Sodium, potassium, chloride, TCO2, glucose, urea, creatinine Album, bill. direct & total, AST, ALT, ALP Typical time delay from ordering stat text to aspir. of sample How often OC required/onboard SW capability to review QC Onboard real-time OC/support multiple QC tot nos. per analyte OC results transferred automatically to LIS  Data mgmt. capability/instrument vendor supplies LIS interface Optional add-on (SW mftr: Dade Behring-DataFusion)/yes (addt'l comboard real-time of the strength of the streng	1	•	
* Sodium, potassium, chloride, TCOZ, gluoses, urea, creatinine Album, bili, direct & total, AST, ALT, ALP Typical time delay from ordering stat test to aspir. of sample How often OC required/nobard RW capability to review QC Onboard real-time QC/support multiple QC lot nos. per analyte QC results transferred automatically to LIS  Data mgmt. capability/instrument vendor supplies LIS interface Optional add-on (SW mftr: Dade Behring-DataFusion)/yes (addt') Cost) Uniterfaces up and running in active user sites with  Difference avail. (or will be) to automated specimen handling system Uses LOINC to transmit orders & results  Modem servicing available/can diagnose own malfunctions/ determine maintructioning component On-selts time of svc. engineer/onboard error codes for troubleshooting Near time to complete maintenance by lab personnel Onboard maintenance records/maint, training demo module Taining provided with purchase/advanced oper. Training avail.  Distinguishing features  Distinguishing features  Distinguishing features  As Din House and the provided with purchase/advanced oper. Training avail.  As Text His 19,755 R. Att Basic: \$18,355  Distinguishing features  As Din House and the provided with purchase/advanced oper. Training avail.  Distinguishing features  Distinguishing features  Distinguishing features  Distinguishing features  As Din House and the provided with other chemistries; allows single platform for over 95% of most requested tests; eliminates sample operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walknawn in a unprecedented onboard automation for the best walknawn in a unprecedented onboard automation for the best walknawn in a unprecedented onboard automation for the best walknawn in a unprecedented onboard automation for the best walknawn in a unprecedented onboard automation for the best walknawn in a unprecedented onboard automation for the best walknawn in a unprecedented onboard automation for the best walknawn in a unprecedented onbo			
Typical time delay from ordering stat test to aspir. of sample how often OC required/onboard Yok epablity to review QC Onboard real-time QC/support multiple QC lod nos. per analyte QC results transferred automatically to LIS  Data mgmt. capability/instrument vendor supplies LIS interface optional add-on (SW mftr: Dade Behring-DataFusion)/yes (addt') Sunquest, Cerner, LabNet, HBOC, SMS, Meditech  all common interfaces including Cerner, Antrim, CCA, Chemware, Davaning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CP3I, Meditech, Sunquest, Citation yes (broadcast download & host query) yes Uses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/lor repair failures Average time to complete maintenance by lab personnel Onhoard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail.  Annual service contract cost (24 h77 d)  Distinguishing features  Annual service contract cost (24 h77 d)  Distinguishing features  Page Average to the complete maintenance precords/maint. training demo module Insurance available that integrates heterogeneous immunosassay sonboard with other chemistries; allows single platform for over 95% of most requested tests; eliminates sample splitting between general tests & immunoassays  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Bread test menu of 120+ methods delivers standardized reparation. Speed, reliability, advanced data management, & uncertained to the post standardized reparation. Speed, reliability, advanced data management, & uncertained to the post standardized reparation. Speed, reliability, advanced data management, & uncertained to the set well-wave of the set well-wave of the set well	Sodium, potassium, chloride, TCO2, glucose, urea, creatinine	· · · · · · · · · · · · · · · · · · ·	
How often QC required/onboard SW capability for review QC onboard real-time QC/support multiple QC to toos, per analyte QC results transferred automatically to LIS interface Optional add-on (SW mftr: Dade Behring-DataFusion)/yes (addt'1 cost)  Interfaces up and running in active user sites with place of the property		·	
Data mgmt. capability/instrument vendor supplies LIS interface optional add-on (SW mftr: Dade Behring-DataFusion)/yes (addt'l cost) Sunquest, Cerner, LabNet, HBOC, SMS, Meditech  Bidirectional interface capability Jess tonacast download & host query) yes (broadcast download & host query) yes (broadcast download & host query) yes yes LIS interface operates simultaneously with running assays Uses LOINC to transmit orders & results Interface avail. (or will be) to automated specimen handling system  yes/yes/yes  Modem servicing available/can diagnose own malfunctioning On-site time of svc. engineer/onboard error codes for troubleshooting Onboard maintenance record/smaint. Training demo module Training provided with purchase/advanced oper. training avail.  Annual service contract cost (24 h/7 d)  Distinguishing features  yes only instrument available that integrates heterogeneous immunoassays onboard with other chemistries; allows single platform for over 95% of most requested tests, eliminates sample spillting between general tests & immunoassays oped, reliability, advanced data management, & unprecedented onboard automation for best walkaway in inpreceded on the straining available, advanced oper, training available, and sample operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in inprecedented onboard automation for the best	How often QC required/onboard SW capability to review QC	24 hr/yes	per CLIA & laboratory's decision/yes
Interfaces up and running in active user sites with  Sunquest, Cemer, LabNet, HBOC, SMS, Meditech  Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays yes no  Interface avail. (or will be) to automated specimen handling system  Modern servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)  Distinguishing features  Sunquest, Cemer, LabNet, HBOC, SMS, Meditech  Jew (Data Innov.), CPSI, Meditech, Sunquest, Cltation yes (broadcast download & host query) yes (proadcast download &			
Interfaces up and running in active user sites with  Sunquest, Cerner, LabNet, HBOC, SMS, Meditech  Bidirectional interface capability Yes (broadcast download & host query) Yes (broadc	Data mgmt. capability/instrument vendor supplies LIS interface	• • • • • • • • • • • • • • • • • • • •	onboard/no (optional)
Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays yes yes Uses LOINC to transmit orders & results no	Interfaces up and running in active user sites with		Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC
Uses LOINC to transmit orders & results    Interface avail. (or will be) to automated specimen handling system   yes   yes		- ·	yes (broadcast download & host query)
Interface avail. (or will be) to automated specimen handling system  yes  Modern servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)  Distinguishing features  only instrument available that integrates heterogeneous immunoassays onboard with other chemistries; allows single platform for over 95% of most requested tests; eliminates sample splitting between general tests & immunoassays  onsort requested tests; eliminates sample splitting between general tests & immunoassays  ves  yes  yes  yes/yes/yes  424 hr/yes average 2 calls per yr/<24 hr daily: 3 min; weekly: 27 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 3–5 d on-site, 5 d at vendor offices/yes inquire  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU6700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in	LIS interface operates simultaneously with running assays	yes	yes
determine malfunctioning component  On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures  Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail.  Annual service contract cost (24 h/7 d)  Distinguishing features  Only instrument available that integrates heterogeneous immunoassays onboard with other chemistries; allows single platform for over 95% of most requested tests; eliminates sample splitting between general tests & immunoassays  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in			
On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)  Distinguishing features  Only instrument available that integrates heterogeneous immunoassays onboard with other chemistries; allows single platform for over 95% of most requested tests; eliminates sample splitting between general tests & immunoassays  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient menagement & streamlined opperation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in		yes/yes	yes/yes
Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)  Distinguishing features  Only instrument available that integrates heterogeneous immunoassays onboard with other chemistries; allows single platform for over 95% of most requested tests; eliminates sample splitting between general tests & immunoassays  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in	On-site time of svc. engineer/onboard error codes for troubleshooting		
Training provided with purchase/advanced oper. training avail.  Annual service contract cost (24 h/7 d)  Distinguishing features  only instrument available that integrates heterogeneous immunoassays onboard with other chemistries; allows single platform for over 95% of most requested tests; eliminates sample splitting between general tests & immunoassays  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in	Average time to complete maintenance by lab personnel	daily: 2 min, weekly: 2 min, monthly: 15 min	daily: 3 min; weekly: 27 min; monthly: 45 min
Annual service contract cost (24 h/7 d)  Distinguishing features  only instrument available that integrates heterogeneous immunoassays onboard with other chemistries; allows single platform for over 95% of most requested tests; eliminates sample splitting between general tests & immunoassays  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in			
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	Distinguishing features	immunoassays onboard with other chemistries; allows single platform for over 95% of most requested tests; eliminates sample	chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in

Part 7 of 10	Olympus America Inc. Terry Giacomo terry.giacomo@olympus.com Two Corporate Center Dr. Melville, NY 11747 800-223-0125	Olympus America Inc. Hiro Sekiya hiro.sekiya@olympus.com Two Corporate Center Dr. Melville, NY 11747 800-223-0125
See related comments, page 49	www.olympus.com	www.olympus.com
Name of instrument/first year sold in U.S.	AU2700/2000	AU5421 with dual ISE/2001
List price  No. units in clinical use in U.S./outside U.S.  Country where designed/manufactured/where reagents mftd.  Operational type/reagent type	\$320,000 n/a/n/a Japan/Japan/U.S. & Ireland random access, discrete, continuous random access/open reagent system	\$465,000 0/30 Japan/Japan/U.S. & Ireland random access, discrete, continuous random access/open reagent system
Sample handling system/model type Dimensions (H x W x D)/instrument footprint	rack & stat carousel/floor-standing 50 x 79 x 45 in/92 sq ft	rack/floor-standing 50 x 148 x 45 in/46.25 sq ft
No. of tests for which analyzer has FDA-cleared applications	122	122
Tests cleared but not clinically released	ceruloplasmin	ceruloplasmin
Tests not available in U.S. but submitted for 510(k) clearance	none	none
Tests not available in U.S. but available in other countries Research-use-only assays Tests in development	cotinine none LDL chol., acid phosphatase	cotinine none LDL chol., acid phosphatase
User-defined methods implemented for what analytes	HbA1c, fructosamine, cholinesterase	HbA1c, fructosamine, cholinesterase
Methods supported/immunoassay methods No. of direct ion selective electrode channels No. of different measured assays onboard simultaneously No. of different assays programmed, calibrated at once No. of user-definable (open) channels/no. active simultaneously No. of different analytes for which system accommodates reag. containers onboard at once/tests per container set Shortest/median onboard reag. stability/refrigerated onboard Multiple reag. configurations supported Reag. container placed directly on system for use Instrument has same capabilities when 3rd-party reag. used	photometry, potentiometry, calculated tests/homogeneous 3 up to 51 99 95/— 48 x 2/100–4,000  120 hr/30 d/yes (4–12°C) yes yes yes yes	photometry, potentiometry, calculated tests/homogeneous 3 99 99 95/— 48 x 4/100–4,000  120 hr/30 d/yes (4–12°C) yes yes yes
Walkaway capacity in minutes/specimens/tests-assays System is liquid or dry Uses disposable cuvettes/max. no. stored Uses washable cuvettes/replacement frequency Minimum sample volume aspirated precisely at one time	varies/up to 322/varies liquid no/n/a yes/permanent 1 µL	varies/up to 300/varies liquid no/n/a yes/permanent 1 µL
Supplied with UPS (backup power)/requires floor drain Requires dedicated water system/water consumption Noise generated Dedicated pediatric sample cup/dead volume	no (optional)/yes yes/65 L per hr peak consumption — no/n/a	no (optional)/yes yes/120 L per hr — no/n/a
Primary tube sampling/pierces caps on primary tubes Sample bar-code reading capability	yes/no yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination	yes/no yes, on sample transport, shortly before sample is aspirated (2 of 5 interl.)/autodiscrimination
Reagent bar-code reading capability Bar code placement per NCCLS standard Auto2A	yes yes	yes yes
Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable	yes yes/yes/yes yes yes/yes yes/yes yes/yes yes/yes  1 d/30 d/14 d/14–20 d yes/yes	yes yes/yes/yes yes yes/yes yes/yes yes/yes yes/yes  1 d/30 d/14 d/14–20 d yes/yes
Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2  • Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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	<4 min, 267 specimens <4 min, 267 specimens 9 min, 267 specimens 1 min per CLIA & laboratory's decision/yes yes/yes yes	—, max 600 —, max 600 —, max 533 — per CLIA & laboratory's decision/yes yes/yes yes
Data mgmt. capability/instrument vendor supplies LIS interface	onboard/no (optional)	onboard/no (optional)
Interfaces up and running in active user sites with	all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation	all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation
Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays Uses LOINC to transmit orders & results	yes (broadcast download & host query) yes yes no	yes (broadcast download & host query) yes yes no
Interface avail. (or will be) to automated specimen handling system	yes	yes
Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)	yes/yes/yes  <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 3–5 d on-site, 5 d at vendor offices/yes inquire	yes/yes/yes  <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 5 d at vendor offices/yes inquire
Distinguishing features	Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in industry today	Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in industry today

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See related comments, page 49	www.olympus.com	www.orthoclinical.com
Name of instrument/first year sold in U.S. List price No. units in clinical use in U.S./outside U.S. Country where designed/manufactured/where reagents mftd.	AU5431 with dual ISE/2001 \$575,000 0/30 Japan/Japan/U.S. & Ireland	Vitros 950, Vitros 950 AT/1995 950: \$235,000; 950 AT: \$285,000 >1,500/— U.S./—/—
Operational type/reagent type  Sample handling system/model type	random access, discrete, continuous random access/open reagent system rack/floor-standing	batch, random access, discrete, continuous random access/self- contained single-use cartridges-packages-slides sample trays/floor-standing
Dimensions (H x W x D)/instrument footprint	50 x 200 x 45 in/62.5 sq ft	55 x 68 x 38 in/26 sq ft
No. of tests for which analyzer has FDA-cleared applications	122	69
Tests cleared but not clinically released	ceruloplasmin	_
Tests not available in U.S. but submitted for 510(k) clearance  Tests not available in U.S. but available in other countries	cotinine	_
Research-use-only assays Tests in development	none LDL chol., acid phosphatase	_ _
User-defined methods implemented for what analytes	HbA1c, fructosamine, cholinesterase	_
Methods supported/immunoassay methods No. of direct ion selective electrode channels	photometry, potentiometry, calculated tests/homogeneous	potentiometry, colorimetric–rate, potentiometry/— 3
No. of different measured assays onboard simultaneously No. of different assays programmed, calibrated at once	up to 147 99	75 75
No. of user-definable (open) channels/no. active simultaneously	95/—	n/a/n/a
No. of different analytes for which system accommodates reag. containers onboard at once/tests per container set	48 x 6/100–4,000	60/60
Shortest/median onboard reag. stability/refrigerated onboard	120 hr/30 d/yes (4-12°C)	7 d/14 d/n/a
Multiple reag. configurations supported Reag. container placed directly on system for use	yes yes	n/a yes
Instrument has same capabilities when 3rd-party reag. used	yes	n/a
Walkaway capacity in minutes/specimens/tests-assays	varies/up to 300/varies	—/40/200 per hr
System is liquid or dry Uses disposable cuvettes/max. no. stored	liquid no/n/a	dry no/n/a
Uses washable cuvettes/replacement frequency	yes/permanent	no/n/a
Minimum sample volume aspirated precisely at one time Supplied with UPS (backup power)/requires floor drain	1 μL no (optional)/yes	6 µL no/no
Requires dedicated water system/water consumption	yes/180 L per hr	no/none
Noise generated Dedicated pediatric sample cup/dead volume	no/n/a	— voc/20 ul
Primary tube sampling/pierces caps on primary tubes	no/n/a yes/no	yes/30 μL yes/no
Sample bar-code reading capability	yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination	yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination
Reagent bar-code reading capability Bar code placement per NCCLS standard Auto2A	yes yes	yes yes
Onboard test auto inventory (determines volume in container)	yes	yes
Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis	yes/yes yes	yes/yes/yes yes
Hemolysis/turbidity detection-quantitation	yes/yes	not needed/not needed
Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear-	yes/yes	no/no no/no
range high/low results	yes/yes	110/110
Autocalibration or autocalibration alert	yes	n/a
Calibrante etorod enhaard/multinaint calibration connected	yes/yes	no/yes
		6 ma/6 ma/3_6 ma/3_6 ma
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse	1 d/30 d/14 d/14–20 d yes/yes	6 mo/6 mo/3–6 mo/3–6 mo no/no
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable	1 d/30 d/14 d/14–20 d	
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2  • Sodium, potassium, chloride, TCO2, glucose, urea, creatinine	1 d/30 d/14 d/14–20 d yes/yes —, max 600 —, max 600	~6 min, 600 specimens ~6 min, ~700 specimens
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2	1 d/30 d/14 d/14–20 d yes/yes —, max 600	no/no ~6 min, 600 specimens
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TC02  • Sodium, potassium, chloride, TC02, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 —	~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens 8 sec
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2 Godium, potassium, chloride, TCO2, glucose, urea, creatinine Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often QC required/onboard SW capability to review QC	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes	~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens 8 sec 24 hr/yes
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2  • Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample dow often QC required/onboard SW capability to review QC Onboard real-time QC/support multiple QC lot nos. per analyte	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 —	~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens 8 sec
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2  • Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2  • Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware,	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TC02  • Sodium, potassium, chloride, TC02, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface Interfaces up and running in active user sites with	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2  Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface Interfaces up and running in active user sites with	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query)	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download)
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2  Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often QC required/onboard SW capability to review QC Conboard real-time QC/support multiple QC lot nos. per analyte QC results transferred automatically to LIS  Data mgmt. capability/instrument vendor supplies LIS interface interfaces up and running in active user sites with  Bidirectional interface capability  Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes onboard/no —
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2  Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample low often 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  Data mgmt. capability/instrument vendor supplies LIS interface interfaces up and running in active user sites with  Sidirectional interface capability  Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays  Uses LOINC to transmit orders & results	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes/ onboard/no  yes (broadcast download) yes yes  —
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TC02  Sodium, potassium, chloride, TC02, glucose, urea, creatinine  Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often QC required/onboard SW capability to review QC Comboard real-time QC/support multiple QC lot nos. per analyte QC results transferred automatically to LIS  Data mgmt. capability/instrument vendor supplies LIS interface interfaces up and running in active user sites with  Sidirectional interface capability  Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays  Jses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes  yes  yes  yes  yes  yes  yes
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2  • Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface interfaces up and running in active user sites with  Bidirectional interface capability  Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays  Uses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/determine malfunctioning component	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no  yes	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes  yes  yes  yes  —  yes (Lab-InterLink, Labotix, Coulter IDS, AutoLab)  —/yes/yes
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2  • Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface Interfaces up and running in active user sites with  Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays Uses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes  yes  yes  yes  yes  yes  yes
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TCO2  • Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often QC required/onboard SW capability to review QC Doboard real-time QC/support multiple QC lot nos. per analyte QC results transferred automatically to LIS  Data mgmt. capability/instrument vendor supplies LIS interface interfaces up and running in active user sites with  Bidirectional interface capability  Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays  Uses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component  On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures  Average time to complete maintenance by lab personnel	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no  yes  yes/yes/yes <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes  yes  yes  yes  daily: 2 min; weekly: 5 min; monthly: 15 min
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  • Sodium, potassium, chloride, TC02  • Sodium, potassium, chloride, TC02, glucose, urea, creatinine  • Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample dow often 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  Data mgmt. capability/instrument vendor supplies LIS interface interfaces up and running in active user sites with  Bidirectional interface capability  Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays  Jses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Wodem servicing available/can diagnose own malfunctions/ determine malfunctioning component  On-site time of svc. engineer/onboard error codes for troubleshooting Wean time between failures/to repair failures  Average time to complete maintenance by lab personnel onboard maintenance records/maint. training demo module fraining provided with purchase/advanced oper. training avail.	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no  yes  yes/yes/yes  <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 5 d at vendor offices/yes	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes  —  yes (Lab-InterLink, Labotix, Coulter IDS, AutoLab)  —/yes/yes  <4 hr/yes —/—
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2  Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  Album, bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface Interfaces up and running in active user sites with  Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays Uses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no  yes  yes/yes/yes  <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 5 d at vendor offices/yes inquire	no/no  ~6 min, 600 specimens ~6 min, ~700 specimens ~7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes  —  yes (Lab-InterLink, Labotix, Coulter IDS, AutoLab)  —/yes/yes  <4 hr/yes —/— daily: 2 min; weekly: 5 min; monthly: 15 min yes/yes 3 d on-site, 5 d at vendor offices/yes —
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2  Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  Album, bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface Interfaces up and running in active user sites with  Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays Uses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no  yes  yes/yes/yes  <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 5 d at vendor offices/yes inquire  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, &	no/no  -6 min, 600 specimens -6 min, ~700 specimens -7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes   yes (Lab-InterLink, Labotix, Coulter IDS, AutoLab)  -/yes/yes  <4 hr/yes -/ daily: 2 min; weekly: 5 min; monthly: 15 min yes/yes 3 d on-site, 5 d at vendor offices/yes  superior assay precision; minimal interference from hemolysis, lipemia, bilirubin; smart metering; continuous process
Sodium, potassium, chloride, TCO2, glucose, urea, creatinine     Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample How often 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  Data mgmt. capability/instrument vendor supplies LIS interface Interfaces up and running in active user sites with  Bidirectional interface capability Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays Uses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no  yes  yes/yes/yes  <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 5 d at vendor offices/yes inquire  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized	no/no  -6 min, 600 specimens -6 min, ~700 specimens -7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes —  yes (Lab-InterLink, Labotix, Coulter IDS, AutoLab)  —/yes/yes  <4 hr/yes —/— daily: 2 min; weekly: 5 min; monthly: 15 min yes/yes 3 d on-site, 5 d at vendor offices/yes —  superior assay precision; minimal interference from hemolysis, lipemia, bilirubin; smart metering; continuous process verification; no infectious waste; no plumbing, water, or drains;
Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2  Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample dow often 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  Data mgmt. capability/instrument vendor supplies LIS interface nterfaces up and running in active user sites with  Sidirectional interface capability rest results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays Jses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Wodem servicing available/can diagnose own malfunctions/ determine malfunctioning component On-site time of svc. engineer/onboard error codes for troubleshooting Wean time between failures/to repair failures  Average time to complete maintenance by lab personnel Onboard maintenance records/maint. training demo module Training provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no  yes  yes/yes/yes  <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 5 d at vendor offices/yes inquire  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, &	no/no  -6 min, 600 specimens -6 min, ~700 specimens -7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes   yes (Lab-InterLink, Labotix, Coulter IDS, AutoLab)  -/yes/yes  <4 hr/yes -/ daily: 2 min; weekly: 5 min; monthly: 15 min yes/yes 3 d on-site, 5 d at vendor offices/yes  superior assay precision; minimal interference from hemolysis, lipemia, bilirubin; smart metering; continuous process
Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2  Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample dow often 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  Data mgmt. capability/instrument vendor supplies LIS interface interfaces up and running in active user sites with  Sidirectional interface capability  Test results transmitted to LIS as soon as chem. time complete also interface operates simultaneously with running assays  Uses LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/determine malfunctioning component on-site time of svc. engineer/onboard error codes for troubleshooting of time to complete maintenance by lab personnel onboard maintenance records/maint. training demo module real-time provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no  yes  yes/yes/yes  <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 5 d at vendor offices/yes inquire  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, & unprecedented onboard automation for the best walkaway in	no/no  -6 min, 600 specimens -6 min, ~700 specimens -7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes —  yes (Lab-InterLink, Labotix, Coulter IDS, AutoLab)  —/yes/yes  <4 hr/yes —/— daily: 2 min; weekly: 5 min; monthly: 15 min yes/yes 3 d on-site, 5 d at vendor offices/yes —  superior assay precision; minimal interference from hemolysis, lipemia, bilirubin; smart metering; continuous process verification; no infectious waste; no plumbing, water, or drains;
Typical calib. frequency for ISE/metabolites/ther. drugs/drugs of abuse Automatic shutdown/startup programmable  Stat time to completion of all analytes, throughput per hr. for:  Sodium, potassium, chloride, TCO2  Sodium, potassium, chloride, TCO2, glucose, urea, creatinine  Album., bili. direct & total, AST, ALT, ALP  Typical time delay from ordering stat test to aspir. of sample low often QC required/onboard SW capability to review QC Inboard real-time QC/support multiple QC lot nos. per analyte low often QC results transferred automatically to LIS  Data mgmt. capability/instrument vendor supplies LIS interface interfaces up and running in active user sites with  Sidirectional interface capability rest results transmitted to LIS as soon as chem. time complete lis interface operates simultaneously with running assays lises LOINC to transmit orders & results  Interface avail. (or will be) to automated specimen handling system  Modem servicing available/can diagnose own malfunctions/ determine malfunctioning component lon-site time of svc. engineer/onboard error codes for troubleshooting Mean time between failures/to repair failures werage time to complete maintenance by lab personnel lonboard maintenance records/maint. training demo module raining provided with purchase/advanced oper. training avail. Annual service contract cost (24 h/7 d)	1 d/30 d/14 d/14–20 d yes/yes  —, max 600 —, max 600 —, max 800 — per CLIA & laboratory's decision/yes yes/yes yes  onboard/no (optional) all common interfaces including Cerner, Antrim, CCA, Chemware, Dawning Technol., ADAC, Dynamic Healthcare, Antek, SMS, HBOC (Data Innov.), CPSI, Meditech, Sunquest, Citation yes (broadcast download & host query) yes yes no  yes  yes/yes/yes  <24 hr/yes TBD/TBD daily: 5 min; weekly: 30 min; monthly: 45 min yes (includes audit trail of who replaced parts)/yes 5 d at vendor offices/yes inquire  Olympus is a leader in standardization with its family of chemistry immuno systems, the AU400, AU600, AU640, AU2700, & AU5400. Broad test menu of 120+ methods delivers standardized results for improved patient management & streamlined operation. Speed, reliability, advanced data management, &	no/no  -6 min, 600 specimens -6 min, ~700 specimens -7 min, ~700 specimens  8 sec 24 hr/yes yes/yes yes  onboard/no  yes (broadcast download) yes yes —  yes (Lab-InterLink, Labotix, Coulter IDS, AutoLab)  —/yes/yes  <4 hr/yes —/— daily: 2 min; weekly: 5 min; monthly: 15 min yes/yes 3 d on-site, 5 d at vendor offices/yes —  superior assay precision; minimal interference from hemolysis, lipemia, bilirubin; smart metering; continuous process verification; no infectious waste; no plumbing, water, or drains;

Part 9 of 10	Ortho-Clinical Diagnostics	Roche Diagnostics
	Christine Hopkins 1001 U.S. Highway 202	Roche Product Manager 9115 Hague Rd.
	Raritan, NJ 08869	Indianapolis, IN 46250
	800-828-6316 www.orthoclinical.co00m	800-428-5074 us.labsystems.roche.com
See related comments, page 49	www.orthochnical.coom	นร.เสมองระดิเกร.เบติเอ.เบที
Name of instrument/first year sold in U.S.	Vitros 250, Vitros 250 AT/1993	Modular/1998
List price	\$107,000	varies
No. units in clinical use in U.S./outside U.S. Country where designed/manufactured/where reagents mftd.	>3,000/— U.S./—/—	>50/>200 multiple countries/multiple countries
Operational type/reagent type	batch, random access, discrete, continuous random access/self-	continuous random access/self-contained multiuse cartridges-
	contained single-use cartridges-packages-slides	packages-slides
Sample handling system/model type Dimensions (H x W x D)/instrument footprint	rack/floor-standing 47 x 45.5 x 28 in/8.8 sq ft	5-position rack/floor-standing varies per configuration/varies
No. of tests for which analyzer has FDA-cleared applications	69	>100
	09	
Tests cleared but not clinically released	_	soluble transferrin receptor, D-dimer
Tests not available in U.S. but submitted for 510(k) clearance	_	none
Tests not available in U.S. but available in other countries	_	ApoA, ApoB, Lpa
Research-use-only assays	_	none
Tests in development	<del>-</del>	_
User-defined methods implemented for what analytes	_	none
Methods supported/immunoassay methods	potentiometry, colorimetric-rate, potentiometry/—	photometry, potentiometry/HbA1 <sub>C</sub>
No. of direct ion selective electrode channels	3	3
No. of different measured assays onboard simultaneously	60	47->100
No. of different assays programmed, calibrated at once No. of user-definable (open) channels/no. active simultaneously	60 n/a/n/a	47->100 5/5
No. of different analytes for which system accommodates	60/60	47–100/100–3,000
reag. containers onboard at once/tests per container set	7 d/14 d/n/a	72 hr/28 d/yac (2_12°C)
Shortest/median onboard reag. stability/refrigerated onboard Multiple reag. configurations supported	/ d/14 d/n/a n/a	72 hr/28 d/yes (2–12°C) yes
Reag. container placed directly on system for use	yes	yes
Instrument has same capabilities when 3rd-party reag. used Walkaway capacity in minutes/specimens/tests-assays	n/a —/40/200 per hr	no varies/300/varies
System is liquid or dry	dry	liquid
Uses disposable cuvettes/max. no. stored Uses washable cuvettes/replacement frequency	n/a/n/a n/a/n/a	no/n/a yes/monthly
Minimum sample volume aspirated precisely at one time	6 µL	2 µL
Supplied with UPS (backup power)/requires floor drain Requires dedicated water system/water consumption	no/— no/n/a	no/yes yes/varies (50 L/hr/mod)
Noise generated	——————————————————————————————————————	<62 decibels
Dedicated pediatric sample cup/dead volume	yes/30 μL	yes/50 µL
Primary tube sampling/pierces caps on primary tubes Sample bar-code reading capability	yes/no yes, on sample transport, shortly before sample is aspirated (2 of	yes/no yes, on sample transport, shortly before sample is aspirated (2 of
,,	5 interl., Codabar, codes 39 & 128)/autodiscrimination	5 interl., Codabar, codes 39 & 128)/autodiscrimination
Reagent bar-code reading capability	yes	yes
Bar code placement per NCCLS standard Auto2A	yes	yes
Onboard test auto inventory (determines volume in container)	yes	yes
Measures no. tests remaining/short sample detection/clot detection	yes/yes/yes	yes/yes/no
Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation	yes/yes/yes yes not needed/not needed	yes/yes/no yes yes/yes
Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability	yes/yes/yes yes not needed/not needed yes/no	yes/yes/no yes yes/yes yes/yes
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Measures no. tests remaining/short sample detection/clot detection Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linear- range high/low results Autocalibration or autocalibration alert	yes/yes/yes yes not needed/not needed yes/no no/no	yes/yes/no yes yes/yes yes/yes yes/yes yes/yes
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#### Chemistry analyzers (for high-volume laboratories)

Part 10 of 10 **Roche Diagnostics Roche Product Manager** 9115 Hague Rd. Indianapolis, IN 46250 800-428-5074 us.labsystems.roche.com RH 917/1995 Name of instrument/first year sold in U.S. \$275,000 No. units in clinical use in U.S./outside U.S. >350/>2,000 Country where designed/manufactured/where reagents mftd. multiple countries/multiple countries/ multiple countries Operational type/reagent type continuous random access/selfcontained multiuse cartridges-Sample handling system/model type 2 models: rack or disk/floor-standing Dimensions (H x W x D)/instrument footprint 46 x 55 x 30.5 in/11.6 sq ft No. of tests for which analyzer has FDA-cleared applications Tests cleared but not clinically released soluble transferrin receptor, D-dimer Tests not available in U.S. but submitted for 510(k) clearance Tests not available in U.S. but available in other countries Apo A, apo B, kappa/lambda light chains, % CDT, antithrombin III Research-use-only assays none Tests in development User-defined methods implemented for what analytes multiple veterinary applications photometry, potentiometry/HbA1c Methods supported/immunoassay methods No. of direct ion selective electrode channels 48 No. of different measured assays onboard simultaneously No. of different assays programmed, calibrated at once No. of user-definable (open) channels/no. active simultaneously No. of different analytes for which system accommodates 48/100-1,000 reag. containers onboard at once/tests per container set 72 hr/28 d/yes (2-12°C) Shortest/median onboard reag. stability/refrigerated onboard Multiple reag. configurations supported Reag. container placed directly on system for use Instrument has same capabilities when 3rd-party reag. used Walkaway capacity in minutes/specimens/tests-assays disk: 264, rack: 360/disk: 110, rack: 150/disk: 5,280, rack: 7,200 System is liquid or dry Uses disposable cuvettes/max. no. stored no/n/a Uses washable cuvettes/replacement frequency yes/monthly Minimum sample volume aspirated precisely at one time Supplied with UPS (backup power)/requires floor drain no/yes Requires dedicated water system/water consumption yes/-Noise generated Dedicated pediatric sample cup/dead volume yes/50 µL Primary tube sampling/pierces caps on primary tubes yes/no Sample bar-code reading capability yes, on sample transport, shortly before sample is aspirated (2 of 5 interl., Codabar, codes 39 & 128)/autodiscrimination Reagent bar-code reading capability Bar code placement per NCCLS standard Auto2A Onboard test auto inventory (determines volume in container) Measures no. tests remaining/short sample detection/clot detection yes/yes/no Automatic detection of adequate reag. for aspir. & analysis Hemolysis/turbidity detection-quantitation ves/ves Dilution of patient samples onboard/automatic rerun capability Sample volume can be reduced/increased to rerun out-of-linearyes/yes range high/low results Autocalibration or autocalibration alert Calibrants stored onboard/multipoint calibration supported 24 hr/lot change/7 d/-Typical calib. frequency for ISE/metabolites/ther. drugs/ drugs of abuse Automatic shutdown/startup programmable no/yes Stat time to completion of all analytes, throughput per hr. for: Sodium, potassium, chloride, TCO2 3 min, 300 samples Sodium, potassium, chloride, TCO2, glucose, urea, creatinine 5 min, 160 samples Album., bili. direct & total, AST, ALT, ALP 10 min, 133 samples Typical time delay from ordering stat test to aspir. of sample How often QC required/onboard SW capability to review QC 24 hr/yes Onboard real-time QC/support multiple QC lot nos. per analyte yes/yes QC results transferred automatically to LIS Data mgmt. capability/instrument vendor supplies LIS interface Interfaces up and running in active user sites with all major LIS vendors **Bidirectional interface capability** yes (broadcast download & host query) Test results transmitted to LIS as soon as chem. time complete LIS interface operates simultaneously with running assays Uses LOINC to transmit orders & results yes (Roche Pre-Analytical Modular) Interface avail. (or will be) to automated specimen handling system Modem servicing available/can diagnose own malfunctions/ no/yes/yes determine malfunctioning component On-site time of syc. engineer/onboard error codes for troubleshooting 8 hr/yes Mean time between failures/to repair failures daily: 5 min; weekly: 10 min; monthly: Average time to complete maintenance by lab personnel 15 min Onboard maintenance records/maint. training demo module yes (includes audit trail of who replaced parts)/yes Training provided with purchase/advanced oper. training avail. 5 d at vendor offices/yes Annual service contract cost (24 h/7 d) **Distinguishing features** Exceptional reliability; large menu allows true consolidation; high throughput not affected by test mix; reduced sample & reagent handling

# What helps and hinders workstation consolidation

#### Raymond D. Aller, MD

An underlying thread tying together CAP TODAY's chemistry analyzer surveys in recent years has been the steady expansion of available, onboard test menus, which has enhanced workstation consolidation in the laboratory.

Such consolidation permits the clinician to draw a single tube and allows the laboratory to perform an array of clinical analyses on this specimen without the labor-intensive and risky process of aliquoting. Two important barriers, however, limit the usefulness of larger chemistry analyzers: defining alternative yet acceptable specimens and coping with a plethora of proprietary nomenclatures.

The first challenge involves defining what constitutes an acceptable specimen. Laboratories traditionally have used serum separator tubes for most chemistries. Still in question, however, is which therapeutic drugs can be measured in such tubes and which others are adsorbed by the separator gel at a rate that gives falsely low results. Likewise, what is the effect of plastic tubes? So why don't vendors provide their clients with definitive information that is specific to their method?

In some settings, particularly intensive care and dialysis units, heparinized plasma separator tubes have advantages over serum, as plasma avoids the formation of fibrin strands seen in partially clotted serum derived from patients with unstable coagulation systems. But which of the more than 120 analytes available on a modern instrument can be run on heparinized plasma? For example, some iron methodologies don't work in the presence of heparin. Others do. The package inserts seldom offer any help.

Outreach settings continue to be plagued by falsely high potassium values caused by potassium leaking from red cells, even after the cells are centrifuged in a serum separator tube. Some laboratorians have observed that citrated plasma (blue top) tubes seem to keep potassium from leaking, and they have successfully measured potassium and many other analytes on specimens sent by overnight express delivery at room temperature. But, again, manufacturers need to help laboratorians by identifying which of the 120 analytes can be measured using citrated plasma. One might assume that calcium would not work, but it may, depending on the method used. Manufacturers need to make such information available.

The second important barrier to workstation consolidation is the "Babel" of proprietary nomenclatures. For example, is ACET acetaminophen? Acetone (acetoacetate)? Acetylcholinesterase (total)? Angiotensin converting enzyme (total)?

As the number of analytes available on chemistry analyzers increases, it becomes more critical that orders be downloaded and results transmitted using a standard LOINC (Logical Observation Identifier Names and Codes) code rather than an instrument-specific proprietary cipher. We applaud Bayer Corp., the only manufacturer thus far to move a large chemistry analyzer—in this case the Advia 1650—to LOINC coding. (For details on an upcoming LOINC meeting, see "Public laboratory LOINC meeting," page 114.)

Pages 31–49 feature 19 mid- and high-volume chemistry analyzers from seven vendors. The data presented are the manufacturers' responses to a CAP TODAY questionnaire. We advise readers to verify the stated features and capabilities of any system under consideration.  $\hfill \Box$ 

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