

HEMATOLOGY ANALYZERS

Part 1 of 12	Abbott Diagnostics Christy Thiessen christy.thiessen@abbott.com 100 Abbott Park Rd., Abbott Park, IL 60064 800-323-9100 www.abbottdiagnostics.com	Abbott Diagnostics Christy Thiessen christy.thiessen@abbott.com 100 Abbott Park Rd., Abbott Park, IL 60064 800-323-9100 www.abbottdiagnostics.com	Abbott Diagnostics Christy Thiessen christy.thiessen@abbott.com 100 Abbott Park Rd., Abbott Park, IL 60064 800-323-9100 www.abbottdiagnostics.com	
See captodayonline.com/productguides for an interactive version of guide				
Name of instrument	CELL-DYN Emerald 22*	CELL-DYN Emerald*	CELL-DYN Ruby*	
First year installed in U.S./Outside U.S./No. of units sold in 2016	2016/2016/—	2009/2008/—	2006/2006/—	
No. units installed in U.S./Outside U.S./List price	—/—/\$64,000	>1,700/>2,800/\$30,000	>550/>2,700/\$185,000	
Test menu:	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) • Laboratory • Flags 	<ul style="list-style-type: none"> • standard menu (left) plus: RDW, MPV 	<ul style="list-style-type: none"> • standard menu (left) plus: MPV, RDW, retic %&# 	
FDA-cleared tests not clinically released	—	—	—	
Tests not available but submitted for 510(k) clearance	—	—	—	
Tests in development	—	—	—	
Tests for research use only	—	—	—	
Tests unique to analyzer	—	—	atypical depolarization flag	
Differential method(s) used	UNI-FLOW Optical Technology	impedance counting	MAPSS (multi-angle polarized scatter separation)	
Analytical measurement range:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes 	<ul style="list-style-type: none"> • 0.4–90 K/μL/1.2–8.3 M/μL • 5.5–22 g/dL/11–1,485 K/μL • 53.2–118.4 (MCV), 12.1–66.1 fL (Hct) 	<ul style="list-style-type: none"> • 0.4–96.1 K/μL/0.22–7.61 M/μL • 3.3–24.6 g/dL/9–1,375 K/μL • 48.8–115 (MCV), 5.3–75.6% (Hct) 	<ul style="list-style-type: none"> • 0.02–246 × 10⁹/μL/0.00–7.50 × 10⁹/μL • 0.00–25.0 g/dL/0.00–3,000 × 10³/μL • 58–139 (MCV), 8.3–79.8% (Hct)
Precision:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	<ul style="list-style-type: none"> • 0.8–2.3% CV/0.7–1.4% CV • 0.2–0.9% CV/2.2–5.2% CV • 0.3–0.6% CV (MCV), 0.8–1.5% CV (Hct) 	<ul style="list-style-type: none"> • 3.5% (95% confidence limit)/2.0% (95% confid. limit) • 2.1% (95% confidence limit)/6.1% (95% confid. limit) • 0.8% MCV (95% confid. limit), 1.7% Hct (95% confid. limit) 	<ul style="list-style-type: none"> • 2.4%/1.8% • 1.4%/3.8% • 0.8% (MCV) • neut% r=0.983, slope=0.97, y=-1.98; lymph% r=0.921, slope=0.95, y=0.94; mono% r=0.711, slope=1.10, y=1.93; eos% r=0.952, slope=1.04, y=0.01; baso% r=0.146, slope=0.18, y=1.22
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	—	—	—	
Interfering substances:	<ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin 	<ul style="list-style-type: none"> • cryoglobulin, cryofibrinogen, heparin, monoclonal proteins, nucleated red cells, platelet clumping, unlysed red cells, clotting, smudge cells, uremia plus immunosuppressants • cryoglobulin, cryofibrinogen, giant platelets, high white cell count (>50,000 K/μL), autoagglutination, clotting, in vitro hemolysis, microcytic red cells • cryoglobulin, cryofibrinogen, giant platelets, high white cell count (>50,000 K/μL), hyperglycemia (>600 mg/dL), autoagglutination, clotting, in vitro hemolysis, microcytic red cells, reduced red cell deformability, swollen red cells • cryoglobulin, cryofibrinogen, in vivo and in vitro hemolysis, microcytic red cells, red cell inclusions, white cell fragments, clotting, giant platelets, heparin, platelet clumping, platelet satellitosis • carboxyhemoglobin (>10%), cryoglobulin, cryofibrinogen, in vivo hemolysis, heparin, high white cell count (>50,000 K/μL), hyperbilirubinemia, lipemia, monoclonal proteins 	<ul style="list-style-type: none"> • cryoglobulin, cryofibrinogen, heparin, monoclonal proteins, nucleated red cells, platelet clumping, unlysed red cells, clotting, smudge cells, uremia plus immunosuppressants • cryoglobulin, cryofibrinogen, giant platelets, high white cell count (>50,000 K/μL), autoagglutination, clotting, in vitro hemolysis, microcytic red cells • cryoglobulin, cryofibrinogen, giant platelets, high white cell count (>50,000 K/μL), hyperglycemia (>600 mg/dL), autoagglutination, clotting, in vitro hemolysis, microcytic red cells, reduced red cell deformability, swollen red cells • cryoglobulin, cryofibrinogen, in vivo and in vitro hemolysis, microcytic red cells, red cell inclusions, white cell fragments, clotting, giant platelets, heparin, platelet clumping, platelet satellitosis • carboxyhemoglobin (>10%), cryoglobulin, cryofibrinogen, in vivo hemolysis, heparin, high white cell count (>50,000 K/μL), hyperbilirubinemia, lipemia, monoclonal proteins 	<ul style="list-style-type: none"> • fragile WBC, neutrophil aggregates, lytic-resistant RBCs, NRBCs, PLT clumps, cryofibrinogen, cryoglobulins • elevated WBC, increased numbers of giant PLTs, autoagglutination, in vitro hemolysis • MCV: elevated WBC, hyperglycemia, in vitro hemolysis, increased number of giant PLTs • WBC fragments, in vitro hemolysis, microcytic RBCs, cryofibrinogen, cryoglobulins, PLT clumping, increased number of giant PLTs • elevated WBC, increased plasma substances (triglycerides, bilirubin, in vivo hemolysis), lytic-resistant RBCs
Interfering substances: differential	platelet aggregates, NRBCs, giant platelets, cryoglobulins, incomplete lysis of RBCs, small lymphocytes, fibrin clots, shift in WBC cell distrib. due to EDTA anticoagulant equilibration	platelet aggregates, NRBCs, giant platelets, cryoglobulins, incomplete lysis of RBCs, small lymphocytes, fibrin clots, shift in WBC cell distrib. due to EDTA anticoagulant equilibration	fragile WBC, neutrophil aggregates, lytic-resistant RBCs, NRBCs, PLT clumps, cryofibrinogen, cryoglobulins, paraproteins	
Maximum CBCs per hour/Maximum CBCs and differentials per hour	45/45	57/57	84/84	
Minimum specimen volume open/Closed/Sample dead volume closed	17 μL/—/—	9.8 μL/—/—	150 μL/230 μL/1.2 mL	
Microsample capability	no	no	no	
Prepares microscope slides automatically or flags problems for slide prep	yes	yes	yes	
Number of automatic slidemakers available/List price	—	—	—/\$125,000	
Archives patient data/Previous patient results incl. with recent results	yes/no	yes/no	yes/yes	
Maximum archived data accessible when system online	300,000 on USB and 1,000 records with histograms on internal memory	60,000 on USB and 1,500 results on internal memory	10,000 results	
No. specimens for which numeric results saved in memory at once	300,000 on USB and 1,000 records with histograms on internal memory	60,000 on USB and 1,500 results on internal memory	10,000 results	
No. specimens for which histo/cytogram results saved in memory at once	300,000 on USB and 1,000 records with histograms on internal memory	60,000 on USB and 1,500 results on internal memory	10,000 results	
Performs delta checks	no	no	no	
Tags and holds results for follow-up, confirmatory testing, or rerun	no	no	yes	
Parameters for flags for holding samples defined by user or vendor	no	no	user or vendor	
Scattergram display: cell-specific color	yes	no	yes	
Histogram display: color with thresholds	yes	no	yes	
User interface can display choice of specimen or result information	yes	yes	yes	
LIS interface formats supported	proprietary (instrument or vendor specific)	proprietary (instrument or vendor specific)	LIS1/LIS2 CLSI	
Information transferred on LIS interface	numeric and flag results, instrument to LIS	numeric and flag results, instrument to LIS	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders	
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	no/no/no	no/no/no	no/no/no	
Interface available or planned to automated specimen-handling system	none	none	none	
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, Interleaved 2 of 5, Chinese post, code 39 full ASCII, code 93, EAN8, EAN13, EAN128, IATA, Industrial 2 of 5, Italian pharmaceutical, Matrix 2 of 5, MSI/Plessey, UK/Plessey, Telepen, TriOptic, S-Code, UPC A, UPC E	Codabar, codes 39 and 128, Interleaved 2 of 5, Chinese post, code 93, EAN8, EAN13, EAN128, IATA, Industrial 2 of 5, Italian pharmaceutical, Matrix 2 of 5, MSI/Plessey, Telepen, TriOptic, S-Code, UPC A, UPC E	Codabar, codes 39 and 128, Interleaved 2 of 5, ISBT	
Accommodates barcode placement per CLSI standard AUT002-A2	yes	yes	yes	
No. of cleaning or maintenance reagents/No. of routine liquid reagents	1/2	1/2	1/3	
Time required for daily, weekly, monthly maintenance	weekly: 5 minutes; quarterly: 2 minutes	daily: ~3 min.; monthly: ~5 min.; biannually: ~10 min.	daily: 30 seconds; weekly: 5 minutes; monthly: 10 minutes (times are estimated)	
Onboard diagnostics for troubleshooting/Limited to software problems	no/no	no/no	yes/no	
Manufacturer can perform diagnostics via modem	no	no	yes	
Distinguishing features (supplied by company)	compact design: small physical footprint, only 3 reagents used (2 of 3 reagents stored onboard), built-in monitor minimizes footprint; ease of use: simple to use and maintain, automated start-up, shut-down, and cleaning; 5-part differential using UNI-FLOW optical flow cytometry technology with a patented lyse allowing for clear separation of the 5 WBC cell populations	small: sample size, reagent volumes used, and physical size; reliable: system averages one service call per year; easy to use: system has touchscreen software with intuitive icons and minimal layers	touch-sensitive screen, all optical technology; onboard maintenance videos; lyse-resistant RBC mode; rules-based result annotations	
<i>Note: a dash in lieu of an answer means company did not answer question or question is not applicable</i>	<i>*refer to CELL-DYN Emerald 22 operator's manual for warnings, limitations, and precautions</i>	<i>*refer to CELL-DYN Emerald operator's manual for warnings, limitations, and precautions</i>	<i>*refer to CELL-DYN Ruby operator's manual for warnings, limitations, and precautions</i>	

HEMATOLOGY ANALYZERS

Part 2 of 12	Abbott Diagnostics Christy Thiessen christy.thiessen@abbott.com 100 Abbott Park Rd., Abbott Park, IL 60064 800-323-9100 www.abbottdiagnostics.com	Advanced Instruments Reem Kassab reemk@aicompanies.com 2 Technology Way, Norwood, MA 02062 781-320-9000 www.aicompanies.com	Beckman Coulter Matthew Rhyner mnrhyner@beckman.com 11800 SW 147th Ave., Miami, FL 33196 305-380-3800 www.beckmancoulter.com	
See captodayonline.com/productguides for an interactive version of guide				
Name of instrument	CELL-DYN Sapphire*	GloCyte Automated Cell Counter for CSF	Coulter Ac•T 5diff Family; Ac•T 5diff AL	
First year installed in U.S./Outside U.S./No. of units sold in 2016	2005/2005/—	2016/—/26	2001/2000/—; 2003/2003/—	
No. units installed in U.S./Outside U.S./List price	>165/>750/\$250,000	24/—/\$9,985	>1,400/>3,900 combined inside, outside of U.S./\$38,500 (OV and CP), \$54,500 (AL)	
Test menu:	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) • Laboratory • Flags 	standard menu (left) plus: MPV, RDW, retic %&#, IRF, NRBC %&#, CD61, CD3T %&#, CD4T %&#, CD8T %&#, 4/8	standard menu (left) plus: RDW, MPV	
FDA-cleared tests not clinically released	—	—	—	
Tests not available but submitted for 510(k) clearance	—	—	—	
Tests in development	—	—	—	
Tests for research use only	—	—	PCT, PDW, IMM, ATL	
Tests unique to analyzer	CD61 for PLTs, CD3/4, CD3/8 (immuno T-cell)	—	—	
Differential method(s) used	MAPSS (multi-angle polarized scatter separation) and three-color fluorescence	—	ACV technology combining cytochemistry, focused flow impedance, and light absorbance principles of measurement	
Analytical measurement range:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes 	0.0–250.0 × 10 ³ /μL/0.0–7.50 × 10 ⁶ /μL 1.0–25.0 g/dL/0.0–2,000 × 10 ³ /μL 37.0–179.0 fL (MCV) 0.0–1,500 × 10 ³ /μL	TNC: 3–123 cells/μL reportable range 3–6,500 cells/μL/ 2–123 cells/μL reportable range 2–615,644 cells/μL — — —	OV: 0.4–90.0/0.23–7.70; CP: 0.4–91.3/0.30–8.0; AL: 0.4–120.0/0.3–8.0 OV: 0–22.9/4–1,000; CP: 0.0–22.0/10.0–1,000; AL: 1.3–24.0/10.0–1,000 (100.0–1,900) OV: 1.8–55.9, 56.0–63.8 (Hct); CP: 1.8–55.9, 56.0–63.8 (Hct); AL: 2.0–67.0 (Hct)
Precision:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	<2.7%/≤1.5% ≤1.0%/≤4.0% ≤1.0% (MCV)	TNC: 2.5–18.0% repeatability CV/2.7–16.3% repeatability CV — —	<2%/<2% <1%/<5% <2.0% (Hct)
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	neut% r=0.942, slope=0.947, y=0.446; lymph% r=0.936, slope=0.943, y=2.811; mono% r=0.623, slope=1.057, y=0.851; eos% r=0.446, slope=1.024, y=0.288; baso% r=0.232, slope=0.257, y=0.350	—	not available in NCCLS H-20A format	
Interfering substances:	<ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin 	PLT clumps, neutrophil aggregates, HbC crystals, lyse-resistant RBCs, cryoglobulin, cryofibrinogen, fragile WBC, NRBCs autoagglutination, cold agglutinins, elevated WBC, giant PLTs, hemolysis, sm WBC autoagglutination, cold agglutinins, elevated WBC, giant PLTs, hemolysis, hyperglycemia auto and cold agglutinins, cryoglobulins, cryofibrinogen, giant PLT, micro RBCs, PLT clumps, RBC fragments, WBC fragments, PLT satellitism lipids>700 mg/dL, WBCs>250 × 10 ⁹ /L, bilirubin>33 mg/dL, HbC crystals	TNC: nucleated RBCs — — —	NRBCs, PLT clumps, large PLTs, lyse-resistant RBCs cold agglutinins, PLT clumps, WBC overlinearity Hct: lipemic samples, high WBC, cold agglutinins RBC and WBC fragments elevated WBC, lipemia
Interfering substances: differential	see WBC	—	lyse-resistant RBCs, NRBCs, lipemia	
Maximum CBCs per hour/Maximum CBCs and differentials per hour	105/105	CSFs: ~12/—	60/60; 80/80	
Minimum specimen volume open/Closed/Sample dead volume closed	120 μL/120 μL/0.5 mL, 0.3 mL for 10.25 × 64 mm tubes	60 μL/—/—	30 μL for CBC and 53 μL for CBC and differential/30 μL for CBC and 53 μL for CBC and differential/varies by tube size	
Microsample capability	yes	no	yes	
Prepares microscope slides automatically or flags problems for slide prep	yes	no	no	
Number of automatic slidemakers available/List price	—/\$125,000	—	—	
Archives patient data/Previous patient results incl. with recent results	yes/yes	no/no	yes/yes	
Maximum archived data accessible when system online	10,000 results	—	10,000 samples	
No. specimens for which numeric results saved in memory at once	10,000 results	1,600 per database	10,000 samples	
No. specimens for which histo/cytogram results saved in memory at once	10,000 results	—	10,000 samples	
Performs delta checks	yes	no	no	
Tags and holds results for follow-up, confirmatory testing, or rerun	yes	no	yes	
Parameters for flags for holding samples defined by user or vendor	user or vendor	no	user or vendor	
Scattergram display: cell-specific color	yes	no	no	
Histogram display: color with thresholds	yes	no	yes	
User interface can display choice of specimen or result information	yes	yes	yes	
LIS interface formats supported	ASTM 1394	RS232, bidirectional	proprietary; proprietary ASTM	
Information transferred on LIS interface	numeric and flag results, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders	numeric and flag results, instrument to LIS; patient, orders, LIS to instrument—broadcast	numeric and flag results, histograms and differential plots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast	
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	no/no/no	yes/—/—	no/no/no	
Interface available or planned to automated specimen-handling system	none	none	no	
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, Interleaved 2 of 5	Codabar, codes 39 and 128, Interleaved 2 of 5, Data Matrix	Codabar, codes 39 and 128, Interleaved 2 of 5, EAN 8 and 13	
Accommodates barcode placement per CLSI standard AUTO02-A2	yes	yes	yes	
No. of cleaning or maintenance reagents/No. of routine liquid reagents	0/4	0/2 (RBC and TNC reagents)	5/4	
Time required for daily, weekly, monthly maintenance	daily: 30 seconds; weekly: 10 minutes; monthly: 5 minutes (times are estimated)	change O-ring on vacuum every six months	none	
Onboard diagnostics for troubleshooting/Limited to software problems	yes/no	yes/yes	yes/no	
Manufacturer can perform diagnostics via modem	yes	no	no	
Distinguishing features (supplied by company)	four optical and three fluorescent detectors provide multiple scatterplot analysis; 2-D optical platelets prevent interferences; fluorescent analysis of reticulocytes, NRBCs, and three-color monoclonal analysis on routine hematology analyzer; OpenFlow MAb test selections; touch-sensitive screen, interfaces to Accelerator a3600 track system	1 cell/μL limit of detection for both RBC and TNC; consistent turnaround time for standardization and for lean practices; disposable test cartridges eliminate carryover for infectious samples	quantitative five-part WBC differential; aspirates only 30 μL of sample; requires small space footprint and runs quietly; AL has auto repeat based on decision rules	

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

*refer to CELL-DYN Sapphire operator's manual for warnings, limitations, and precautions

HEMATOLOGY ANALYZERS

Part 3 of 12	Beckman Coulter Matthew Rhyner mnrhyner@beckman.com 11800 SW 147th Ave., Miami, FL 33196 305-380-3800 www.beckmancoulter.com	Beckman Coulter Matthew Rhyner mnrhyner@beckman.com 11800 SW 147th Ave., Miami, FL 33196 305-380-3800 www.beckmancoulter.com	Beckman Coulter Matthew Rhyner mnrhyner@beckman.com 11800 SW 147th Ave., Miami, FL 33196 305-380-3800 www.beckmancoulter.com
See captodayonline.com/productguides for an interactive version of guide			
Name of instrument	DxH Connected Workcell	DxH 600	DxH 800
First year installed in U.S./Outside U.S./No. of units sold in 2016	2014/2014/—	2013/2013/—	2008/2008/—
No. units installed in U.S./Outside U.S./List price	100/200/\$690,000	>600/>100/\$209,000	>2,000/>1,500/\$229,000
Test menu:	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) 	<ul style="list-style-type: none"> • standard menu (left) plus: IRF, MPV, MRV, NRBC %&#, RDW-CV, RDW-SD, automated retic #, retic %; body fluids: total nucleated count and RBC count for synovial, serous, CSF fluids and slidemaking 	<ul style="list-style-type: none"> • standard menu (left) plus: IRF, MPV, MRV, NRBC %&#, RDW-CV, RDW-SD, automated retic #, retic %; body fluids: total nucleated count and RBC count for synovial, serous, and CSF fluids
<ul style="list-style-type: none"> • Laboratory • Flags 	—	—	—
FDA-cleared tests not clinically released	—	—	—
Tests not available but submitted for 510(k) clearance	—	—	—
Tests in development	—	—	—
Tests for research use only	body fluid mononuclear %&#, body fluid polymorphonuclear %&#, early granulated cells %&#, high light scatter reticulocytes %&#, low hemoglobin density, microcytic anemia factor, mean sphered cell volume, plateletcrit, platelet distribution width, reticulocyte distribution width, more	body fluid mononuclear %&#, body fluid polymorphonuclear %&#, early granulated cells %&#, high light scatter reticulocytes %&#, low hemoglobin density, microcytic anemia factor, mean sphered cell volume, plateletcrit, platelet distribution width, reticulocyte distribution width, more	body fluid mononuclear %&#, body fluid polymorphonuclear %&#, early granulated cells %&#, high light scatter reticulocytes %&#, low hemoglobin density, microcytic anemia factor, mean sphered cell volume, plateletcrit, platelet distribution width, reticulocyte distribution width (RDWR and RDWR-SD), red cell size factor, unghosted red cells %&#, leukocyte estimates (UWROP, WDOP, WNOP, WROP), cell population data research parameters
Tests unique to analyzer	—	—	—
Differential method(s) used	Automated Intelligent Morphology using volume, conductivity, and five angles of light scatter, digital signal processing, advanced algorithm applications, high-definition cellular resolution, DataFusion	Automated Intelligent Morphology using volume, conductivity, and five angles of light scatter, digital signal processing, advanced algorithm applications, high-definition cellular resolution, DataFusion	Automated Intelligent Morphology using volume, conductivity, and five angles of light scatter, digital signal processing, advanced algorithm applications, high-definition cellular resolution, DataFusion
Analytical measurement range:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) 	0.050–400.000/0.005–8.500 0.10–25.50/3.0–3,000.0 0.00–85.00 (Hct) for operating range, 50.00–150.00 (MCV) for measuring range 0.000–30.000	0.050–400.000/0.005–8.500 0.10–25.50/3.0–3,000.0 0.00–85.00 (Hct) for operating range, 50.00–150.00 (MCV) for measuring range 0.000–30.000
Precision:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	≤3.0%/≤1.5% ≤1.5%/≤3.5% ≤1.0% (MCV)	≤3.0%/≤1.5% ≤1.5%/≤3.5% ≤1.0% (MCV)
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	neut= ±2.0; lymph, mono= ±3.0; eso, baso= ±1.0 (or 10%, whichever is greater)	neut= ±2.0; lymph, mono= ±3.0; eso, baso= ±1.0 (or 10%, whichever is greater)	neut= ±2.0; lymph, mono= ±3.0; eso, baso= ±1.0 (or 10%, whichever is greater)
Interfering substances:	<ul style="list-style-type: none"> • WBC 	precipitated elevated proteins, cryoglobulin, fragmented white cells, agglutinated white cells, lyse-resistant red cells, giant platelets, platelet clumps, unlysed particles >35 fL in size	precipitated elevated proteins, cryoglobulin, fragmented white cells, agglutinated white cells, lyse-resistant red cells, giant platelets, platelet clumps, unlysed particles >35 fL in size
	<ul style="list-style-type: none"> • RBC 	very high WBC count, high concentration of very large platelets, autoagglutinins	very high WBC count, high concentration of very large platelets, autoagglutinins
	<ul style="list-style-type: none"> • MCV or Hct 	very high WBC count, high concentration of very large platelets, autoagglutinins	very high WBC count, high concentration of very large platelets, autoagglutinins
	<ul style="list-style-type: none"> • Platelet 	platelet clumps, white cell fragments, very small red cells, red cell fragments, giant platelets, electronic noise	platelet clumps, white cell fragments, very small red cells, red cell fragments, giant platelets, electronic noise
	<ul style="list-style-type: none"> • Hemoglobin 	severe lipemia, heparin, certain unusual RBC abnormalities that resist lysing	severe lipemia, heparin, certain unusual RBC abnormalities that resist lysing
Interfering substances: differential	elevated triglycerides, precipitated elevated proteins, hypogranular granulocytes, agranular granulocytes, lyse-resistant red cells, very small or multipopulation lymphocytes	elevated triglycerides, precipitated elevated proteins, hypogranular granulocytes, agranular granulocytes, lyse-resistant red cells, very small or multipopulation lymphocytes	elevated triglycerides, precipitated elevated proteins
Maximum CBCs per hour/Maximum CBCs and differentials per hour	up to 300/up to 300	>100/>90	>100/>90
Minimum specimen volume open/Closed/Sample dead volume closed	165 µL/165 µL/300–400 µL	165 µL/165 µL/300–400 µL	165 µL/165 µL/300–400 µL
Microsample capability	yes	yes	yes
Prepares microscope slides automatically or flags problems for slide prep	yes	yes	yes
Number of automatic slidemakers available/List price	—/DxH SMS \$165,000	—/DxH SMS \$165,000	—/DxH SMS \$165,000
Archives patient data/Previous patient results incl. with recent results	—/no	—/no	yes/no
Maximum archived data accessible when system online	90,000 standalone	40,000 standalone	40,000 standalone
No. specimens for which numeric results saved in memory at once	90,000 standalone	40,000 standalone	40,000 standalone
No. specimens for which histo/cytogram results saved in memory at once	90,000	40,000	40,000
Performs delta checks	yes	yes	yes
Tags and holds results for follow-up, confirmatory testing, or rerun	yes	yes	yes
Parameters for flags for holding samples defined by user or vendor	yes	yes	yes
Scattergram display: cell-specific color	yes	yes	yes
Histogram display: color with thresholds	yes	yes	yes
User interface can display choice of specimen or result information	yes	yes	yes
LIS interface formats supported	CLSI LIS01-A2	CLSI LIS01-A2	CLSI LIS01-A2
Information transferred on LIS interface	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders (available with release of workcell)	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders (available with release of workcell)	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders (available with release of workcell)
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	no/no/no	no/no/no	no/no/no
Interface available or planned to automated specimen-handling system	Beckman Coulter	Beckman Coulter	Beckman Coulter
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, Interleaved 2 of 5, NW7	Codabar, codes 39 and 128, interleaved 2 of 5, NW7	Codabar, codes 39 and 128, interleaved 2 of 5, NW7
Accommodates barcode placement per CLSI standard AUTO02-A2	yes	yes	yes
No. of cleaning or maintenance reagents/No. of routine liquid reagents	7/9	5/7	5/7
Time required for daily, weekly, monthly maintenance	automated shutdown programmable with <1 minute user time daily	automated shutdown programmable with <1 minute user time daily	automated shutdown programmable with <1 minute user time daily
Onboard diagnostics for troubleshooting/Limited to software problems	yes/no	yes/no	yes/no
Manufacturer can perform diagnostics via modem	yes	yes	yes
Distinguishing features (supplied by company)	DxH Workcell automation solutions reduce turnaround time without the need for track-based automation; Automated Intelligent Morphology (AIM) provides three independent counts for RBC, WBC, PLT; blast flagging by cell lineage; reliable MVP with few interferences and reliable hemoglobin with few interferences	Automated Intelligent Morphology provides three independent counts for RBC, WBC, PLT; blast flagging by cell lineage; reliable MPV with few interferences and reliable hemoglobin with few interferences; upper-level linearity for body fluids minimizes dilution steps; 48–72 hour sample stability on CBC parameters	Automated Intelligent Morphology provides three independent counts for RBC, WBC, PLT; blast flagging by cell lineage; reliable MPV with few interferences and reliable hemoglobin with few interferences; 48–72 hour sample stability on CBC parameters

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

HEMATOLOGY ANALYZERS

Part 4 of 12	CellaVision Ken Childs ken.childs@cellavision.com 2530 Meridian Parkway, Suite 300, Durham, NC 27713 919-806-4420 www.cellavision.com	Clinical Diagnostic Solutions sales@cdsolinc.com 1800 NW 65th Ave., Plantation, FL 33313 954-791-1773 www.cdsolinc.com	Diatron MI Frank Matuszak frank.matuszak@diatron.com 12601 NW 115th Ave., Ste. A113, Medley, FL 33178 877-684-1139 www.diatron.com
See captodayonline.com/productguides for an interactive version of guide			
Name of instrument	CellaVision DM9600/DM1200	Medonic M-Series	Abacus 3CP
First year installed in U.S./Outside U.S./No. of units sold in 2016	2004/2003/—	2006/—/250	2013/2013/481
No. units installed in U.S./Outside U.S./List price	—/—/~\$135,000–\$175,000	2,000/>25,000/\$21,089	56/1,039/\$20,385
Test menu:	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) 	WBC, RBC, HGB, Hct, MCV, MCH, MCHC, Plt, gran %&#, mid, lymph, RDW, MPV	WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, mono, lymph, RDW%, MPV, GRA%, GRA#
<ul style="list-style-type: none"> • Laboratory • Flags 	—	—	—
FDA-cleared tests not clinically released	—	—	—
Tests not available but submitted for 510(k) clearance	—	—	—
Tests in development	—	—	—
Tests for research use only	—	—	—
Tests unique to analyzer	analysis of cytocentrifuged samples, body fluids (reported parameters: neutrophils, eosinophils, lymphocytes, macrophages, including monocytes), other (basophils, lymphoma cells, atypical lymphocytes, blast cells, and tumor cells)	micro-pipette adaptor for capillary sampling	range flags, measurement condition flags, parameter warning and error flags
Differential method(s) used	light microscopy, image analysis, and artificial neural networks	impedance	volumetric impedance method, light absorbance for HGB measurement
Analytical measurement range:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes 	0.5–80.0/0.5–7.00 2.0–23.0/30–1,800	0.95–83.45/0.44–7.74 1.4–23.7/11–975
Precision:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	7.0 × 10 ⁹ /L, ≤1.8% (OT CV)/4.59 × 10 ¹² /L, ≤0.9% (OT CV) 14.3 g/dL, ≤0.8% (OT CV)/239 × 10 ⁹ /L, ≤3.0% (OT CV) MCV: 86.8 fL/≤0.5% (OT CV)	<2.7%/<1.7% <2.0%/<6% <1.7%
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	seg neut% y=0.97x+1.3, r= 0.987; lymph% y=0.97x + 1.2, r= 0.979; eos% y=1.01+0.1, r=0.960; mono% y=0.97+0.2, r=0.941; band neut% y=0.87x+0.1, r=0.917	—	—
Interfering substances:	<ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin 	<ul style="list-style-type: none"> NRBCs, unlysed RBCs, hemolysis, leukemias, chemotherapy, cryoglobulins, multiple myeloma, lymphocyte count interference leukocytosis with concurrent anemia, agglutinated RBCs, cold agglutinins red blood cell agglutination, WBC, thrombocytosis microcytosis, agglutinated RBCs, giant platelets in excessive numbers, chemotherapy, hemolysis, ACD blood, RBC inclusions, platelet agglutination unlysed RBCs, leukocytosis, lipemia, hyperproteinemia, hyperbilirubinemia, fetal blood 	<ul style="list-style-type: none"> >5 NRBCs/100 WBCs, PLT clumps/large PLTs WBC count >50.0 × 10³/μL WBC count >50.0 × 10³/μL PLT clumps/large PLTs WBC count >50.0 × 10³/μL, lipids >270 mg/dL
Interfering substances: differential	—	factors that affect WBC (above) plus: large lymphocytes, atypical lymphocytes, blasts, basophils in excessive numbers, metamyelocytes, myelocytes, promyelocytes, blasts and plasma cells in excessive numbers	>5 NRBCs/100 WBCs, PLT clumps/large PLTs
Maximum CBCs per hour/Maximum CBCs and differentials per hour	—/35 differentials	>60/>60	60/60
Minimum specimen volume open/Closed/Sample dead volume closed	—	<110 μL/<250 μL/1 mL	100 μL/100 μL/—
Microsample capability	—	yes	no
Prepares microscope slides automatically or flags problems for slide prep	—	no	no
Number of automatic slidemakers available/List price	—	—	—
Archives patient data/Previous patient results incl. with recent results	yes/no	no/no	yes/no
Maximum archived data accessible when system online	unlimited	—	10,000 results
No. specimens for which numeric results saved in memory at once	~4,000	>1,000 samples	10,000 results
No. specimens for which histo/cytogram results saved in memory at once	—	>1,000 samples	10,000 results
Performs delta checks	no	no	no
Tags and holds results for follow-up, confirmatory testing, or rerun	—	no	yes
Parameters for flags for holding samples defined by user or vendor	—	user-definable ranges	yes
Scattergram display: cell-specific color	—	no	no
Histogram display: color with thresholds	—	yes	yes
User interface can display choice of specimen or result information	—	yes	no
LIS interface formats supported	ASTM 1394	XML/Serial	HL7, Diatron Serial Communication
Information transferred on LIS interface	numeric and flag results, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	no/no/yes (for peripheral blood)	no/no/no	no/no/no
Interface available or planned to automated specimen-handling system	—	—	none
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, Interleaved 2 of 5, QR, DataMatrix	—	Codabar, codes 39 and 128, Interleaved 2 of 5
Accommodates barcode placement per CLSI standard AUTO02-A2	—	—	—
No. of cleaning or maintenance reagents/No. of routine liquid reagents	none/1	1/1	1/3
Time required for daily, weekly, monthly maintenance	daily: none; weekly: 5 minutes	daily: a few minutes; monthly: 10 minutes; 6 months: 75 minutes	daily: 10 minutes; weekly: 15 minutes; monthly: 10 minutes
Onboard diagnostics for troubleshooting/Limited to software problems	yes/no	yes/no	no/no
Manufacturer can perform diagnostics via modem	no	no	no
Distinguishing features (supplied by company)	fully automated slide handling and oiling available in two models for medium and large laboratories; performs peripheral blood and body fluid differentials; WBC and other nucleated cells classified into 18 different categories; RBC morphology characterized for six categories; network use allows remote review of blood smears and linking of multiple analyzers in multiple locations	micro-pipette adaptor for capillary sampling; only three-part diff with auto sampling capability; no weekly maintenance	reliable 3-part diff analyzers with two sampling modes: cap-piercing mode for closed-tube sampling and another for open tubes; operator safety: self-cleaning procedures minimize daily maintenance; user-friendly and easy-to-operate high-resolution touchscreen; USB and barcode option to load QC target values; capable to read QR codes for reference input data; confidence: system uses easy-to-understand warning messages and sample flags, employs a comprehensive QC SW package

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HEMATOLOGY ANALYZERS

Part 5 of 12	Diatron MI Frank Matuszak frank.matuszak@diatron.com 12601 NW 115th Ave., Ste. A113, Medley, FL 33178 877-684-1139 www.diatron.com	HORIBA Medical Jim Knowles jim.knowles@horiba.com 9755 Research Drive, Irvine, CA 92618 888-903-5001 ext. 4553 www.horiba.com/us/en/medical	HORIBA Medical Jim Knowles jim.knowles@horiba.com 9755 Research Drive, Irvine, CA 92618 888-903-5001 ext. 4553 www.horiba.com/us/en/medical
See captodayonline.com/productguides for an interactive version of guide			
Name of instrument	Abacus 5	Pentra XLR	Pentra 60C+ Hematology Analyzer
First year installed in U.S./Outside U.S./No. of units sold in 2016	2013/2009/658	2016/2015/—	2000/2000/85
No. units installed in U.S./Outside U.S./List price	35/3,120/\$31,850	—/—/\$77,500	>350/>600/\$47,313
Test menu:	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) • Laboratory • Flags 	standard menu (left) plus: RDW-SD, RDW-CV, MPV	standard menu (left) plus: retic %&#, IRF%, CRC%
	—	—	atypical lymphocytes, atypical lymphocytes %, LIC, LIC%
	pathological flags, lab limits (normal ranges), reagents alert, instrumental alerts	operator selectable flagging	operator selectable flagging
FDA-cleared tests not clinically released	—	—	—
Tests not available but submitted for 510(k) clearance	—	—	—
Tests in development	—	—	—
Tests for research use only	—	—	PCT, PDW, ATL, LIC
Tests unique to analyzer	—	automatic dilution for over range WBC and platelet	—
Differential method(s) used	laser light scatter technology, impedance method, light absorbance	DHSS technology combining cytochemistry, focused flow impedance, and light absorbance	DHSS technology combining cytochemistry, focused flow impedance, and light absorbance principles of measurement
Analytical measurement range:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes 	0.2–100/0.36–7.19	0–120/0–8
		1.1–22.2/15–2,000	0–24/0–1,900
		—	0–67 (Hct)
		—	—
Precision:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	<2.7%/<1.7%	<2%/<2%
		<2.0%/<6%	<1%/<5%
		<1.7%	<2% (Hct)
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	—	—	neut% r=0.99, lymph% r=0.98, mono% r=0.96, eos% r=0.89, baso% r=0.54
Interfering substances:	<ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin 	>5 NRBCs/100 WBCs, PLT clumps/large PLTs	NRBCs, PLT clumps, lyse-resistant RBCs
		WBC count >75.0 × 10 ³ /μL	cold agglutinins
		WBC count >75.0 × 10 ³ /μL	Hct: extreme leukocytosis
		PLT clumps/large PLTs	microcytes, PLT clumps
		WBC count >75.0 × 10 ³ /μL, lipids >280 mg/dL	extreme lipemia, leukocytosis
Interfering substances: differential	>5 NRBCs/100 WBCs, PLT clumps/large PLTs	NRBCs, lyse-resistant RBCs, extreme hyperbilirubinemia	NRBCs, lyse-resistant RBCs, extreme hyperbilirubinemia
Maximum CBCs per hour/Maximum CBCs and differentials per hour	60/60	80/80	60/60
Minimum specimen volume open/Closed/Sample dead volume closed	110 μL/110 μL/—	30 μL for CBC and 53 μL for CBC and differential/100 μL/—	30 μL for CBC and 53 μL for CBC and differential/30 μL for CBC and 53 μL for CBC and differential/—
Microsample capability	no	yes	yes
Prepares microscope slides automatically or flags problems for slide prep	no	no	yes
Number of automatic slidemakers available/List price	—	—	—
Archives patient data/Previous patient results incl. with recent results	yes/no	yes/no	yes/yes, with MultiLink Data Manager
Maximum archived data accessible when system online	100,000 results	100,000	100,000
No. specimens for which numeric results saved in memory at once	100,000 results	unlimited with backup	unlimited with backup
No. specimens for which histo/cytogram results saved in memory at once	100,000 results	unlimited with backup	unlimited with backup
Performs delta checks	no	yes	yes
Tags and holds results for follow-up, confirmatory testing, or rerun	yes	yes	yes
Parameters for flags for holding samples defined by user or vendor	yes	yes	user
Scattergram display: cell-specific color	yes	yes	yes
Histogram display: color with thresholds	yes	yes	yes
User interface can display choice of specimen or result information	no	no	yes
LIS interface formats supported	HL7, Diatron Serial Protocol	proprietary, ASTM 1394	ASTM 1394 and 1238, HL7, IEEE MIB
Information transferred on LIS interface	histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, patient orders, LIS to instrument—broadcast; host query for patient demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, LIS to instrument—broadcast
LOINC codes transmitted with all results/Sent in message to LIS/Listing of machine codes and corresponding LOINC for each test	no/no/no	no/no/no	no/no/no
Interface available or planned to automated specimen-handling system	none	no	no
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, Interleaved 2 of 5	Codabar, codes 39 and 128, ASTM, Interleaved 2 of 5	Codabar, codes 39 and 128, ASTM, Interleaved 2 of 5
Accommodates barcode placement per CLSI standard AUTO02-A2	—	yes	yes
No. of cleaning or maintenance reagents/No. of routine liquid reagents	1/3	2/6	2/5
Time required for daily, weekly, monthly maintenance	daily: 10 minutes; weekly: 15 minutes; monthly: 10 minutes	daily: 10 minutes; weekly: 15 minutes; monthly: 15 minutes	daily: 10 minutes; weekly: 15 minutes; monthly: 15 minutes
Onboard diagnostics for troubleshooting/Limited to software problems	no/no	yes/yes	yes/yes
Manufacturer can perform diagnostics via modem	no	no	yes, with Data Manager
Distinguishing features (supplied by company)	compact, benchtop 5-part laser WBC differential analyzer provides accurate and precise results; two sampling modes (cap-piercing mode for closed-tube sampling and another for open tubes); field upgradeable with optional autosampler with built-in barcode reader, sample capacity: 100 tubes; user friendly and easy to operate: easy-to-follow, intuitive icon user interface	customized dilution ratio for over range WBC up to 360 × 10 ³ /mm ³ and platelet up to 5,600 × 10 ³ /mm ³ ; auto-rerun of patient results based on customized criteria; autovalidation of patient results on customized criteria	reliable five-part WBC differential technology; mean time between failures more than 200 days; small footprint; small sample size of 53 μL

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HEMATOLOGY ANALYZERS

Part 6 of 12	HORIBA Medical Jim Knowles jim.knowles@horiba.com 9755 Research Drive, Irvine, CA 92618 888-903-5001 ext. 4553 www.horiba.com/us/en/medical	HORIBA Medical Jim Knowles jim.knowles@horiba.com 9755 Research Drive, Irvine, CA 92618 888-903-5001 ext. 4553 www.horiba.com/us/en/medical	Mindray Peggy Chan p.chan@mindray.com 8650 154th Ave. NE, Redmond, WA 98052 425-881-0361 ext. 3305 www.mindraynorthamerica.com
See captodayonline.com/productguides for an interactive version of guide			
Name of instrument	Pentra DX Nexus	Pentra XL 80	BC-5390
First year installed in U.S./Outside U.S./No. of units sold in 2016	2005/2004/6	2004/2003/31	2016/2012/>800
No. units installed in U.S./Outside U.S./List price	>20/>400/\$213,979	>250/>900/\$76,808	20/>2,000/—
Test menu:	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) • Laboratory 	standard menu (left) plus: NRBCs, reticulocytes, IRF, MRV	standard menu (left) plus: RDW-CV, RDW-SD, MPV
	LIC %&#, atypical lymphocytes %&#, IMG %&#, IML %&#, IMM %&#, RETL%, RETM%, RETH%, IMR%, MRU, MFI%, CRC%	standard menu (left) plus: automatic dilution of over-range results (WBC × 3, RBC/Hgb/PLT × 2), RDW, MPV atypical lymphocytes, atypical lymphocytes %, LIC, LIC%	—
	—	operator selectable flagging	WBC scattergram abn., WBC histogram abn., blast, immature gran, left shift, abn./atypical lym, RBC lyse resist, NRBC, dimorphic population, turb/HGB interference, RBC agglutination, PLT histogram abn., PLT clump
FDA-cleared tests not clinically released	—	—	—
Tests not available but submitted for 510(k) clearance	—	—	—
Tests in development	—	—	—
Tests for research use only	PCT, PDW, ATL, LIC, IMG, IML, IMM	PCT, PDW, ATL, LIC	—
Tests unique to analyzer	—	automatic dilution protocol	—
Differential method(s) used	cytochemistry (chlorazol black E) and absorbance	DHSS technology combining cytochemistry, focused flow impedance, and light absorbance	flow cytometry, light scatter
Analytical measurement range:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes 	0–150/0.5–8.1 2–25/0–2,000 0–80 (Hct) 0–40%	0.3–200/0.2–8.0 0.5–25/5–2,000 2–75 (Hct%) —
Precision:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	<2%/<2% <1%/<5% <2% (Hct)	<0.15 (SD) or 3.0% (CV)/<1.5% <1.5%/<7.5 (SD) or 5% (CV) <1.5% (MCV)
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	neut% r=0.99, lymph% r=0.98, mono% r=0.92, eos% r=0.97, baso% r=0.71	neut% r=0.99, lymph% r=0.98, mono% r=0.96, eos% r=0.89, baso% r=0.54	neu%: ±5.00 or ±10.0%; lym%: ±4.00 or ±10.0%; mon%: ±3.00 or ±10.0%; eos%: ±2.00 or ±10.0%; bas%: ±1.00 or ±10.0%
Interfering substances:	<ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin 	NRBCs, PLT clumps, lyse-resistant RBCs cold agglutinins Hct: extreme leukocytosis microcytes, PLT clumps extreme lipemia, leukocytosis	NRBCs, PLT clumps, lyse-resistant RBCs cold agglutinins Hct: extreme leukocytosis microcytes, PLT clumps extreme lipemia, leukocytosis
Interfering substances: differential	NRBCs, lyse-resistant RBCs, extreme hyperbilirubinemia	NRBCs, lyse-resistant RBCs, extreme hyperbilirubinemia	lysis-resistant RBC, NRBC, PLT aggregates, giant PLT
Maximum CBCs per hour/Maximum CBCs and differentials per hour	120/120	80/80	60/60
Minimum specimen volume open/Closed/Sample dead volume closed	130 µL/200 µL/1 mL	30 µL for CBC/53 µL for CBC and differential/0.5 mL	—/33 µL, predilute 20 µL/1 mL
Microsample capability	yes, open mode	yes	yes
Prepares microscope slides automatically or flags problems for slide prep	yes	yes	no
Number of automatic slidemakers available/List price	—	—	—
Archives patient data/Previous patient results incl. with recent results	yes/yes, with MultiLink Data Manager	yes/yes, with MultiLink Data Manager	yes/yes
Maximum archived data accessible when system online	100,000	100,000	100,000
No. specimens for which numeric results saved in memory at once	unlimited with backup	unlimited with backup	100,000
No. specimens for which histo/cytogram results saved in memory at once	unlimited with backup	unlimited with backup	100,000
Performs delta checks	yes	yes	yes
Tags and holds results for follow-up, confirmatory testing, or rerun	yes	yes	yes
Parameters for flags for holding samples defined by user or vendor	user	user	yes
Scattergram display: cell-specific color	yes	yes	yes
Histogram display: color with thresholds	yes	yes	yes
User interface can display choice of specimen or result information	yes	—	yes
LIS interface formats supported	proprietary, ASTM 1394 and 1238, HL7, IEEE MIB	proprietary, ASTM 1394 and 1238, HL7, IEEE MIB	ASTM 1394, ASTM 1238, HL7, TCP-IP
Information transferred on LIS interface	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	no/no/no	yes/yes/yes	yes/yes/yes
Interface available or planned to automated specimen-handling system	yes	yes	none
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, ASTM, Interleaved 2 of 5	Codabar, codes 39 and 128, ASTM, Interleaved 2 of 5	Codabar, codes 39, 93, and 128, Interleaved 2 of 5, UPC/EAN
Accommodates barcode placement per CLSI standard AUTO02-A2	yes	yes	yes
No. of cleaning or maintenance reagents/No. of routine liquid reagents	2/6	2/5	1/4
Time required for daily, weekly, monthly maintenance	daily: 15 minutes; weekly: 30 minutes; monthly: 30 minutes	daily: 10 minutes; weekly: 15 minutes; monthly: 15 minutes	daily: <10 minutes
Onboard diagnostics for troubleshooting/Limited to software problems	no/yes	no/yes	yes/no
Manufacturer can perform diagnostics via modem	no	no	yes
Distinguishing features (supplied by company)	high-throughput cell counter with integrated reticulocyte methodology and slidemaker-stainer; fluorescent NRBC counting, auto rerun and reflex testing, autovalidation	compact five-part differential instrument with auto-loader and autodilution capability, auto rerun feature, autovalidation	60 QC files, maximum 40 samples autoloader capacity, sample adaptors for pediatric and predilution samples, operation software with built-in data-management functions, 3 modes of operation: autoloader and opened and closed tube; customizable patient reports, only 1 maintenance reagent, other maintenance is touch-button operation, cyanide-free, nontoxic reagent; patented WBC differential and digital sheath flow technology, top instrument reliability, mean time between failures >2 years of instrument in the same 5-part series

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

HEMATOLOGY ANALYZERS

Part 7 of 12	Mindray Peggy Chan p.chan@mindray.com 8650 154th Ave. NE, Redmond, WA 98052 425-881-0361 ext. 3305 www.mindraynorthamerica.com	Roche Diagnostics Krista Curcio krista.curcio@roche.com 9115 Hague Road, Indianapolis, IN 46250 317-217-0801 www.roche.com	Siemens Healthineers David Metrena david.metrena@siemens.com 1717 Deerfield Rd., Deerfield, IL 60015 800-948-3234 www.usa.siemens.com/diagnostics
See captodayonline.com/productguides for an interactive version of guide			
Name of instrument	BC-3600	cobas m 511*	Advia 120 Hematology System
First year installed in U.S./Outside U.S./No. of units sold in 2016	2015/2011/—	—/2017/—	1998/1998/—
No. units installed in U.S./Outside U.S./List price	25/2,500/\$18,000	—	>750/2,700/\$169,000–\$189,000
Test menu:	• Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso)	standard menu (left) plus: NRBC %&#, MPV, RET %&#, HGB-RET*	standard menu (left) plus: CHCM, MPV, RDW, HDW, LUC %&#, retic %&#, Chr, CHCMr, MCVr; CSF: WBC, RBC, PMN, MN, neut, lymph, mono; cellular Hgb
• Laboratory	—	—	% hypo, hyper, macro, micro; calc. Hb, MPXI; % blast, PMN, MN; large PLT count; RBC fragment count; RBC ghost count; CSF: WBC, RBC, three-part differential; body fluids: TNC, RBC
• Flags	—	—	left shift, atyp. lymph, blasts, immature grans, myeloperoxidase deficiency, aniso, micro, macro, Hb variation, hypo, hyper, NRBC, RBC fragments, RBC ghost, large PLTs, PLT clumps
FDA-cleared tests not clinically released	none	—	—
Tests not available but submitted for 510(k) clearance	none	—	—
Tests in development	none	—	IRF, MPC, MPM
Tests for research use only	none	—	CSF eos
Tests unique to analyzer	none	—	CHCM, HDW, Chr, CHCMr, MPC, MPM; CSF: WBC, RBC, MN, PMN, neut, lymph, mono
Differential method(s) used	impedance method for WBC, RBC, MCV, RDW, PLT, MPV and WBC 3-part differential determination, colorimetric method for HGB determination	multispectral digital image analysis	perox: peroxidase cytochemistry staining with light scatter and absorption; baso: cytochemistry stripping with two-angle laser light scatter
Analytical measurement range:	• WBC count/RBC count	—	whole blood: WBC 0.02–400/RBC 0–7.0; CSF: WBC 0–5,000/RBC 0–1,500
• Hemoglobin/Platelet	1.0–24.9/10–999	—	0–22.5/5–3,500
• MCV (fL) or Hct (%)	—	—	30–180 (MCV)
• Reticulocytes	—	—	0.2–24.5%
Precision:	• WBC count/RBC count	—	2.7%/1.2%
• Hemoglobin/Platelet	WBC ≥4.0: ≤3.0% CV%; 1.0 ≤WBC ≤2.0: ≤7.0% CV%/≤2.5% CV%	—	0.93%/2.93%
• MCV or Hct	≤2.0% CV%/PLT ≥150: ≤6.0% CV%; 20 ≤PLT ≤ 50: ≤20.0% CV%	—	0.78% (MCV)
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	≤2.0 CV% (MCV), ≤2.5 CV% (Hct)	—	neut% r=0.997, y=1.02x–0.6; lymph% r=0.997, y=1.00x+0.8; mono% r=0.943, y=0.85x–0.3; eos% r=0.979, y=0.87x+0.2; baso% r=0.772, y=0.67x+0.0; luc% r=0.994, y=0.92x+0.6
Interfering substances:	• WBC	—	incomplete RBC lysis (peroxidase only)
• RBC	certain unusual RBC abnormalities that resist lysing, nucleated RBCs, fragmented WBCs, unlysed particles, very large or aggregated platelets as when anticoagulated with oxalate or heparin	—	cold agglutinins, extreme sickle cell
• MCV or Hct	very high WBC count, high concentration of very large platelets, agglutinated RBCs and smaller RBC	—	—
• Platelet	very high WBC count, high concentration of very large platelets, agglutinated RBCs, RBC fragments	—	—
• Hemoglobin	very small red blood cells near the upper PLT threshold, cell fragments, clumped platelets as with oxalate or heparin, platelet fragments or cellular debris near the lower platelet threshold	—	—
Interfering substances: differential	very high WBC count, severe lipemia, certain unusual RBC abnormalities that resist lysing, anything that increases the turbidity of the sample such as elevated levels of triglycerides	—	high WBC, lipemia, extremely high bilirubin, interfere with cyanmethemoglobin only, none with direct cellular Hb (CHCM)
Maximum CBCs per hour/Maximum CBCs and differentials per hour	60/60	60/60 (including images of all WBCs, RBCs, and platelets)	120/120
Minimum specimen volume open/Closed/Sample dead volume closed	100 µL/21 µL/1 mL	50 µL/480 µL/450 µL	157 µL/157 µL/<300 µL (tube size dependent)
Microsample capability	yes	yes	yes
Prepares microscope slides automatically or flags problems for slide prep	no	yes	yes
Number of automatic slidemakers available/List price	—	—	—
Archives patient data/Previous patient results incl. with recent results	no/no	yes/—	yes/no
Maximum archived data accessible when system online	—	abnormal images maintained for 2 years, numeric data for ~10 years; normal images stored for up to 30 days	10,000 samples
No. specimens for which numeric results saved in memory at once	40,000	numeric data stored for ~10 years	10,000 samples
No. specimens for which histo/cytogram results saved in memory at once	40,000	normal sample images stored for up to 30 days; abnormal images maintained for 2 years	10,000 samples
Performs delta checks	no	yes	yes
Tags and holds results for follow-up, confirmatory testing, or rerun	no	yes	yes
Parameters for flags for holding samples defined by user or vendor	no	yes	user or vendor
Scattergram display: cell-specific color	no	cell images are displayed instead of scattergrams	yes
Histogram display: color with thresholds	yes	yes (view specific cell's location within the PLT or RBC histogram)	yes
User interface can display choice of specimen or result information	no	yes	yes
LIS interface formats supported	HL7	—	proprietary (Spec 79)
Information transferred on LIS interface	numeric and flag results, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast	—	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	yes/yes/no	—	no/no/yes
Interface available or planned to automated specimen-handling system	—	—	LabCell (Siemens)
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128	—	Codabar, codes 39 and 128, ASTM, Interleaved 2 of 5
Accommodates barcode placement per CLSI standard AUTO02-A2	no	—	yes
No. of cleaning or maintenance reagents/No. of routine liquid reagents	1/4	2/2	1/7
Time required for daily, weekly, monthly maintenance	daily: <10 minutes	daily: <5 minutes	daily: automated; weekly: 15 minutes; monthly: 15 minutes
Onboard diagnostics for troubleshooting/Limited to software problems	yes/no	yes/no	yes/no
Manufacturer can perform diagnostics via modem	no	yes	yes
Distinguishing features (supplied by company)	10.4-inch all-in-one Glance color touchscreen, touch-button maintenance procedures, and low sample requirement; 40,000 patient results storage, close-tube sampling, open-tube sampling for pediatric samples, 3 types of sample adaptors, barcoded reagent, and 5 minutes daily start-up and maintenance; 12 QC files, uploadable QC files, auto-sleep setting, only 1 maintenance reagent, and sample stability between 8 and 24 hours	all CBC parameters are determined using multispectral digital image analysis directly from a prepared, stained slide; WBC differential performed using digital cell image analysis on every sample; combines three separate processes (CBC/differential, slide making/staining, slide review) into one truly integrated system	laser technology provides cellular Hb for RBCs and retics; 2-D PLT analysis eliminates interference from RBC fragments and inclusion of large PLTs; dual WBC counts with a linearity of up to 400,000; CSF assay
Note: a dash in lieu of an answer means company did not answer question or question is not applicable		*Instrument has CE mark. Instrument and test menu are not FDA cleared or available for use in the U.S. A 510(k) submission is pending.	

HEMATOLOGY ANALYZERS

Part 8 of 12	Siemens Healthineers David Metrena david.metrena@siemens.com 1717 Deerfield Rd., Deerfield, IL 60015 800-948-3234 www.usa.siemens.com/diagnostics	Siemens Healthineers David Metrena david.metrena@siemens.com 1717 Deerfield Rd., Deerfield, IL 60015 800-948-3234 www.usa.siemens.com/diagnostics	Siemens Healthineers David Metrena david.metrena@siemens.com 1717 Deerfield Rd., Deerfield, IL 60015 800-948-3234 www.usa.siemens.com/diagnostics	
See captodayonline.com/productguides for an interactive version of guide				
Name of instrument	Advia 2120 Hematology System	Advia 2120i	Advia 360 Hematology System	
First year installed in U.S./Outside U.S./No. of units sold in 2016	2004/2004/—	2008/2008/130	2015/2015/—	
No. units installed in U.S./Outside U.S./List price	>200/>3,700/\$225,000	>200/>3,700/\$225,000	—/\$24,000	
Test menu:	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) • Laboratory • Flags 	standard menu (left) plus: CHCM, MPV, RDW, HDW, LUC %&#, retic %&#, Chr, CHCMr, cellular Hgb, MCVr; CSF: WBC, RBC, PMN, MN, neut, lymph, mono % hypo, hyper, macro, micro; MPXI; % blast, PMN, MN, large PLT count, RBC fragment count; RBC ghost count; NRBC; CSF: WBC, RBC, three-part differential; body fluids: TNC, RBC left shift, atyp. lymph, blasts, immature grans, myeloperoxidase deficiency, aniso, micro, macro, Hb variation, hypo, hyper, NRBC, RBC fragments, RBC ghost, large PLTs, PLT clumps	standard menu (left) plus: CHCM, MPV, RDW, HDW, LUC %&#, retic %&#, Chr, CHCMr, cellular Hgb, MCVr; CSF: WBC, RBC, PMN, MN, neut, lymph, mono % hypo, hyper, macro, micro, MPXI; % blast, PMN, MN, large PLT count, RBC fragment count, RBC ghost count, NRBC; CSF: WBC, RBC, three-part differential; body fluids: TNC, RBC left shift, atypical lymphocytes, blasts, immature grans, myeloperoxidase deficiency, aniso, micro, macro, Hgb variation, hypo, hyper, NRBC, RBC fragments, RBC ghost, large PLTs, PLT clumps out-of-range flags, measurement condition flags (warnings); flagging on WBC and HGB channels; flagging on RBC/PLT channel; warning flags of differential parameters	
FDA-cleared tests not clinically released	—	—	—	
Tests not available but submitted for 510(k) clearance	—	—	—	
Tests in development	MPC, MPM	MPC, MPM	—	
Tests for research use only	IRF, CSF eos	IRF, CSF eos	—	
Tests unique to analyzer	CHCM, HDW, Chr, CHCMr, cellular Hgb, MPC, MPM; CSF: WBC, RBC, PMN, MN, neut, lymph, mono	CHCM, HDW, Chr, CHCMr, cellular Hgb, MPC, MPM, CSF: WBC, RBC, PMN, MN, neut, lymph, mono	—	
Differential method(s) used	peroxidase WBC: peroxidase cytochem. staining with light scatter and absorption; baso: cytochem. stripping with two-angle laser light scatter	peroxidase WBC: peroxidase cytochem. staining with light scatter and absorption; baso: cytochem. stripping with two-angle laser light scatter	volumetric impedance change for WBC, RBC, PLT; lytic reagents with impedance method for 3 subpopulations; spectrophotometry for HGB	
Analytical measurement range:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes 	whole blood: WBC 0.02–400/RBC 0–7.0; CSF: WBC 0–5,000/RBC 0–1,500 0–22.5/5–3,500 30–180 (MCV) 0.2–24.5%	0.0–85.0/0.0–800 1.0–25.0/0–1,000 50–120 (MCV) —	
Precision:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	2.7%/1.2% 0.93%/2.93% 0.78% (MCV)	<4.0%/<2.5% <2.4%/<7.0% <2.0% (MCV)	
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	neut% r=0.997, y=1.02x-0.6; lymph% r=0.997, y=1.00x+0.8; mono% r=0.943, y=0.85x-0.3; eos% r=0.979, y=0.87x+0.2; baso% r=0.772, y=0.67x+0.0; luc% r=0.994, y=0.92x+0.6	neut% r=0.997, y=1.02x-0.6; lymph% r=0.997, y=1.00x+0.8; mono% r=0.943, y=0.85x-0.3; eos% r=0.979, y=0.87x+0.2; baso% r=0.772, y=0.67x+0.0; luc% r=0.994, y=0.92x+0.6	—	
Interfering substances:	<ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin 	incomplete RBC lysis (peroxidase only) cold agglutinins, extreme sickle cell — — extreme lipemia, high WBC, extremely high bilirubin interference with colorimetric Hb only, none with cellular Hb	incomplete RBC lysis (peroxidase only) cold agglutinins, extreme sickle cell — — extreme lipemia, high WBC, extremely high bilirubin interference with colorimetric Hgb only, none with cellular Hgb	>5 NRBCs/100 WBCs, PLT clumps/large PLTs WBC count >50.0 × 103/μL WBC count >50.0 × 103/μL PLT clumps/large PLTs (abnormal histogram) WBC count >50.0 × 103/μL, lipids >270 mg/dL
Interfering substances: differential	incomplete RBC lysis, complete myeloperoxidase deficiency	incomplete RBC lysis, complete myeloperoxidase deficiency	> 5 NRBCs/100 WBCs, PLT clumps/large PLTs (abnormal histogram)	
Maximum CBCs per hour/Maximum CBCs and differentials per hour	120/120	120/120	60/60	
Minimum specimen volume open/Closed/Sample dead volume closed	175 μL/175 μL/<300 (tube size dependent)	175 μL/175 μL/<300 (tube size dependent)	100 μL/100 μL/—	
Microsample capability	yes	yes	—	
Prepares microscope slides automatically or flags problems for slide prep	if integrated to Advia Autoslide	yes	no	
Number of automatic slidemakers available/List price	Advia Autoslide/\$98,000	Advia Autoslide/\$98,000	—	
Archives patient data/Previous patient results incl. with recent results	yes/no	yes/no	yes/no	
Maximum archived data accessible when system online	10,000	10,000 samples	10,000	
No. specimens for which numeric results saved in memory at once	10,000	10,000 samples	10,000	
No. specimens for which histo/cytogram results saved in memory at once	10,000	10,000 samples	10,000	
Performs delta checks	yes	yes	yes	
Tags and holds results for follow-up, confirmatory testing, or rerun	yes	yes	yes	
Parameters for flags for holding samples defined by user or vendor	user or vendor	yes	yes	
Scattergram display: cell-specific color	yes	yes	yes	
Histogram display: color with thresholds	yes	yes	yes	
User interface can display choice of specimen or result information	yes	yes	yes	
LIS interface formats supported	proprietary	proprietary (instrument or vendor specific)	proprietary, HL7	
Information transferred on LIS interface	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders	
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	no/no/yes	no/no/yes	yes/yes/yes	
Interface available or planned to automated specimen-handling system	LabCell (Siemens)	LabCell (Siemens)	none	
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, Interleaved 2 of 5	Codabar, codes 39 and 128, ASTM, Interleaved 2 of 5	Codabar, codes 39 and 128, ASTM, Interleaved 2 of 5	
Accommodates barcode placement per CLSI standard AUTO02-A2	—	yes	—	
No. of cleaning or maintenance reagents/No. of routine liquid reagents	1/7	1/7	1/4	
Time required for daily, weekly, monthly maintenance	daily: automated; weekly: 15 minutes; monthly: 15 minutes	daily: automated; weekly: 15 minutes; monthly: 15 minutes	daily: 5 minutes; weekly: 20 minutes	
Onboard diagnostics for troubleshooting/Limited to software problems	yes/no	yes/no	yes/—	
Manufacturer can perform diagnostics via modem	yes	yes	no	
Distinguishing features (supplied by company)	laser technology provides direct cellular Hb for RBCs and reticulocytes; 2-D PLT analysis eliminates interference from RBC fragments and inclusion of large PLTs; dual WBC counts with a linearity of up to 400,000; CSF assay	laser technology provides direct cellular Hgb for RBCs and reticulocytes; 2-D PLT analysis eliminates interference from RBC fragments and inclusion of large PLTs; dual WBC counts with a linearity of up to 400,000; CSF assay	measures 16 parameters including 3-part WBC differential; efficient manual sampling of both open and closed tubes; 60 samples per hour, volume as low as 100 μL	

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

HEMATOLOGY ANALYZERS

Part 9 of 12	Siemens Healthineers David Metrena david.metrena@siemens.com 1717 Deerfield Rd., Deerfield, IL 60015 800-948-3234 www.usa.siemens.com/diagnostics	Sysmex America Kevin Croghan communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us	Sysmex America Ann Ludwig communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us
See captodayonline.com/productguides for an interactive version of guide			
Name of instrument	Advia 560/560AL Hematology	pocH-100i	XN-1000
First year installed in U.S./Outside U.S./No. of units sold in 2016	2015/2015/—	2004/2003/>160	2012/2011/>390
No. units installed in U.S./Outside U.S./List price	—/—/\$56,800	>1,200/>5,000/\$19,094	>700/>450/\$202,667
Test menu: <ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) • Laboratory • Flags 	WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso, LYM%, MON%, EOS%, BAS%, RDW-CV, MPV	WBC, RBCs, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, lymph, MXD (mono, eos, baso), RDW-SD, RDW-CV, MPV	standard menu (left) plus: NRBC %&#, IG %&#, MPV, PLT-F, IPF, RDW-CV, RDW-SD, retic %&#, IRF, RET-He; body fluids: RBC-BF, TC-BF, WBC-BF, MN %&#, PMN %&#
FDA-cleared tests not clinically released	—	—	—
Tests not available but submitted for 510(k) clearance	—	—	—
Tests in development	—	—	—
Tests for research use only	—	—	—
Tests unique to analyzer	—	absolute neutrophil count	IG %&#, PLT-F, IPF, RET-He; body fluids: two-part differential MN %&#, PMN %&#
Differential method(s) used	volumetric impedance change for WBC, RBC, PLT; light scattering baso measurement; light scattering 4-diff measurement LYM, MON, NEU, EOS; spectrophotometry for HGB	direct current	fluorescent flow cytometry with side fluorescent light, forward-scattered and side-scattered light
Analytical measurement range: <ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes 	0.20–100.0/0.36–7.19 1.10–22.2/15.0–1,000 50–120 (MCV) —	1.0–99.9/0.3–7.0 0.1–25.0/10–999 10–60 (Hct) —	0.00–440.00/0.00–8.60 0.0–26.0/0–5,000 0.0–75.0% (Hct) 0.00–30.00
Precision: <ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	<3.4%/<2.0% <2.4%/<7.0% <2.0% (MCV)	≤3.5%/≤2.0% ≤1.5%/≤6.0% ≤2.0% (Hct)	<3.0%/<1.5% <1.0%/<4.0% <1.5% (Hct)
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	—	neut% r=0.98, lymph% r=0.99, MXD% r=0.75, neut# r=1.00, lymph# r=1.00, MXD# r=0.90	—
Interfering substances: <ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin 	>5 NRBCs/100 WBCs, PLT clumps/large PLTs WBC count >75.0 × 103/μL WBC count >75.0 × 103/μL PLT clumps/large PLTs WBC count >75.0 × 103/μL, lipids >280 mg/dL	lyse-resistant RBCs, cold agglutinins, cryoglobulins, PLT aggregation, NRBCs cold agglutinins, severe microcytosis, fragmented RBCs cold agglutinins, fragmented RBCs, leukocytosis (>100,000/μL) PLT aggregation, giant PLTs, microcytic RBCs, fragmented RBCs severe lipemia, abnormal protein, leukocytosis (>100,000/μL)	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 30.320 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 199 mg/dL for hemolysis
Interfering substances: differential	> 5 NRBCs/100 WBCs, PLT clumps/large PLTs	—	—
Maximum CBCs per hour/Maximum CBCs and differentials per hour	60/60	30/30	100/100
Minimum specimen volume open/Closed/Sample dead volume closed	100 μL/100 μL/—	15 μL/15 μL/15 μL	88 μL/88 μL/1 mL
Microsample capability	—	yes	yes
Prepares microscope slides automatically or flags problems for slide prep	no	no	yes
Number of automatic slidemakers available/List price	—	—	—
Archives patient data/Previous patient results incl. with recent results	yes/no	yes/yes	yes/yes
Maximum archived data accessible when system online	100,000	100 samples	100,000
No. specimens for which numeric results saved in memory at once	100,000	100 samples	100,000
No. specimens for which histo/cytogram results saved in memory at once	100,000	100 samples	100,000
Performs delta checks	yes	yes	yes
Tags and holds results for follow-up, confirmatory testing, or rerun	yes	no	yes
Parameters for flags for holding samples defined by user or vendor	yes	yes	yes
Scattergram display: cell-specific color	yes	no	yes
Histogram display: color with thresholds	yes	yes	yes
User interface can display choice of specimen or result information	yes	yes	yes
LIS interface formats supported	proprietary, HL7	RS-232C	XN series ASTM1381-95/ASTM1894-97 or XN series ASTM1381-02/ASTM1894-97
Information transferred on LIS interface	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for patient demographics and orders	numeric and flag results, histograms and scatterplots, patient demographics, orders, host query for patient demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	yes/yes/yes	no/no/yes	no/no/yes
Interface available or planned to automated specimen-handling system	none	—	none
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, ASTM, Interleaved 2 of 5	codes 39 and 128, ASTM, ITF, NW7, JAN-8 and 13	Codabar, codes 39 and 128, ITF, NW7, ISBT 128, JAN/EAN/UPC
Accommodates barcode placement per CLSI standard AUTO02-A2	—	yes	yes
No. of cleaning or maintenance reagents/No. of routine liquid reagents	1/4	1/2	1/5 cubitainer reagents, 4 fluorescent dye cartridges
Time required for daily, weekly, monthly maintenance	daily: 5 minutes; weekly: 20 minutes	daily: <2 minutes; weekly: <2 minutes; monthly: <2 minutes	daily: <1 minute (operator time)
Onboard diagnostics for troubleshooting/Limited to software problems	—	yes/no	yes/no
Manufacturer can perform diagnostics via modem	no	yes	yes
Distinguishing features (supplied by company)	60 samples per hour, volume as low as 110 μL; measures 20 parameters and employs laser-based optical measurement to provide a 5-part WBC differential; aids in interpreting disease state information with 2 scattergrams and 2 histograms per result	hydrodynamic focusing, automatic floating discriminators, ISBT compliant, data-masking software for blood donor centers; optional upgrade to pocHi Plus or pocHi Linc available (data manager and small LIS); ability to directly link to EMR	reportable parameters include IG %&#, RET-He, fluorescent PLT, body fluid with two-part differential; onboard preloaded decision rules including automated rerun-reflex capabilities; optional wagons for complete reagent management; compatible with MySysmex, an easy-to-use mobile assistant that displays real-time analyzer performance data, enabling informed decision-making; compatible with optional RU-20 reagent unit that allows for use of concentrated Cellpack

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

HEMATOLOGY ANALYZERS

Part 10 of 12		Sysmex America Ann Ludwig communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us	Sysmex America Ann Ludwig communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us	Sysmex America Ann Ludwig communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us
See captodayonline.com/productguides for an interactive version of guide				
Name of instrument	XN-2000	XN-3100	XN-9100	XN-9100
First year installed in U.S./Outside U.S./No. of units sold in 2016	2012/2011/>180	2017/2017/—	2017/2017/—	2017/2017/—
No. units installed in U.S./Outside U.S./List price	>500/>450/\$402,667	<10/<10/\$562,667	<10/<10/varies based on configuration	<10/<10/varies based on configuration
Test menu:	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) 	standard menu (left) plus: NRBC %&#, IG %&#, MPV, PLT-F, IPF, RDW-CV, RDW-SD, retic %&#, IRF, RET-He; body fluids: RBC-BF, TC-BF, WBC-BF, MN %&#, PMN %&#	standard menu (left) plus: NRBC %&#, IG %&#, MPV, PLT-F, IPF, RDW-CV, RDW-SD, retic %&#, IRF, RET-He; body fluids: RBC-BF, TC-BF, WBC-BF, MN %&#, PMN %&#	standard menu (left) plus: NRBC %&#, IG %&#, MPV, PLT-F, IPF, RDW-CV, RDW-SD, retic %&#, IRF, RET-He; body fluids: RBC-BF, TC-BF, WBC-BF, MN %&#, PMN %&#
<ul style="list-style-type: none"> • Laboratory • Flags 	—	—	—	—
FDA-cleared tests not clinically released	—	—	—	—
Tests not available but submitted for 510(k) clearance	—	—	—	—
Tests in development	—	—	—	—
Tests for research use only	—	—	—	—
Tests unique to analyzer	IG %&#, PLT-F, IPF, RET-He; body fluids: two-part differential MN %&#, PMN %&#	IG %&#, PLT-F, IPF, RET-He; body fluids: two-part differential MN %&#, PMN %&#	IG %&#, PLT-F, IPF, RET-He; body fluids: two-part differential MN %&#, PMN %&#	IG %&#, PLT-F, IPF, RET-He; body fluids: two-part differential MN %&#, PMN %&#
Differential method(s) used	fluorescent flow cytometry with side fluorescent light, forward-scattered and side-scattered light	fluorescent flow cytometry with side fluorescent light, forward-scattered and side-scattered light	fluorescent flow cytometry with side fluorescent light, forward-scattered and side-scattered light	fluorescent flow cytometry with side fluorescent light, forward-scattered and side-scattered light
Analytical measurement range:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes 	0.00–440.00/0.00–8.60 0.0–26.0/0–5,000 0.0–75.0% (Hct) 0.00–30.00	0.00–440.00/0.00–8.60 0.0–26.0/0–5,000 0.0–75.0% (Hct) 0.00–30.00	0.00–440.00/0.00–8.60 0.0–26.0/0–5,000 0.0–75.0% (Hct) 0.00–30.00
Precision:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	<3.0%/<1.5% <1.0%/<4.0% <1.5% (Hct)	<3.0%/<1.5% <1.0%/<4.0% <1.5% (Hct)	<3.0%/<1.5% <1.0%/<4.0% <1.5% (Hct)
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	—	—	—	—
Interfering substances:	<ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin 	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 30.320 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 199 mg/dL for hemolysis	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 30.320 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 199 mg/dL for hemolysis	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 30.320 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 199 mg/dL for hemolysis
Interfering substances: differential	—	—	—	—
Maximum CBCs per hour/Maximum CBCs and differentials per hour	200/200	200/200	100+, varies by configuration/100+, varies by configuration	100+, varies by configuration/100+, varies by configuration
Minimum specimen volume open/Closed/Sample dead volume closed	88 µL/88 µL/1 mL	88 µL/88 µL/1 mL	88 µL/88 µL/1 mL	88 µL/88 µL/1 mL
Microsample capability	yes	yes	yes	yes
Prepares microscope slides automatically or flags problems for slide prep	yes	yes	yes	yes
Number of automatic slidemakers available/List price	—	1/included	configurable/included	configurable/included
Archives patient data/Previous patient results incl. with recent results	yes/yes	yes/yes	yes/yes	yes/yes
Maximum archived data accessible when system online	100,000	100,000	100,000	100,000
No. specimens for which numeric results saved in memory at once	100,000	100,000	100,000	100,000
No. specimens for which histo/cytogram results saved in memory at once	100,000	100,000	100,000	100,000
Performs delta checks	yes	yes	yes	yes
Tags and holds results for follow-up, confirmatory testing, or rerun	yes	yes	yes	yes
Parameters for flags for holding samples defined by user or vendor	yes	yes	yes	yes
Scattergram display: cell-specific color	yes	yes	yes	yes
Histogram display: color with thresholds	yes	yes	yes	yes
User interface can display choice of specimen or result information	yes	yes	yes	yes
LIS interface formats supported	XN series ASTM1381-95/ASTM1894-97 or XN series ASTM1381-02/ASTM1894-97	XN series ASTM1381-95/ASTM1894-97 or XN series ASTM1381-02/ASTM1894-97	XN series ASTM1381-95/ASTM1894-97 or XN series ASTM1381-02/ASTM1894-97	XN series ASTM1381-95/ASTM1894-97 or XN series ASTM1381-02/ASTM1894-97
Information transferred on LIS interface	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	no/no/yes	no/no/yes	no/no/yes	no/no/yes
Interface available or planned to automated specimen-handling system	none	none	Abbott, Ortho Clinical, Roche, Siemens	Abbott, Ortho Clinical, Roche, Siemens
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, ITF, NW7, ISBT 128, JAN/EAN/UPC	Codabar, codes 39 and 128, ITF, NW7, ISBT 128, JAN/EAN/UPC	Codabar, codes 39 and 128, ITF, NW7, ISBT 128, JAN/EAN/UPC	Codabar, codes 39 and 128, ITF, NW7, ISBT 128, JAN/EAN/UPC
Accommodates barcode placement per CLSI standard AUTO02-A2	yes	yes	yes	yes
No. of cleaning or maintenance reagents/No. of routine liquid reagents	1/5 cubitainer reagents, 4 fluorescent dye cartridges	1/5 cubitainer reagents, 4 fluorescent dye cartridges	1/5 cubitainer reagents, 4 fluorescent dye cartridges	1/5 cubitainer reagents, 4 fluorescent dye cartridges
Time required for daily, weekly, monthly maintenance	daily: <1 minute (operator time)	<3 minutes (operator time), ~15 minutes (analyzer time)	<3 minutes (operator time), ~15 minutes (analyzer time)	<3 minutes (operator time), ~15 minutes (analyzer time)
Onboard diagnostics for troubleshooting/Limited to software problems	yes/no	yes/no	yes/no	yes/no
Manufacturer can perform diagnostics via modem	yes	yes	yes	yes
Distinguishing features (supplied by company)	fully integrated co-primary hematology solution consisting of two analytical modules connected with a single sampler, providing maximum productivity and efficiency with workload balancing; reportable parameters include IG %&#, RET-He, fluorescent PLT, body fluid with two-part differential, onboard preloaded decision rules including automated rerun-reflex capabilities; optional wagons for complete reagent management; compatible with MySysmex, an easy-to-use mobile assistant that displays real-time analyzer performance data, enabling informed decision-making; compatible with optional RU-20 reagent unit that allows for use of concentrated Cellpack	co-primary hematology solution: two analytical modules plus a fully integrated 5th generation slidemaker/stainer (SP-50); integration of the DI-60 automated cell image system providing preclassification for WBC, RBC, and PLT estimates; compatible with optional RU-20 reagent unit that allows for use of concentrated Cellpack	scalable, modular system that can be configured as an island of automation or connected to TLA systems; integration of the DI-60 automated cell image system providing preclassification for WBC, RBC, and PLT estimates; tube sorter/archiver (TS-10) and A1c testing (Bio-Rad Variant II Turbo Link) provide complete testing efficiencies	scalable, modular system that can be configured as an island of automation or connected to TLA systems; integration of the DI-60 automated cell image system providing preclassification for WBC, RBC, and PLT estimates; tube sorter/archiver (TS-10) and A1c testing (Bio-Rad Variant II Turbo Link) provide complete testing efficiencies

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

HEMATOLOGY ANALYZERS

Part 11 of 12	Sysmex America Kanochia Johnson communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us	Sysmex America Ann Ludwig communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us	Sysmex America Kevin Croghan communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us
See captodayonline.com/productguides for an interactive version of guide			
Name of instrument	XN-1000V*	XN-1000 R	XP-300
First year installed in U.S./Outside U.S./No. of units sold in 2016	2017/2017/—	2014/2015/>105	2013/2012/>250
No. units installed in U.S./Outside U.S./List price	—/—/\$227,667	>200/>250/\$147,795	>700/>2,000/\$28,408
Test menu: • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso)	WBC, RBC, Hb, Hct, MCV, MCH, Plt, %&# neut, mono, lymph, eos, baso, NRBC %&#, MPV, PLT-F, PLT-O, IPF, RDW-CV, RDW-SD, retic %&#, IRF, RET-He; body fluids: RBC-BF, TC-BF, WBC-BF, MN %&#, PMN %&#	standard menu (left) plus: NRBC %&#, IG %&#, MPV, RDW-CV, RDW-SD, retic %&#, IRF, RET-He	WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, lymph, MXD %&# (mono, eos, baso)
• Laboratory	—	—	—
• Flags	blasts/abnormal lymphocytes, left shift, atypical lymphocytes, RBC agglutination, turbidity/HGB interference, iron deficiency, HGB defect, fragments, PLT clumps	blasts/abnormal lymphocytes, left shift, atypical lymphocytes, RBC agglutination, turbidity/HGB interference, iron deficiency, HGB defect, fragments, PLT clumps	WBC, RBC, PLT (histogram)
FDA-cleared tests not clinically released	—	—	—
Tests not available but submitted for 510(k) clearance	—	—	—
Tests in development	—	—	—
Tests for research use only	not FDA cleared for human use; for research use only	—	—
Tests unique to analyzer	PLT-F, PLT-O, IPF, RET-He; body fluids: two-part differential MN %&#, PMN %&#	IG %&#, RET-He	absolute neutrophil count
Differential method(s) used	fluorescent flow cytometry with side fluorescent light, forward-scattered and side-scattered light	fluorescent flow cytometry with side fluorescent light, forward-scattered light, and side-scattered light	direct current
Analytical measurement range: • WBC count/RBC count	0.00–440.00/0.00–8.60	0–440/0–8.6	1.0–99.9/0.3–7.0
• Hemoglobin/Platelet	0.0–26.0/0–5,000	0–26/0–5,000	0.1–25.0/10–999
• MCV (fL) or Hct (%)	0.0–75.0% (Hct)	0–75 (Hct)	10–60 (Hct)
• Reticulocytes	—	0.00–30.00	—
Precision: • WBC count/RBC count	<3.0%/<1.5%	≤3%/≤1.5%	<3.5%/<2.0%
• Hemoglobin/Platelet	<1.0%/<4.0%	≤1.0%/≤4.0%	<1.5%/<6.0%
• MCV or Hct	<1.5% (Hct)	≤1.5% (Hct)	<2.0% (Hct)
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	—	—	neut% r=0.98, lymph% r=0.99, MXD% r=0.75, neut# r=1.00, lymph# r=1.00, MXD# r=0.90
Interfering substances: • WBC	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 30.320 OD for intralipid, 2,880 OD for chyle	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 30.320 OD for intralipid, 2,880 OD for chyle	cold agglutinins, PLT clumps, cryoprotein, cryoglobulin, fibrin, giant PLTs (>1 M/μL)
• RBC	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle	cold agglutinins, severe microcytosis, fragmented RBCs, leukocytosis (>100,000/μL), giant PLTs (>1 M/μL)
• MCV or Hct	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle	cold agglutinins, severe microcytosis, fragmented RBCs, leukocytosis (>100,000/μL), severe diabetes, uremia, spherocytosis
• Platelet	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 996 mg/dL for hemolysis, 55.980 OD for intralipid, 2,880 OD for chyle	PLT clumps, pseudothrombocytopenia, giant PLTs, severe microcytosis, fragmented RBCs, fragmented leukocytes, cryoprotein, cryoglobulin
• Hemoglobin	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 199 mg/dL for hemolysis	no significant interference up to: 39.4 mg/dL for bilirubin C, 37.4 mg/dL for bilirubin F, 199 mg/dL for hemolysis	severe lipemia, abnormal protein, leukocytosis (>100,000/μL)
Interfering substances: differential	—	—	—
Maximum CBCs per hour/Maximum CBCs and differentials per hour	100/100	100/100	60/60
Minimum specimen volume open/Closed/Sample dead volume closed	88 μL/88 μL/1 mL	88 μL/88 μL/1 mL	50 μL/—/—
Microsample capability	yes	yes	yes
Prepares microscope slides automatically or flags problems for slide prep	yes	yes	no
Number of automatic slidemakers available/List price	—	>1,000/—	—
Archives patient data/Previous patient results incl. with recent results	yes/yes	yes/yes	yes/no
Maximum archived data accessible when system online	30,000	100,000 samples	40,000
No. specimens for which numeric results saved in memory at once	30,000	100,000 samples	40,000
No. specimens for which histo/cytogram results saved in memory at once	30,000	100,000 samples	40,000
Performs delta checks	yes	yes	no
Tags and holds results for follow-up, confirmatory testing, or rerun	yes	yes	yes
Parameters for flags for holding samples defined by user or vendor	yes	user or vendor	yes
Scattergram display: cell-specific color	yes	yes	no
Histogram display: color with thresholds	yes	yes	yes
User interface can display choice of specimen or result information	yes	yes	yes
LIS interface formats supported	proprietary, XN series ASTM1381-95/ASTM1894-97 or XN series ASTM1381-02/ASTM1894-97	XN series ASTM1381-95/ASTM1894-97 or XN series ASTM1381-02/ASTM1894-97	RS-232C
Information transferred on LIS interface	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders	numeric and flag results; patient orders, LIS to instrument—broadcast; host query for patient demographics and orders
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	yes/yes/no	no/no/yes	no/no/yes
Interface available or planned to automated specimen-handling system	none	none	—
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, ITF, NW7, ISBT 128, JAN/EAN/UPC	Codabar, codes 39 and 128, ITF, NW7, ISBT 128, JAN/EAN/UPC	Codabar, codes 39 and 128, ITF, NW-7, UPC-A, UPC-E, JAN-8, JAN-13
Accommodates barcode placement per CLSI standard AUTO02-A2	yes	yes	yes
No. of cleaning or maintenance reagents/No. of routine liquid reagents	—	1/5 cubitainer reagents, 4 fluorescent dye cartridges	1/2
Time required for daily, weekly, monthly maintenance	daily: <1 minute (operator time)	—	daily: <2 minutes; weekly: <2 minutes; monthly: <2 minutes
Onboard diagnostics for troubleshooting/Limited to software problems	yes/no	yes/—	yes/no
Manufacturer can perform diagnostics via modem	yes	yes	no
Distinguishing features (supplied by company)	customizable, manual gating, low maintenance, remote diagnostics, online QC, fluorescent optical platelets; discrete testing, reagent monitoring, customized chartable report formats; for use in toxicology, research, and veterinary reference labs	optional testing licenses/capabilities: body fluid license that includes reportable WBC, RBC, total nucleated count, and two-part differential, fluorescent PLT-F with reportable immature platelet fraction (IPF); optional accessory wagon for complete reagent management; onboard, preloaded decision rules to help manage rerun/reflex testing; compatible with MySysmex, an easy-to-use mobile assistant that displays real-time analyzer performance data, enabling informed decision-making; compatible with optional RU-20 reagent unit that allows for use of concentrated Cellpack	automatic floating discriminators, optional upgrade to XP-300 Plus or XP-300 Linc available (data manager and small LIS); ability to directly link to EMR

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

*XN-1000V is not FDA cleared for human use; for research use only.

HEMATOLOGY ANALYZERS

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	Sysmex America Michelle Job communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us	Sysmex America Michelle Job communications@sysmex.com 577 Aptakistic Rd., Lincolnshire, IL 60069 800-379-7639 www.sysmex.com/us
Name of instrument	XN-350, XN-450, XN-550	XN-330, XN-430
First year installed in U.S./Outside U.S./No. of units sold in 2016	2017/2015/—	2017/—/—
No. units installed in U.S./Outside U.S./List price	—/—/\$75,000–\$110,000	—/—/\$71,000–\$84,000
Test menu:	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) • Laboratory • Flags 	<ul style="list-style-type: none"> • Chartable (standard menu: WBC, RBC, Hb, Hct, MCV, MCH, MCHC, PLT, neut %&#, mono, lymph, eos, baso) • Laboratory • Flags
FDA-cleared tests not clinically released	—	—
Tests not available but submitted for 510(k) clearance	—	—
Tests in development	—	—
Tests for research use only	—	—
Tests unique to analyzer	immature granulocyte on every sample, optional reticulocyte and body fluid licenses available	immature granulocyte on every sample; models available through authorized distributors for POL and clinic market
Differential method(s) used	fluorescent flow cytometry with side fluorescent light, forward-scattered and side-scattered light	fluorescent flow cytometry with side fluorescent light, forward-scattered and side-scattered light
Analytical measurement range:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes 	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV (fL) or Hct (%) • Reticulocytes
Precision:	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct 	<ul style="list-style-type: none"> • WBC count/RBC count • Hemoglobin/Platelet • MCV or Hct
Accuracy of automated differential compared with manual differential (per CLSI H20-A2)	—	—
Interfering substances:	<ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin 	<ul style="list-style-type: none"> • WBC • RBC • MCV or Hct • Platelet • Hemoglobin
Interfering substances: differential	—	—
Maximum CBCs per hour/Maximum CBCs and differentials per hour	60/60	60/60
Minimum specimen volume open/Closed/Sample dead volume closed	25 µL/25 µL/1.0 mL	25 µL/25 µL/1.0 mL
Microsample capability	yes	yes
Prepares microscope slides automatically or flags problems for slide prep	no	no
Number of automatic slidemakers available/List price	—	—
Archives patient data/Previous patient results incl. with recent results	yes/yes	yes/yes
Maximum archived data accessible when system online	100,000	10,000
No. specimens for which numeric results saved in memory at once	100,000	10,000
No. specimens for which histo/cytogram results saved in memory at once	100,000	10,000
Performs delta checks	yes	yes
Tags and holds results for follow-up, confirmatory testing, or rerun	yes	yes
Parameters for flags for holding samples defined by user or vendor	yes	yes
Scattergram display: cell-specific color	yes	yes
Histogram display: color with thresholds	yes	yes
User interface can display choice of specimen or result information	yes	yes
LIS interface formats supported	XN series ASTM1381-95/ASTM1894-97 or XN series ASTM1381-02/ASTM1894-97	XN series ASTM1381-95/ASTM1894-97 or XN series ASTM1381-02/ASTM1894-97
Information transferred on LIS interface	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders	numeric and flag results, histograms and scatterplots, instrument to LIS; patient demographics, orders, LIS to instrument—broadcast; host query for demographics and orders
LOINC codes transmitted with all results/Sent in message to LIS/ Listing of machine codes and corresponding LOINC for each test	yes/yes/no	yes/yes/no
Interface available or planned to automated specimen-handling system	none	none
Barcode symbologies read on specimen tube	Codabar, codes 39 and 128, ITF, NW7, ISBT 128, JAN/EAN/UPC	Codabar, codes 39 and 128, ITF, NW7, ISBT 128, JAN/EAN/UPC
Accommodates barcode placement per CLSI standard AUTO02-A2	yes	yes
No. of cleaning or maintenance reagents/No. of routine liquid reagents	1/4	1/4
Time required for daily, weekly, monthly maintenance	daily: 2 minutes; weekly: 15 minutes	daily: 2 minutes; weekly: 15 minutes
Onboard diagnostics for troubleshooting/Limited to software problems	yes/no	yes/no
Manufacturer can perform diagnostics via modem	yes	yes
Distinguishing features (supplied by company)	six-part WBC differential including immature granulocyte in a low volume system; standardization of reagents and controls with existing Sysmex XN-Series analyzers; 25 µL sample size	six-part WBC differential including immature granulocyte in a low volume system; standardization of reagents and controls with existing Sysmex XN-Series analyzers; 25 µL sample size

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

All information is supplied by the companies listed. The tabulation does not represent an endorsement by the CAP.

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