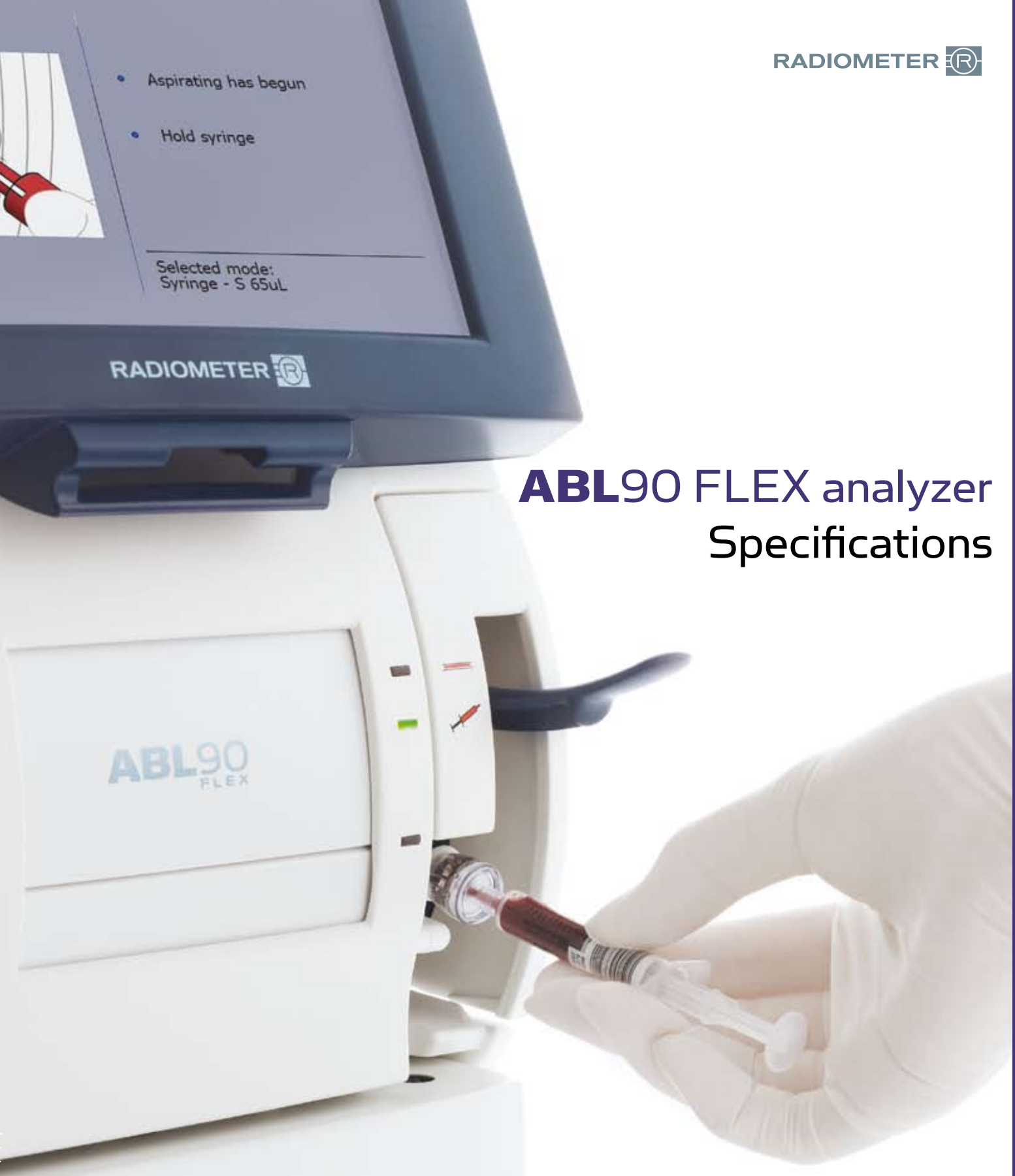
RADIOMETER

ABL90 FLEX analyzer
Specifications



Analyzer performance

Measuring system

Sample volume (all parameters)	65 µL
Measuring time (all parameters)	35 sec*)
Cycle time	60 sec*)
Throughput	44 samples/per hour*)
Average uptime	23.5 hours/per day**)

*) May vary during startup

**) May vary during startup; 2.5 min for system calibration is the longest activity

Sensor cassette

Lifetime and storage

In-use lifetime	30 days (or until max number of tests)
Shelf life	4 months
Storage temperature	2-8 °C / 35-46 °F
Automatic QC	Yes

Parameter panels	50 tests	100 tests	300 tests	600 tests	900 tests
BG / OXI with QC	x	x	x	x	x
BG / LYT / OXI with QC	x	x	x	x	x
BG / LYT / MET / OXI with QC	x	x	x	x	x

Not all variants are available at the time of introduction and additional variants may be introduced

Solution pack

Lifetime and storage

In-use lifetime	30 days (or until solution pack is empty, see table below)
Shelf life	4 months
Storage temperature	2-25 °C / 35-77 °F

Estimated lifetime of solution packs

No of tests per day	5	10	15	20	30	50
Estimated in-use lifetime (days)	30	30	24	20	15	10

Quality management

Automatic quality management system

3 dedicated QC solutions
Automatic detection and correction of failures
Continuous system and analysis checks
Air detection
Automatic lockout of parameter that fails QC
Customizable QC schedule
Commonly used statistics (Levey Jennings plots)

Measured parameters

Type	Parameter	Units	Range of indication
pH	pH	pH scale	6.3-8.0
Blood gas	pCO_2	mmHg; Torr	5-250
		kPa	0.67-33.3
	pO_2	mmHg; Torr	0-800
		kPa	0-107
Electrolyte	cK^+	mmol/L	0.5-25
		meq/L	0.5-25
	cNa^+	mmol/L	7-350
		meq/L	7-350
	cCa^{2+}	mmol/L	0.2-9.99
		meq/L	0.4-19.98
		mg/dL	0.8-40.04
	cCl^-	mmol/L	7-350
		meq/L	7-350
Metabolite	*c*Glu	mmol/L	0-60
		mg/dL	0-1081
	*c*Lac	mmol/L	–0.1-31
		meq/L	–0.1-31
		mg/dL	–1-279
Oximetry	sO_2	%	–2-102
		fraction	–0.02-1.02
	*c*tHb	g/dL	–0.48-27.7
		g/L	–4.8-277
		mmol/L	–0.30-17.2
	FO_2Hb	%	–2-103
		fraction	–0.02-1.03
	*F*COHb	%	–2-103
		fraction	–0.02-1.03
	*F*MetHb	%	–2-103
		fraction	–0.02-1.03
	*F*HHb	%	–2-102
		fraction	–0.02-1.02
	*F*HbF	%	–25-121
		fraction	–0.25-1.21
	ctBil	µmol/L	–20-1000
		mg/dL	–1.2-58.5
		mg/L	–12-585

Derived and input parameters

Derived parameters

Parameter	Description
pH(*T*)	pH of blood at patient temperature
$pCO_2(T)$	Carbon dioxide tension of blood at patient temperature
$cHCO_3^-(P)$	Concentration of hydrogen carbonate in plasma
cBase(B)	Concentration of titrable base of blood (actual base excess)
cBase(B,ox)	Actual base excess at 100 % oxygen saturation
cBase(Ecf)	Concentration of titrable base of extracellular fluid (standard base excess)
cBase(Ecf,ox)	Standard base excess at 100 % oxygen saturation
$cHCO_3^-(P,st)$	Concentration of hydrogen carbonate in plasma of standardized blood (standard bicarbonate)
cH^+	Concentration of hydrogen ions in blood
$cH^+(T)$	Concentration of hydrogen ions in blood at patient temperature
$ctCO_2(P)$	Concentration of total carbon dioxide in plasma
$ctCO_2(B)$	Concentration of total carbon dioxide of whole blood (CO_2 content)
pH(st)	pH of standardized blood (pCO_2 = 40 mmHg)
$pO_2(T)$	Oxygen tension of blood at patient temperature
$pO_2(A)$	Oxygen tension of alveolar air
$pO_2(A,T)$	Oxygen tension of alveolar air at patient temperature
*p*50	Oxygen tension at 50 % saturation of blood
*p*50(*T*)	Oxygen tension at 50 % saturation of blood at patient temperature
*p*50(st)	Oxygen tension at 50 % saturation of blood at standard conditions for pH, pCO_2, *F*COHb, *F*MetHb, *F*HbF at 37 °C
$pO_2(A–a)$	Difference of oxygen tension of alveolar air and arterial blood
$pO_2(A–a,T)$	Difference of oxygen tension of alveolar air and arterial blood at patient temperature
$pO_2(a/A)$	Ratio of oxygen tension of arterial blood and alveolar air
$pO_2(a/A,T)$	Ratio of oxygen tension of arterial blood and alveolar air at patient temperature
$pO_2(a)/FO_2(I)$	Oxygen tension ratio of arterial blood to the fraction of oxygen in inspired air
$pO_2(a,T)/FO_2(I)$	Oxygen tension ratio of arterial blood at patient temperature to the fraction of oxygen in inspired air
cCa^{2+}(pH=7.40)	Concentration of ionized calcium in plasma at pH 7.40
Anion Gap(K^+)	Concentration difference of $K^+ + Na^+$ and $Cl^- + HCO_3^-$
Anion Gap	Concentration difference of Na^+ and $Cl^- + HCO_3^-$
DO_2	Oxygen delivery
Hct	Fraction of the volume of erythrocytes in the volume of whole blood
$pO_2(x)$	Oxygen extraction tension of arterial blood
$pO_2(x,T)$	Oxygen extraction tension of arterial blood at patient temperature
$ctO_2(B)$	Total oxygen concentration of blood (O_2 content)
$ctO_2(a–\bar{v})$	Total oxygen concentration difference between arterial and mixed venous blood
BO_2	Oxygen capacity of hemoglobin. The maximum concentration of oxygen bound to hemoglobin in blood, saturated so that all deoxyhemoglobin is converted to oxyhemoglobin
$ctO_2(x)$	Extractable oxygen concentration of arterial blood
*F*Shunt	Volume fraction of shunted venous blood in arterial blood
*F*Shunt(*T*)	*F*Shunt at patient temperature
RI	Respiratory Index
RI(T)	Respiratory Index at patient temperature
$\dot{V}O_2$	Oxygen consumption
*m*Osm	Plasma osmolality
$\dot{Q}x$	Oxygen compensation factor of arterial blood
$\dot{Q}_t$	Cardiac output
V(B)	Volume of blood
sO_2	Saturation
FO_2Hb	Fraction of oxyhemoglobin in total hemoglobin in blood

Input parameters

Type	Definition
Patient ID	Patient identification number
Patient height	The height of the patient
Patient department	Which department the patient is from
T	Patient temperature
Sample type	Arterial, venous, mixed venous, capillary, prof. test, cal. verification
Patient note	Notes about the patient or sample
Patient weight	The weight of the patient
Patient accession no.	Unique sample order number
Patient age	The age of the patient
Patient sex	Male or female
Draw time	When the sample was taken
Date of birth	Patient date of birth
Sample site	Not specified, brachial left/right, femoral left/right, radial left/right, finger left/right, heel left/right, umbilical cord
Patient birth weight	The weight of the newborn
Patient gestational age	Period of intrauterine fetal development from conception to birth
Patient name	Name of the patient
Physician	Name of the physician
Operator	Name of the operator
Operator department	Department where the operator is from
RQ	Respiratory quotient
$FO_2(I)$	Fraction of oxygen in dry inspired air
$\dot{Q}_t$	Cardiac output
$\dot{V}O_2$	Total oxygen consumption
VCO	Volume of carbon monoxide, input value for measurement of V(B)
$sO_2(\bar{v})$	Oxygen saturation in mixed venous blood
$pO_2(\bar{v})$	Oxygen tension in mixed venous blood
ctHb	Total hemoglobin concentration (if not measured)
FCOHb(1)	Used for determining blood volume
FCOHb(2)	Used for determining blood volume

General information

Hardware

Computer specifications

Processor Intel Celeron® M 600 MHz with 512K L2 Cache
1 GB RAM
2 GB SolidState storage
8.4" color TFT-LCD, resolution 800 × 600 SVGA Touch screen
4" thermal-sensitive printer

Sample mixer

Mixing time 7 sec
For *safe*PICO samplers

Interface

Built-in barcode reader for operator & sampler ID
  Accepted codes: UPC/EAN, Code 128, Code 39, Code 93, I 2 of 5, Discrete 2 of 5, Codabar and more
Serial interface RS232 with power for external barcode reader
3 USB connections
Optional external keyboard
Optional external mouse
Optional external barcode reader

Inlet

Left/right hand operation
Position for syringe as well as capillary and test tube
Aspiration from capillary without adapter
Aspiration time 5 seconds

Software

Software platform

Windows® XP Embedded
Sybase® SQL Anywhere

Data capacity

Patient log: 2000
Activity log: 5000
Calibration adjustment log: 1000
Data secured by password protection
8 different user profiles
Unlimited ID access verification

Printer display options

Auto print (on/off)
Select derived parameters
Select input variables
Reference ranges with results

Security and QA features

Advanced planning of replacement and QC schedules
Optional automatic QC at startup and after replacements
Customizable QC and calibration schedule

Communication

HIS/LIS communication
High-level protocols:
  ASTM
  HL7
  POCT1-A
Low-level serial protocols:
  ASTM 1381-91, E1394-91
  Serial RAW
Low-level network protocols:
  TCP/IP

RADIANCE communication
Interface via Ethernet adapter

Additional information

Dimensions

Height	45 cm	17.7 in
Width	25 cm	9.8 in
Depth	29 cm	11.4 in
Weight	11 kg	24.4 lbs

Other

Startup time	1.5 hours average (less than 4 hours)
Operating environment	15-32 °C / 59-89.6 °F, 20-80% RH
Altitude correction	Up to 4000 m / 13,124 feet above sea level
Power	100-240 V; 50-60 Hz; 250VAC
Thermostat control	Sensor cassette: 37±0.15 °C / 98.6±32.27 °F Oximetry: 37±0.30 °C / 98.6±32.54 °F

Simpler, faster, better

Radiometer's products and services simplify and automate all phases of acute care testing, providing you with the speed and ease of use you want and the accuracy you need.

This is acute care testing truly made simpler, faster and better.

IVD

Contact us

Radiometer is represented in more than 100 countries. For the local Radiometer representative nearest you, please go to www.radiometer.com.

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Patents and compliance

CE	Compliance with IVD Directive 98/79/EC
EMC Emission & Immunity	The equipment complies with the requirements for Class A equipment in IEC 61326-2-6: Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2.6: Particular requirements – In vitro diagnostic (IVD) medical equipment
Approvals	UL/CSA IEC 61010-1, IEC 61010-2-81, IEC 61010-2-101 Installation Category II: Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements – Part 2-81: Particular requirements for automatic and semi-automatic analytical equipment for analysis and other purposes – Part 2-101: Particular requirements for in vitro diagnostic (IVD) medical equipment
Patents	One or more of the following patents and patent applications may apply: US Patent Nos.: US6551480, US6805781, US6980285, US7384523 European Patent Nos.: EP1084398, EP1086366, EP1269172, EP1644725 Japanese Patent Nos.: JP3369547, JP3635263, JP4503599 German Patent Nos.: DE69938550, DE60138694, DE69942250, DE602004025243 US Patent Application Nos.: US2006-0013744, US2008-0266545, US2008-0279487, US2009-0060789, US2010-0015691, US2010-0155239 European Patent Application Nos.: EP1773495, EP2142922, EP2147307, EP2150804 Japanese Patent Application Nos.: JP2008-506129, JP2010-525338, JP2010-525339, JP2010-525340 Chinese Patent Application No.: CN101005895, CN101688826, CN101688860, CN101715556 International Patent Application Nos.: WO2010/006603, WO2010/072223
Languages	English, Chinese, Croatian, Czech, Danish, Dutch, Estonian, French, German, Greek, Hungarian, Italian, Japanese, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Spanish, Swedish, Turkish

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