Canon

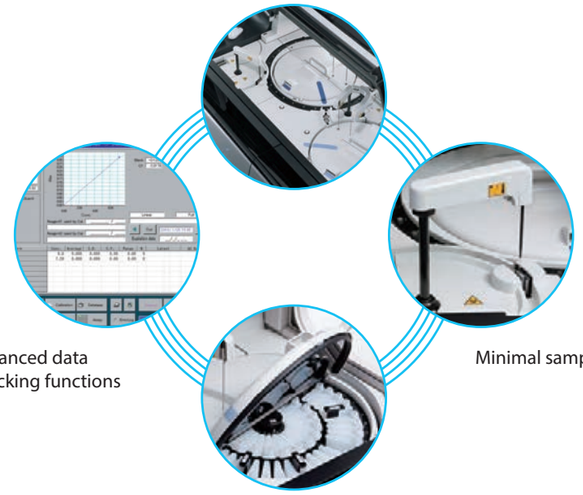
TBA-2000FR

Reliability

Designed to ensure high data precision

Based on its outstanding achievements and many years of
experience in the manufacture of automated biochemical analyzers,
Canon Medical Systems has developed the TBA-2000FR, which represents
a new concept in ultimate functionality.
In addition to the incorporation of high-precision units that have
proven themselves in previous models, the TBA-2000FR provides
high reliability, stable data precision, and safety-conscious design, including an
enhanced data checking function, minimal sample carry over,
and cover open/closed sensors.

Incorporating the high-precision
units of previous models



Enhanced data
checking functions

Minimal sample carryover

Open/closed sensors for the top cover,
reagent carousel covers, and STAT position cover

TBA-2000FR

Simple

Optimized to ensure simple operation

Ensuring that highly reliable data is obtained by simple operation... This concept has been realized in the sophisticated design of the TBA-2000FR.
Simplified calibration and control measurement using barcodes, urgent sample measurement on the rack sampler and at the STAT position, an integrated multi-ion sensor for easy maintenance, and many other user-friendly features are provided to ensure efficient and accurate analysis.

TBA-2000FR

Ecology

Developed to ensure a low environmental impact

Effectively utilizing space, reducing waste, and minimizing negative impact on the environment...
The TBA-2000FR incorporates many environmentally friendly features. It is an earth-friendly system that has been developed based on a wide range of ecological considerations, including a compact and space-saving design and the extensive use of recyclable materials.

Integration of the console and the analyzer module

Shift from air to sea transport for exported systems to reduce CO_2 emissions

Materials selected to promote recycling
(reduced use of resin materials)

Molded hard-glass reaction cuvettes

TBA-2000FR

Extremely Smooth

The sample racks and trays can be set safely and smoothly on the rack sampler on the front of the system. High sample throughout is ensured by simple operation.

The rack sampler is on the front of the system to increase measurement efficiency.

The rack sampler on the front of the system allows the user to open the sampler cover and add samples even while measurement is being performed. The rack sampler can be accessed without opening the top cover of the analyzer module, and samples can be set safely and with no danger of being hit by the sampling arm or other moving parts.

Samples are recognized reliably by double-checking

The cup sensor detects the presence of a sample cup and sample tube, and the barcode reader then reads the sample IDs to identify the samples with high reliability.

Completion of sampling can be confirmed at a glance

Racks for which sampling has been competed are moved to the left end of the sampler. This allows the user to easily confirm that sampling has been completed before removing the samples.

Set the tray on the rack sampler and start measurement.

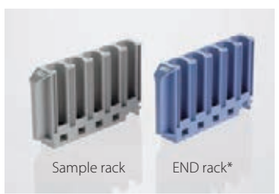
The rack at the left end is loaded into the analyzer, and the cup sensor recognizes the samples. The barcode reader then reads the sample IDs.

The rack is moved to the left and sampling is performed.

Racks for which sampling has been competed are pushed out of the analyzer and moved to the left end of the sampler.

Racks and trays

The racks (each of which can hold up to 5 samples) are placed on trays and set on the sampler. Up to 10 racks can be placed on a tray, and up to 4 trays (200 samples) can be set on the sampler.



Rack: 5 samples

Tray: 10 racks

* The END rack is set at the final position of the racks and allows quick measurement of additional samples.

Sample containers

Sample tubes of various sizes and sample cups can be used in combination.

Extremely Flexible

The TBA-2000FR supports simplified calibration and control measurement using barcodes and flexible urgent sample measurement, ensuring efficient analysis.

Calibration and control measurement using barcodes

Calibrators and controls can be measured by simply placing sample cups containing the calibrators or controls on top of sample tubes to which dedicated barcodes have been applied and setting them in the sample rack. This minimizes screen operations and increases efficiency in daily operation.

Support of urgent sample measurement with the rack sampler and STAT position

An urgent sample can be measured without delay by replacing a rack on the rack sampler with a rack containing the urgent sample or by setting the sample at the dedicated STAT position.

Sample replacement on the rack sampler

The racks on the rack sampler are drawn into the analyzer immediately just before sampling. An urgent sample can be measured with high priority by simply replacing the rack to the right of the drawing position with the rack containing the urgent sample.

STAT position for processing a STAT sample with top priority

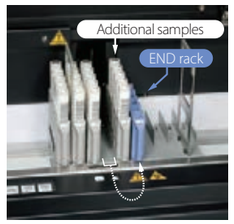
A STAT position for urgent samples is provided. Sample barcode reading is possible at this position, and measurement is performed immediately for the sample set at the STAT position, interrupting sampling of the routine samples in the other racks. The tray open/close sensor at the STAT position allows STAT samples to be set safety by preventing interference with the sample arm.

STAT position

Quick and easy setting of additional samples

The END rack that interrupts rack drawing and the RESTART switch allow additional samples to be set with ease.
This feature minimizes user operations.

Rack drawing is interrupted when the system detects the END rack.



Set the rack containing additional samples and move the END rack to the right of the newly added rack.

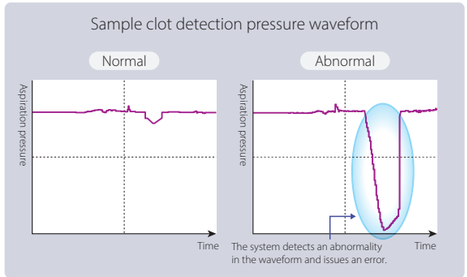
Press the RESTART switch to resume measurement.

Extremely Precise

The TBA-2000FR incorporates various functions to ensure that highly precise data is consistently obtained. Its extremely reliable analysis results satisfy a wide range of clinical needs.

Sample clot detection function provided as standard

The sample clot detection unit monitors the pressure during sample aspiration and dispensing and detects any abnormalities in the pressure waveform. If cloggings in the sample probe due to fibrin and other obstacles are detected, an error is output and the sample probe is washed automatically. Sampling of the next sample is started when the pressure returns to normal levels.

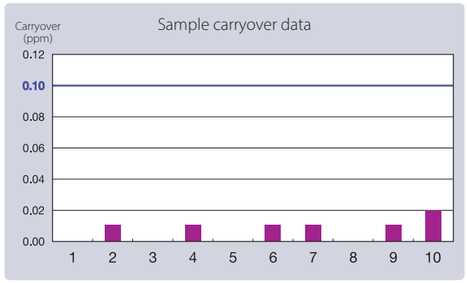


Sample carryover reduced to 0.1 ppm or less

Sample carryover is reduced to 0.1 ppm (1/10,000,000)[*1] or less by the enhanced sample probe wash operation. It is no longer necessary to divide a sample into small portions for use in an immunoassay system.

*1: For example, even when a negative sample containing 0 IU/mL of HBs antigen is measured followed by a sample containing 100,000 IU/mL of HBs antigen, the result for the negative sample will be 0.01 IU/mL of HBs antigen or less.

*2: Consult with the manufacturer of each immunoassay system for the level of sample carryover that is considered to be clinically acceptable.



Highly efficient reagent carousels that permit the use of different bottle sizes in combination

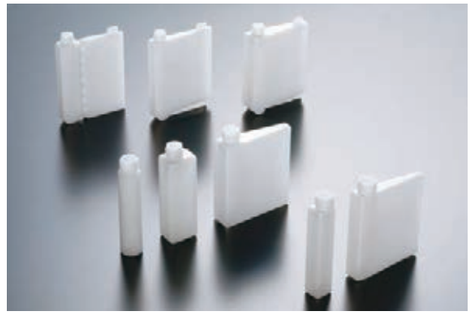
The double-turntable reagent carousels ensure highly efficient reagent dispensing. It is possible to set reagent bottles of various sizes in combination.[*1] The reagent carousel cover open/close sensor prevents the reagent probes from hitting the cover.

Reagent bottle sharing, reagent bottle changeover

Each of the two reagent carousels can accept up to 65 reagent bottles[*2]

All reagent bottle positions are refrigerated, and universal reagents are supported.

*1: 100, 90, 70, 55, 50, 20 mL (round type, 70-mL type, 55-mL type)
*2: When the reagent rack for 55-mL bottles is used



Photometry with a minimum final reaction volume of 80 µL

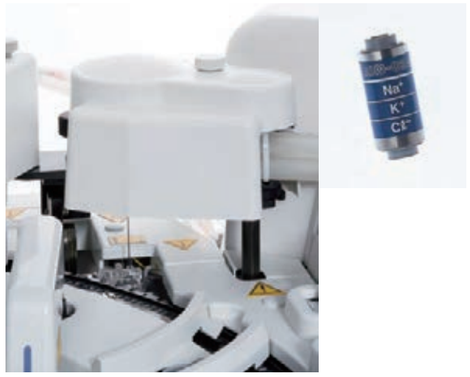
The minimum required reaction volume for undiluted samples is reduced, which also reduces the amount of reagent required. In addition, this feature provides improved data precision, extending the range of applications.

Extremely Efficient

The TBA-2000FR is the realization of Canon Medical Systems' many years of expertise in automated biochemical analyzers. High-order integration opens up many new possibilities.

Canon Medical Systems' original electrolyte measurement unit installed as standard

Canon Medical Systems' original integrated multi-ion sensor can simultaneously measure three electrolytes (Na^+, K^+, Cl^-) in serum or urine and is designed for easy maintenance. The Smart Report function displays the measurement results as soon as they become available.



Vibration-type piezoelectric stirrers for effective mixing of the reaction liquid

High-performance vibration-type stirrers with piezoelectric elements are used to mix the reaction liquid effectively. The stirrers cause the liquid to move up and down in the reaction cuvette, ensuring that it is thoroughly mixed. In addition, the stirrers have a simple design for easy maintenance.

Molded hard-glass reaction cuvettes with high washing efficiency

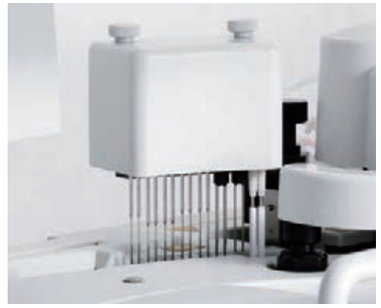
The TBA-2000FR uses molded hard-glass reaction cuvettes that can be washed effectively. After measurement, the reaction cuvettes are washed thoroughly with two different types of detergents and deionized water before they are used for the next sample. In addition, a cuvette blank is measured before sample measurement, and cuvettes with a cuvette blank value higher than the specified value are skipped automatically, with a beep to indicate an error. The high durability of the reaction cuvettes reduces the need for periodic replacement and minimizes waste.

Commitment to developing environmentally friendly products

The TBA-2000FR is designed to be environmentally friendly, and its structural components have been carefully selected to minimize negative impact on the environment and waste generation. The system is based on environmentally conscious product development concepts that aim to promote the most effective use of resources, to reduce the use of potentially harmful substances, and to avoid contributing to global warming.

Thorough reaction cuvette washing with the washing unit

After measurement, the reaction cuvettes are washed thoroughly with two different types of detergents (alkaline and acid) and deionized water before they are used for the next sample. The detergent bottles can be set in the system as is because the detergents are diluted automatically, saving time and effort.



OSS* function to minimize reduction in the processing speed

The carryover pair program includes additional washing processes and consequently reduces the effective processing speed. To minimize this effect, the OSS function automatically rearranges the sampling sequence to reduce the number of times the carryover pair program needs to be executed.

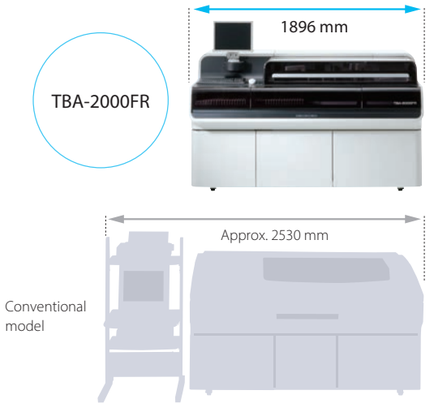
* OSS : Optimized Sampling Sequence

Extremely Smart

Smart functions are implemented in a compact unit.
The TBA-2000FR supports user-friendly and powerful functions in daily operation.

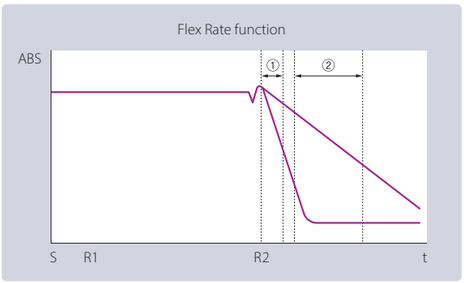
Space-saving design by integrating the control console with the analyzer module

The console, which is separated from the analyzer module in conventional models, is integrated with the analyzer module for further space saving. The combination of an easy-to-operate LCD monitor with a touch panel and a mouse for detailed setting improves user friendliness.



Flex Rate function for reducing the retest ratio

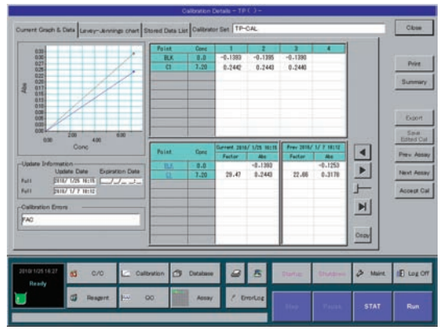
For high-concentration samples that require retesting after dilution, the Flex Rate function calculates the concentration based on the absorbance data in the early stages of the read timing and reports the result. This minimizes the retest ratio and consequently reduces the reporting time and operating costs.



① Flex Rate read timing ② Main read timing

Assay View screen for confirmation of calibration curves

The system can store calibration curves for the last 31 days. This allows the user to compare the current calibration curves with the previous curves on the same screen for confirmation. In addition, the calibration data can be displayed in graphical form, which is useful for checking for variations in reagent blank data or calibrator data.



Recalculation using different conditions

The system stores the absorbance data for all 16 wavelengths, and the measurement results can therefore be recalculated easily after the assay parameters or calibration curve are changed. This is also useful when evaluating a new assay.

Automatic startup/automatic shutdown

The system can be automatically started up and shut down at scheduled times. It is also possible to set the system so that the power is turned off automatically after shutdown.

External data output to a USB flash drive

The measurement results, absorbance data, QC data, assay parameters, etc. can be exported to a USB flash drive.

Automated Biochemical Analyzer

TBA-2000FR

Examples of assays

Proteins and immunoglobulins	
Total protein	TP
Albumin	Alb
Haptoglobin	HP
C1 inactivator	C1 IA
Thymol turbidity test	TTT
Zinc sulfate turbidity test	ZTT
Myoglobin	Mb
IgA, G, M	IgA,G,M
IgE	IgE
Complement 3 and complement 4	C3, C4
C-reactive protein	CRP
Rheumatoid factor	RF
Antistreptolysin O	ASO
Complement activity	CH50
Serum antitreponemal antibody	TPLA
Antilipid antibody	RPR
Cystatin C	Cys-C

Nonprotein nitrogen compounds	
Urea nitrogen	UN
Uric acid	UA
Creatinine	CRE
Creatine	CRET
Ammonia	NH3
Total bilirubin	T-Bil
Direct bilirubin	D-Bil

Lipids	
Triglycerides	TG
Phospholipids	PL
Free fatty acids	FFA
Total cholesterol	T-Cho
Free cholesterol	F-Cho
HDL-cholesterol	H-Cho
LDL-cholesterol	L-Cho
β-lipoproteins	β-Lipo
ApoA-I	ApoA-I
ApoA-II	ApoA-II
ApoB	ApoB
ApoC-II	ApoC-II
ApoC-III	ApoC-III
ApoE	ApoE
Total bile acid	TBA
Serum lipoprotein (a)	Lp(a)

Carbohydrates	
Glucose	Glu
Sialic acid	SiA
Fructosamine	FRA
Serum 1,5-anhydroglucitol	1.5AG
Glycohemoglobin	HbA1c
Glycoalbumin	GA

Enzymes	
Aspartate aminotransferase	AST
Mitochondrial AST	ASTm
Alanine aminotransferase	ALT
Alkaline phosphatase	ALP
Acid phosphatase	ACP
Adenosine deaminase	ADA
Aldolase	ALD
Amylase	AMY
Pancreatic amylase	AMYp
Guanase	GUN
γ-Glutamyl transpeptidase	γGT
Creatine kinase	CK
CK isozymes (CK-MB)	CKMB
Cholinesterase	CHE
Lactic dehydrogenase	LD
α-Hydroxybutyric acid dehydrogenase	HBD
Monoamine oxidase	MAO
Lipase	Lip
Leucine aminopeptidase	LAP
β-N-acetylglucosaminidase	NAG

Electrolytes and minerals	
Sodium	Na
Potassium	K
Chloride	Cl
Calcium	Ca
Magnesium	Mg
Inorganic phosphorus	IP
Serum iron	Fe
Unsaturated iron-binding capacity	UIBC
Transferrin	Tf
Serum copper	Cu

Tumor markers	
α1-Antitrypsin	α1AT
Carcinoembryonic antigen	CEA
α1-Acid glycoprotein	α1AGP
α-Fetoprotein	AFP
Ferritin	Fer
Immunosuppressive acid protein	IAP
β2-Microglobulin	β2mG
Prostate-specific antigen	PSA

Blood coagulation factors and fibrinolytic agents	
Antithrombin III	AT III
Coagulation factor XIII	F XIII
Plasminogen	Plg
Fibrin degradation products	FDP
α2-Plasmin inhibitor	α2Pl
D-dimer	D-dimer
Fibrinogen	Fib

Drugs	
Phenobarbital	PBT
Primidone	PRM
Phenytoin	PHI
Carbamazepine	CBZ
Ethosuximide	ESM
Valproate	VLP
Theophylline	TPR
Digoxin	DIG
Cyclosporin A	CSA
Gentamicin	GM

Other	
Urinary albumin	U-Alb
Occult blood in stool	HbAo
Amino acid	BTR
Urinary total protein	U-TP
Inulin	Inulin
Remnant-like particle cholesterol	RLP-C

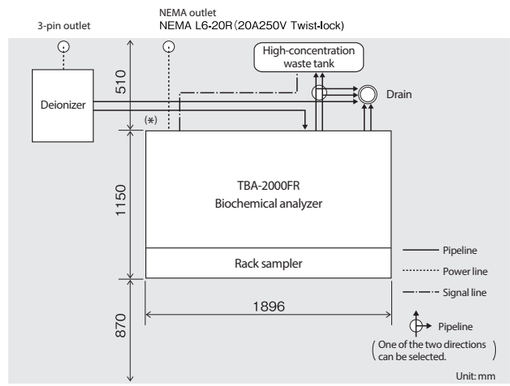
*Assays currently under investigation are included.

Specifications

Maximum number of assays that can ordered simultaneously	100
Maximum throughput	Photometric assays: 1600 tests/hour
	ISE assays: 600 tests/hour
Analysis methods	Endpoint, Rate, and ISE
Sample dispensing volume	1.5 to 35.0 µL/test (in 0.1-µL increments)
	The sample clot detection function is provided in the standard configuration.
Sample carryover	0.1 ppm or less
Reagent dispensing volume	R1: 20 to 278 µL (in 1-µL increments)
	R2: 0, 20 to 200 µL (in 1-µL increments)
Final reaction volume	80 to 280 µL
Rack sampler	200 samples
	The cup sensor and sample ID unit are provided in the standard configuration.
STAT position	1 position
Sample containers	Sample tubes, sample cups
Reagent carousels	R1: 56 bottles (maximum 65 bottles when the reagent rack for 55-mL bottles is used)
	R2: 56 bottles (maximum 65 bottles when the reagent rack for 55-mL bottles is used)
Reagent bottles	100 mL, 90 mL, 70 mL, 55 mL, 50 mL, 20 mL
Reaction disk	Discrete type
Reaction cuvettes	Hard glass (optical path length: 5 mm)
Reaction time	Approx. 10 min
Method for maintaining isothermal conditions	Water bath
Reaction temperature	37˚C
Stirring	Piezoelectric stirrers (at two positions)
Wavelengths	16 wavelengths ranging from 340 to 804 nm
Photometry	Direct photometry of reaction cuvettes, monochromatic or bichromatic measurement
Online interface	RS-232C
Data processing functions	Multipoint calibration curve, display of calibration curve expiration date, calibration curve log, automatic calibration, reaction time course (33 points), display of remaining reagent/detergent volumes, reagent bottle changeover, reagent bottle sharing, skipping of insufficient reagent, skipping of insufficient sample, obstacle detection, quality control (daily QC, monthly QC, real-time QC), Smart Wash, reaction test, Flex Rate, skipping of inappropriate cuvette, multiple measurement, automatic sample dilution, automatic retest order, Smart Report, OSS, recalculation, color correction, serum indices, calculation between assays, process monitor, automatic startup, automatic shutdown, cuvette analyzer, multiassay, registration of user IDs/passwords, lamp intensity monitor
External dimensions*	Analyzer module 1896 (W) x 1150 (D) x 1437 (H) mm
Mass*	Analyzer module Approx. 780 kg
Power supply	Analyzer module 200 VAC
Power consumption	Analyzer module 3 kVA maximum
Options	Reagent rack for 55-mL bottles
	Reagent barcode unit

* The console is included in the analyzer module.

Installation layout example



*: A circuit breaker is provided on the back of the system. Sufficient clearance should be provided behind the system to allow access to the circuit breaker.

Only Canon Medical Systems specified detergents and ISE solutions should be used. The use of detergents or ISE solutions other than those specified may lead to system malfunction or abnormal data.

TBA-2000FR

CANON MEDICAL SYSTEMS CORPORATION
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Canon Medical Systems Corporation meets internationally recognized standards for Quality Management System ISO 9001, ISO 13485.
Canon Medical Systems Corporation meets the Environmental Management System standard ISO 14001.

Made For life