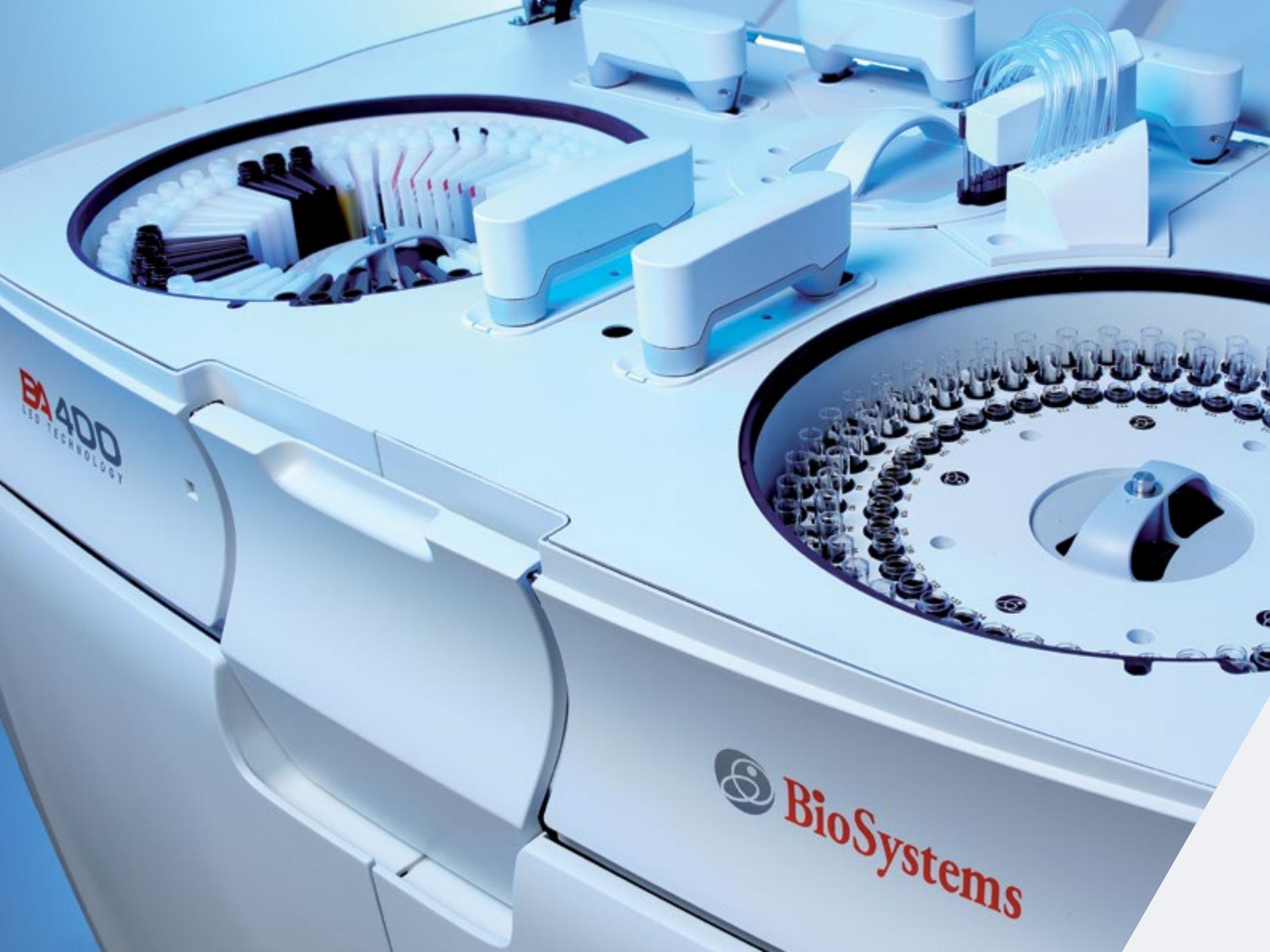


**BA 400**  
LED TECHNOLOGY

Smart Efficiency  
Biochemistry Analyzer

**BioSystems**  
REAGENTS & INSTRUMENTS



**BA400**  
LED TECHNOLOGY

 **BioSystems**



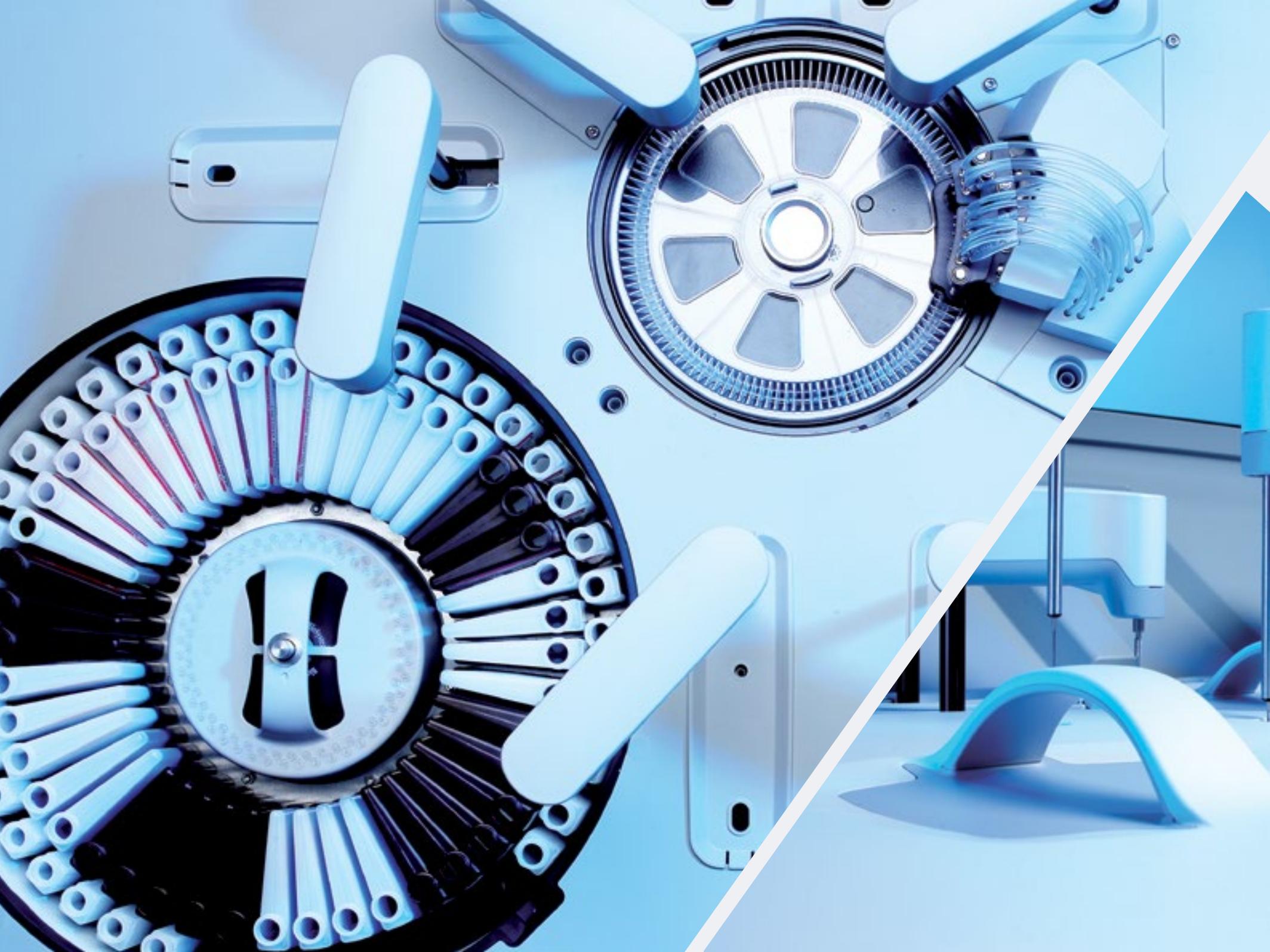
## *Smart Efficiency*

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BioSystems designs and develops efficient systems that implement the latest and best technical solutions.

BioSystems' BA400 is a clinical chemistry and turbidimetry analyzer designed to offer the best performance to laboratories looking towards achieving the highest efficiency with optimal operative cost.

In combination with BioSystems original reagents and worldwide technical support coverage, the BA400 system defines the new generation of clinical analyzers.



## *Smart Autonomy*

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88 refrigerated positions with internal barcode reader.

135 positions for samples, controls and standards suitable for primary or pediatric tubes, 90 of them with barcode reading.

High capacity washing solution and waste containers, able to run continuously for up to 8 hours without refilling/emptying.

Automated water inlet and waste outlet with internal reservoirs that can be easily adapted to any lab facility.

## *Smart Optics*

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BioSystems has developed for its BA400 analyzer an advanced and innovative optical system based on a battery of high-power LED monochromatic sources with 8 working wavelengths that covers the most demanding tests in routine and special chemistry.

Solid-state light source with a split reference beam with a working life up to 50.000 hours to achieve optimal accuracy and performance.

## *Smart Performance*

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Auto-controlled electronic subsystems based on CAN\_bus (Controller Area Network) optimizes performance and reduce the maintenance down times.

Sample dispensing system of high accuracy with level, collision and clot detection that automatically retract to a protected home position during stops.

Low water consumption (less than 14 L/hour) with thermostated fluid washing station system.

Low mechanical wear dispensing pumps with ceramic piston.

Independent powered cooling system for reagents (temperature between 5 and 8 °C, up to 35 °C room temperature).





## *Smart Solutions*

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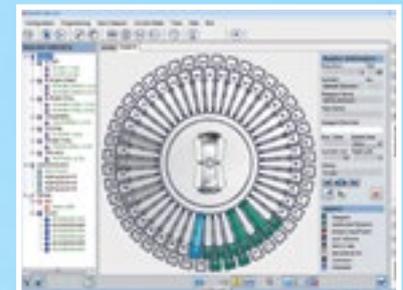
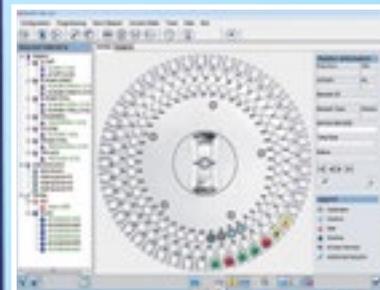
High operating autonomy, through its high capacity for samples and reagents.

Optical system with BioSystems' patented LED technology, with virtually no maintenance.

Low operating cost with optimized water and power consumption, low reaction volume and high pipetting precision.

Distributed electronics through CAN (Controller Area Network) bus system to increase robustness, simplify maintenance and reduce down times.

User friendly software, with an intuitive graphical interface, real time monitoring of work-session and exhaustive quality control analysis (Westgard rules, Youden and Levey-Jennings charts, management historical results database).



# Smart System

Original reagents specially designed and optimized to use in the BA400 system, covering a complete panel of clinical chemistry and specific protein tests.

Worldwide technical assistance coverage from BioSystems' certified engineers.

BioSystems SA is a European company manufacturer of its own reagents and analyzers. BioSystems SA ensures proper functionality of all components under strict quality and safety standards for maximum performance and capabilities of its systems.

## Turbidimetry

Code	Test	Presentation		
		R1	R2	mL/Kit
22324	Albumin (Microalbuminuria)	4x60 mL	4x15 mL	300
22923	Anti-Streptolysin O (ASO)	2x60 mL	2x15 mL	150
22936	Antithrombin III	2x60 mL	2x15 mL	150
22928	$\alpha$ -1-Acid Glycoprotein	2x60 mL		120
22095	Apolipoprotein A-I (APO A-I)	2x60 mL	2x15 mL	150
22098	Apolipoprotein B (APO B)	2x60 mL	2x15 mL	150
22925	$\beta$ 2-Microglobulin	2x60 mL	2x15 mL	150
22084	Complement Component C3	2x60 mL		120
22085	Complement Component C4	2x60 mL		120
22921	C-Reactive Protein (CRP)	4x60 mL	4x15 mL	300
22927	C-Reactive Protein-hs (CRP-hs)	2x60 mL	2x15 mL	150
22180	Cystatin C	1x60 mL	1x20 mL	80
22934	Ferritin	2x40 mL	2x20 mL	120
22804	Fibrinogen	2x60 mL	2x15 mL	160
22047	Hemoglobin A1C-Direct (HbA1C-DIR)	2x60 mL	2x12 mL	144
22082	Immunoglobulin A (Ig A)	2x60 mL		120
22081	Immunoglobulin G (Ig G)	2x60 mL		120
22083	Immunoglobulin M (Ig M)	2x60 mL		120
22929	Prealbumin	2x60 mL		120
22922	Rheumatoid Factors (RF)	4x60 mL	4x15 mL	300
22091	Transferrin	2x60 mL		120

## Biochemistry

Code	Test	Presentation		
		R1	R2	mL/Kit
21550	$\alpha$ -Amylase-Direct	8x20 mL		160
21534	$\alpha$ -Amylase-EPS	2x60 mL	2x15 mL	150
21799	$\alpha$ -Amylase Pancreatic	2x60 mL	2x15 mL	150
21533	Alanine Aminotransferase (ALT/GPT)	8x60 mL	8x15 mL	600
21547	Albumin	10x60 mL		600
21592	Alkaline Phosphatase (ALP)-AMP	4x60 mL	4x15 mL	300
21590	Alkaline Phosphatase (ALP)-DEA	4x60 mL	4x15 mL	300
21796	Angiotensin Converting Agent (ACE)	2x60 mL		120
21531	Aspartate Aminotransferase (AST/GOT)	8x60 mL	8x15 mL	600
21798	Bilirubin (Direct)	4x60 mL	3x20 mL	300
21510	Bilirubin (Total)	8x60 mL	8x15 mL	600
21570	Calcium-Arsenazo	10x60 mL		600
21570	Calcium-Cresolphthalein	8x60 mL	8x15 mL	600
21558	Carbon Dioxide (CO <sub>2</sub> )	2x60 mL		120
21505	Cholesterol	10x60 mL		600
21557	Cholesterol HDL Direct	2x60 mL	2x20 mL	160
21585	Cholesterol LDL Direct	2x60 mL	2x20 mL	160
21588	Cholinesterase (CHE)	2x60 mL	2x15 mL	150
21790	Creatine Kinase (CK)	2x60 mL	2x15 mL	150
21792	Creatine Kinase-MB (CK-MB)	2x60 mL	2x15 mL	150
21502	Creatinine	5x60 mL	5x60 mL	600
21734	Creatinine-Enzymatic	2x60 mL	2x20 mL	160
21520	$\gamma$ -Glutamyltransferase ( $\gamma$ -GT)	4x60 mL	4x15 mL	300
21503	Glucose	10x60 mL		600
21656	Glucose Hexokinase	4x60 mL	4x15 mL	300
21737	Homocysteine	1x60 mL	1x16,2 mL	76.2
21525	beta-Hydroxybutyrate	1x60 mL	1x15 mL	75
21509	Iron-Ferrozine	4x60 mL	4x15 mL	300
21736	Lactate	4x60 mL	4x15 mL	300
21580	Lactate Dehydrogenase (LDH)	8x60 mL	8x15 mL	600
21586	Lactate Dehydrogenase (LDH)-IFCC	8x60 mL	8x15 mL	600
21793	Lipase	2x50 mL	1x20 mL	120
21797	Magnesium	2x60 mL	2x15 mL	150
21508	Phosphorus	4x60 mL	2x50 mL	340
21500	Protein (Total)	10x60 mL		600
21501	Protein (Urine+CSF)	4x60 mL		240
21551	Total Bile Acids	2x60 mL	2x20 mL	160
21528	Triglycerides	10x60 mL		600
21835	Unsaturated iron binding capacity (UIBC)	2x60 mL	2x15 mL	150
21516	Urea/BUN-UV	8x60 mL	8x15 mL	600
21521	Uric Acid	10x60 mL		600



**BioSystems**  
CHOLESTEROL  
REF 21801 60 mL

**BioSystems**  
IRON-FERROZINE  
REF 21808 60 mL

**BioSystems**  
CREATININE  
REF 21802 60 mL

**BioSystems**  
PHOSPHORUS  
REF 21808 60 mL





CE



reddot award 2014  
winner

# Technical Specifications

Throughput	400 test/h (without electrolytes)
Throughput ISE module	320 test/h
Principles of analysis	Colorimetry, turbidimetry.
<b>ISE Module (optional)</b>	
Method type	ISE direct
Sample type	Serum, Plasma or Urine
Electrode type	Na+, K+, Cl-, Li+ (optional)
Sample volume	Serum: 100 µL / Urine: 200 µL
<b>Sample handling</b>	
Capacity of sample rotor	135
Barcode detector	Yes
Number of samples with barcode	90
Sample tube size	Diameter from 12 mm to 16 mm (height up to 100 mm)
Pediatric well	13.5 mm diameter
Type of syringe	Ceramic piston pump with low maintenance
Sample type:	Serum, Plasma, Whole Blood, Urine Cerebrospinal, Semen, Biological Liquid
Pipetting volume	from 2 µL to 40 µL
Pipetting resolution	0.1 µL
Predilution ratio	From 1:2 to 1:200
Level detection	Yes
Clot detector	Yes
Vertical collision detector	Yes
<b>Reagent handling</b>	
Volume of reagent bottles	20 mL, 60 mL
Capacity of reagent rotor	88 (44 bottles of 20 mL or 60 mL + 44 bottles of 20 mL)
Cooled reagent	Yes
Temperature range of refrigerator	From 5 °C to 8 °C (at room temperature of 25 °C)
Barcode detector	Yes
Reagent volume R1	From 90 µL to 450 µL
Reagent volume R2	From 10 µL to 300 µL
Type of syringe	Ceramic piston pump with low-maintenance
Pipetting resolution	1 µL
Level detection	Yes
Vertical collision detector	Yes
Thermostated tip	Yes
<b>Reactions rotor</b>	
Minimum reaction volume	180 µL
Maximum reaction volume	600 µL
Number of wells	120
Well material	UV methacrylate
Temperature reaction rotor	37 °C
Accuracy of temperature	± 0.2 °C
Temperature stability	± 0.1 °C
Mixers	2
Cuvette washing system	7 tips (2 wash, 3 rinse, 2 dry)

<b>Optical System</b>	
Light source	LED + Hard Coating filter
Wavelengths	340 - 405 - 505 - 535 - 560 - 600 - 635 - 670 nm
Filters bandwidth	10 nm ± 2 nm
Photometric range	-0.2 A to 3.5 A
Internal resolution	0.0001 A
Detector	Main Photodiode + reference photodiode
Measurement precision (for 340 nm, 405 nm and 505 nm)	CV < 1% to 0.1 A CV < 0.1% to 2 A

<b>Environmental Requirements</b>	
Ambient temperature	From 10 °C to 35 °C
Relative humidity	From 10 °C to 30 °C (With ISE module)
Altitude	< 85% without condensation < 2 500 m

<b>Dimensions and weight</b>	
Dimensions (width, depth and height)	1 200 mm x 720 mm x 1 258 mm
Weight	210 Kg

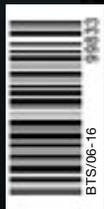
<b>Electrical Requirements</b>	
Main voltages	115 V to 230 V
Main frequencys	50 Hz or 60 Hz
Electric power	500 VA

<b>Fluidic Requirements</b>	
Water inlet	External tank or mains water supply
Water type	Purified Type II
Water consumption	< 14 L/h
Bottle of high concentration waste	5 L
Bottle of washing solution	5 L

<b>Minimum Computer Requirements</b>	
Operating system	Windows® 7, 8.1 or 10
CPU	Equivalent to Intel Core i3 @3.10 GHz or higger
RAM	4 Gbytes
Hard Disk	40 GB or higher
DVD	Yes
Monitor minimum resolution	Minimum resolution 1 024 x 768
Connector of serial channel	USB
Connectivity to LIS (Laboratory Information Systems)	HL7 and ASTM protocols

<b>Directives and Standards Compliance</b>	
EC Directive	98/79/EC IVD

BioSystems, S.A. reserves the right to change specifications of the instruments at any time due to technical improvements.



Ginper Group



**BioSystems**



- Certified Management System
- EN ISO 9001
- EN ISO 13485

**Manufactured by: BioSystems S.A.**

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