

**TOSHIBA**

Leading Innovation >>>

  
**TBA-120FR**  
Analyzer



# The future is here.

*With its flexible functions and operability, the TBA™-120FR meets all clinical needs.*

## **High-speed single-line multiple assay processing at up to 1200 tests/hour**

Parameters for up to 100 tests can be stored. High-speed processing at a maximum throughput of 1200 tests/hour can be performed using photometric and ISE technologies.

## **Intelligent sampler for flexible operation**

A universal dual-disk double-circle sampler is used. The new functions include sheet forms and independent scanning for the inner and outer disks. These features allow various demands of the clinical laboratory to be met.

## **Smart Sampling function for optimized sampling**

The Smart Sampling function optimizes the measurement order automatically. This feature prevents interference between reagents and improves the throughput.

## **Stable ISE technology for electrolytes**

The multi-ion sensor can measure three electrolytes (Na<sup>+</sup>, K<sup>+</sup>, and CL<sup>-</sup>) simultaneously in serum or urine.



# TBA-120FR

## **FlexRate function for prompt reporting**

The FlexRate function extends the assay range based on the linear portion of curve. This feature reduces the number of rerun requests and enables prompt reporting.

## **Recalculation function for calculation with different conditions**

A sample result can be recalculated with different conditions (for example, different test parameters). This feature facilitates investigations related to new tests.

## **Mass-memory database for storage of up to 10,000 sample results**

Measurement results and reaction curves for up to 10,000 samples can be stored in the hard disk. The absorbance data for all the 16 wavelengths is stored in the database, enabling effective data analysis.

# Reading the future

The intelligent sampler adapts to various demands, creating flexible laboratory.



## The outer disk accepts sample containers of various types. (Photo 1)

The outer disk is a universal sampler that can accept up to 80 sample containers of various types. This sampler demonstrates its full potential in multisample processing.

## The inner disk processes urgent samples effectively. (Photo 1)

The inner disk can be driven and controlled independently of the outer disk. Samples on the inner disk are given measurement priority to allow urgent sample processing and urgent rerun.



## The inner and outer disks can be scanned independently. (Photo 2)

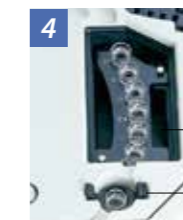
The outer disk and inner disk can be scanned separately. When a sample ID unit is used, scanning can be specified to start immediately after the instruction for scanning is issued (Scan on Scan) or to start after the end of sampling (Sampling-End Scan). Up to 100 barcoded samples can be set. Also, barcoded and non-barcoded samples can be set together for measurement.

## A calibration sheet is provided.

All the 126 positions on the inner disk, outer disk, and refrigerated sampler can be used for calibrators. Calibration for multiple tests can be performed simultaneously.

## The refrigerated sampler enables control measurement to be performed whenever required (the measurements in progress can be interrupted) (Photo 4)

The refrigerated sampler provides positions dedicated for calibrators and controls. This sampler is independent of the disk sampler, therefore controls can be set on it even during measurement.



Refrigerated sampler  
STAT position

## The inner disk cup plates are easy to use. (Photo 3)

Convenient inner disk cup plates are provided to facilitate calibration and the use of sample cups.

## Sheet forms can be used to assign dedicated positions for particular uses.

It is possible to allocate specific positions on the inner and outer disks for discrete uses such as routine sample, urgent sample, and calibrator/control. Eight types of sheet forms are provided for different uses (one is custom-made).

## The STAT position is used to perform measurement for a sample with top priority. (Photo 4)

The STAT position is given higher priority than the urgent sample positions on the disk sampler, and other measurements are interrupted for this measurement. The dedicated STAT position control screen simplifies operation.

# Creating the future

Toshiba's state-of-the-art technologies are incorporated into a single high-performance analyzer system. The TBA-120FR provides prompt and reliable test results.



## Each probe contains an integrated level sensor that detects the liquid surface correctly. (Photo 1)

The sample and reagent probes each contain an integrated level sensor. They detect the sample or reagent surface, minimizing contact and reducing the interference between different samples and between different reagents. In addition, the probe guard detects obstacles and thus prevents collisions and other operational problems.

## The durable hard-glass cuvettes can be washed effectively. (Photo 4)

The TBA-120FR uses cast hard-glass cuvettes that are extremely durable. They can be washed effectively, eliminating residual reaction liquid. In preparation for the next measurement, the reaction cuvettes are automatically washed with deionized water and two types of detergents during analysis.

## The highly flexible reagent compartments support various bottle sizes. (Photo 2)

A wide variety of reagent racks\* and reagent adapters\* are provided. In contrast to conventional systems, which accept only a few types of bottles, the TBA-120FR supports a large number of bottle sizes.

## The minimum reaction liquid volume for photometry is 80 µL.

Photometry is possible with a minimum reaction liquid volume of 80 µL, reducing reagent consumption. The reaction liquid volume can be set in the range from 80 µL to 360 µL, enabling support of a wide range of applications.

## The piezoelectric stirrer mixes the reaction liquid effectively. (Photo 3)

The vibration-type stirrer, which uses a piezoelectric element, mixes the reaction liquid effectively. Mixing and washing is completed in a measurement cycle time of 4.5 seconds. The simple structure of the stirrer allows easy maintenance.

## The electrolyte measurement unit can be operated inexpensively. (Photo 5)

The electrolyte measurement unit, which incorporates a multi-ion sensor, can be maintained easily and has low running costs.

## Sample clot detection function\*

The sample clot detection function improves sampling reliability.

\* Optional parts

# Harnessing the future

The intuitive, user-friendly interface makes operation easy.



## Touch screen and mouse for easy operation.

The TBA-120FR uses a touch panel and a mouse, which make detailed setting convenient. A color monitor is used to facilitate viewing and operation.

## Process monitor for the display of the analysis status.

The analysis status from the sampling stage to the result reporting stage is displayed on the screen of the console. This helps the operator estimate when the urgent sample results will be ready.

## Automatic calibration.

Calibration is performed automatically after reagent bottle changeover or change of the reagent lot. The calibration method can be selected for each test from alternatives such as reagent blank correction and 2-point correction.

## Automatic rerun

Urgent rerun or standard rerun is performed based on the rerun logic check. The rerun sample volume is increased or decreased or the sample is diluted for rerun automatically according to the setting. An urgent rerun can be ordered by an external host computer.

## Selectable QC levels (can be set according to the operation)

The QC level can be selected on the Test Configuration screen and measurement is performed only for the selected control level.

## Multiview test screen for the display of various types of information in a single window.

The multiview screen displays the calibration results, remaining reagent volumes, and QC data in one window. All the essential information can be seen without switching the screen.

## Dedicated rack for detergents and solutions. (Photo 1, 2)

Detergents for the reagent probes, bath additives, and solutions for the ISE can be set at dedicated positions.

## Automatic mode for startup and shutdown (Photo 3)

Automatic system startup and automatic power OFF after shutdown are possible. The power can be switched ON or OFF without troublesome procedures. In addition, the timer function allows the system to be started automatically at the programmed time of day for each day of the week.





\*: The table is not included in the system configuration.

## Examples of tests that can be performed

### Plasma proteins and immunological

Proteins	
Total protein	TP
Albumin	Alb
Haptoglobin	HP
C1 inactivator	C1 IA
Thymol turbidity test	TTT
Zinc sulphate 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

Nonprotein nitrogen compounds, etc.	
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
$\beta$ -lipoproteins	$\beta$ -Lipo
Apo AI	ApoAI
Apo AII	ApoAII
Apo B	ApoB
Apo CII	ApoCII
Apo CIII	ApoCIII
Apo E	ApoE
Total bile acid	TBA
Serum lipoprotein (a)	Lp (a)

Carbohydrates	
Glucose	Glu
Sialic acid	SIA
Fructosamine	FRA

Enzymes	
Aspartate aminotransferase	AST
Mitochondria-AST	ASTm
Alanine aminotransferase	ALT
Alkaline phosphatase	ALP
Acid phosphatase	ACP
Adenosine deaminase	ADA
Aldolase	ALD
Amylase	AMY
Pancreatic amylase	AMYp
Guanase	GUN
$\gamma$ -Glutamyl transpeptidase	$\gamma$ GT
Creatine kinase	CK
CK isozyme (CK-MB)	CKMB
Cholinesterase	CHE
Lactic dehydrogenase	LD
$\alpha$ -Hydroxybutyric acid dehydrogenase	HBD
Monoamine oxidase	MAO
Lipase	Lip
Leucine aminopeptidase	LAP
$\beta$ -N-acetyl glucosaminidase	NAG

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

Hormones	
Cortisol	CS

Tumor markers	
$\alpha$ 1-Antitrypsin	$\alpha$ 1AT
Carcinoembryonic antigen	CEA
$\alpha$ 1-Acid glycoprotein	$\alpha$ 1AGP
$\alpha$ -Fetoprotein	AFP
Ferritin	Fer
Immunosuppressive acid protein	IAP
$\beta$ 2-Microglobulin	$\beta$ 2mG

Blood coagulation factors and fibrinolysis	
Antithrombin III	ATIII
Coagulation factor XIII	F XIII
Plasminogen	Plg
Fibrin degradation products	FDP
$\alpha$ 2-Plasmin inhibitor	$\alpha$ 2PI
D dimer	D dimer

Drugs	
Phenobarbital	PBT
Primidone	PRM
Phenytoin	PHI
Carbamazepine	CBZ
Ethosuximide	ESM
Valproate	VLP
Theophylline	TPR
Digoxin	DIG

Others	
Uric albumin	U-Alb
Complement titer	CH50
Serum 1, 5-anhydroglucitol	1,5AG
Serum antitreponema antibody	TPLA
Glycohemoglobin	HbA1c
Occult blood in stool	HbAo
Amino acid	BTR

\* including tests under investigation

## Specifications

Number of tests performed simultaneously	Up to 100 tests
Throughput	Up to 1200 tests/hour
Measurement method	End assay, rate assay, ISE
Sample dispensing volume	1.5 to 35.0 $\mu$ L/test (selectable in 0.1- $\mu$ L steps)
Reagent dispensing volume	20 to 345 $\mu$ L/reagent (selectable in 1- $\mu$ L steps). Concentrated reagents can be dispensed together with water.
Reaction liquid volume	80 to 360 $\mu$ L
Sampler	Dual-disk double-circle sampler (with independently driven disks) Outer disk: 80 positions; Inner disk: 40 positions; Cup sensor: Provided; Measures against hand injury hazard from probe: Provided.
STAT position	1 position
Refrigerated sampler	6 positions
Sample containers	Blood collection tubes, sample cups
Reagent compartments	R1: 56 bottles (65 bottles maximum*), R2: 36 bottles (56 bottles maximum*)
Reagent containers	100-mL, 70-mL, 55-mL, 50-mL, and 20-mL bottles
Reaction	line Discrete type
Reaction cuvettes	Hard glass (light-path length: 5 mm)
Reaction time	Approx. 10 minutes (can be extended)
Thermostatic control	Water bath method
Reaction temperature	37°C
Stirring	2 positions (after the first and second reagent are dispensed), required minimum volume: 80 $\mu$ L
Wavelengths	340 nm to 804 nm (16 fixed wavelengths)
Photometric technique	Reaction cuvette direct photometry, monochromatic or bichromatic measurement
Online interface	RS232C
Data processing functions	Smart Sampling, reaction curve (33 points), recalculation, FlexRate, sheet form, calibration sheet, STAT function, automatic rerun, batch rerun, process monitor, insufficient-sample skip, display of remaining reagent volumes, reagent bottle changeover, insufficient-reagent skip, multipoint calibration curve, automatic dilution of calibrator, calibration curve history, automatic calibration, reagent blank correction, 1-point correction, 2-point correction, reaction check, carry-over pair, QC level selection function, QC chart, real-time QC, automatic startup, automatic shutdown, reaction color correction, serum indices, calculation between tests, multisample measurement, calculation of manual dilution ratio, automatic sample dilution, data search, entry of patient demographics, report generation, qualitative criteria, profile, maintenance log, reaction cuvette skip, wastewater level check function, password registration, reagent library (200 types $\times$ 2), standard sample library (200 types)

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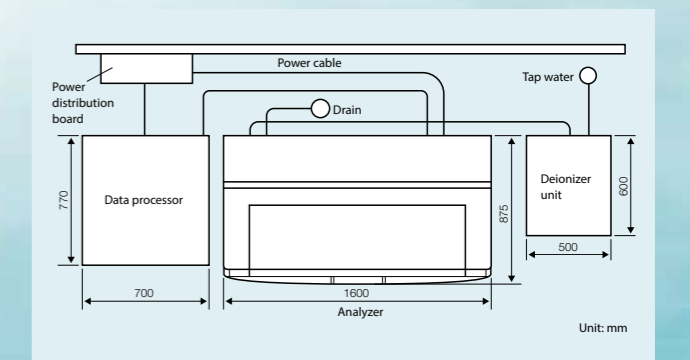
Forms	Sheet form (manually input sample IDs, standard samples), standard sample registration list, reagent registration list, calibration curve list, QC list, database display list, order list, test parameters
Export	Standard sample library, reagent library, measurement results, reaction curve, calibration curve list, QC list, QC data, test parameters
Import	Standard sample library, reagent library, test parameters

## Options

Reagent barcode unit
Outer disk cup plate
55-mL reagent bottle rack
Reagent bottle adapters (for 70-mL, 55-mL, 50-mL, and 20-mL bottles)
Sample clot detection function
Restricted sample measurement support function

## Dimensions and Mass

External dimensions (mm)	Analyzer	1600 (W) $\times$ 875 (D) $\times$ 1223 (H)
	Console	700 (W) $\times$ 770 (D) $\times$ 1245 (H)
Mass (kg)	Analyzer	Approx. 570
	Console	Approx. 50
Power supply	200/100 VAC $\pm$ 10%. Grounding must be provided in accordance with all applicable legal requirements for medically used electrical equipment.	
Power consumption	Analyzer 3 kVA maximum/Console 0.6 kVA maximum	



- The specifications and appearance are subject to change when improvements are made to the system.
- It is recommended that an annual inspection and maintenance contract be signed to ensure stable system operation.

The logo for the TBA-120FR Analyzer features a stylized blue and green arch above the text "TBA-120FR" in a bold, sans-serif font. Below this, the word "Analyzer" is written in a smaller, regular sans-serif font.

**TBA-120FR**  
Analyzer



**TOSHIBA MEDICAL SYSTEMS CORPORATION**

<http://www.toshibamedicalsystems.com>

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