RADIOMETER

# **ABL**80 FLEX CO-OX

## Specifications

# Measured parameters

| Type | Parameter | Units | Measuring range | Cassette type | | |
|---|---|---|---|---|---|---|
| | | | | Full Panel | | BG/CO-OX |
| | | | | *w/Glu* | *w/o Glu* | |
| pH | pH | | 6.00–8.00 | x | x | x |
| Blood Gas | $pCO_2$ | mmHg | 0–150 | x | x | x |
| | | kPa | 0.0–20.0 | | | |
| | $pO_2$ | mmHg | 0–760 | x | x | x |
| | | kPa | 0.0–101.3 | | | |
| Electrolytes | $cCa^{2+}$ | mmol/L | 0.00–5.00 | x | x | |
| | | mEq/L | 0.00–10.00 | | | |
| | | mg/dL | 0.00–20.00 | | | |
| | $cCl^-$ | mmol/L | 0–250 | x | x | |
| | | mEq/L | 0–250 | | | |
| | $cK^+$ | mmol/L | 0.0–20.0 | x | x | |
| | | mEq/L | 0.0–20.0 | | | |
| | $cNa^+$ | mmol/L | 0–210 | x | x | |
| | | mEq/L | 0–210 | | | |
| Glucose | cGlu | mmol/L | 0.0–75.0 | x | | |
| | | mg/dL | 0–1351 | | | |
| Oximetry | ctHb | g/dL | 0.0–27.7 | x | x | x |
| | | d/L | 0–277 | | | |
| | | mmol/L | 0.0–17.2 | | | |
| | $sO_2$ | % | 0.0–100.0 | x | x | x |
| | | Fraction | 0.000–1.000 | | | |
| | $FO_2Hb$ | % | 0.0–100.0 | x | x | x |
| | | Fraction | 0.000–1.000 | | | |
| | *F*COHb | % | 0.0–100.0 | x | x | x |
| | | Fraction | 0.000–1.000 | | | |
| | *F*MetHb | % | 0.0–100.0 | x | x | x |
| | | Fraction | 0.000–1.000 | | | |
| | *F*HHb | % | 0.0–100.0 | x | x | x |
| | | Fraction | 0.000–1.000 | | | |

The *Measuring range* is defined as the limits within which the analyzer is capable of displaying parameter values.

# Derived and input parameters

## Derived parameters

| Parameter | Description |
|---|---|
| $cHCO_3^-(P)$ | Concentration of bicarbonate |
| cBase(B) | Concentration of titratable base in blood (actual base excess) |
| cBase(B,ox) | Concentration of titratable base in fully oxygenated blood |
| cBase(Ecf) | Concentration of titratable base in extracellular fluid (standard base excess) |
| cBase(Ecf,ox) | Concentration of titratable base in extracellular fluid from fully oxygenated blood |
| $cHCO_3^-(P,st)$ | Concentration of bicarbonate in plasma of standardized blood (standard bicarbonate) |
| $ctCO_2(P)$ | Concentration of total carbon dioxide in plasma |
| $ctCO_2(B)$ | Concentration of total carbon dioxide in whole blood ($CO_2$ content) |
| $cCa^{2+}(7.40)$ | Concentration of calcium ion in whole blood at a pH of 7.40 |
| Anion Gap ($K^+$) | Molecular difference in concentration of sodium and potassium and concentration of bicarbonate plus chloride |
| Anion Gap | Molecular difference in concentration of sodium and the concentration of bicarbonate plus chloride |
| $ctO_2$ | Concentration of total oxygen in whole blood ($O_2$ content) |
| $pO_2(A)$ | Oxygen tension in alveolar air |
| $pO_2(a/A)$ | Arterio-alveolar oxygen tension ratio |
| $pO_2(A–a)$ | Alveolo-arterial oxygen tension difference |
| RI | Respiratory index |
| *m*Osm | Osmolality |
| *p*50 | Oxygen tension at 50 % saturation of blood |
| p50(st) | Oxygen tension at 50 % saturation of blood at standard conditions for pH, $pCO_2$, *F*COHb, *F*MetHb, *F*HbF at 37 °C |
| $pO_2(a)/FO_2(I)$ | Oxygen tension ratio of arterial blood to the fraction of oxygen in inspired air |
| $\dot{D}O_2$ | Oxygen delivery |
| Hct | Fraction of the volume of erythrocytes in the volume of whole blood |
| $pO_2(x)$ | Oxygen extraction tension of arterial blood |
| $BO_2$ | Oxygen capacity of hemoglobin. The maximum concentration of oxygen bound to hemoglobin in blood, saturated so that all deoxyhemoglobin is converted to oxyhemoglobin |
| *F*Shunt | Volume fraction of shunted venous blood in arterial blood |
| $\dot{V}O_2$ | Oxygen consumption |
| $\dot{Q}x$ | Oxygen compensation factor of arterial blood |
| $\dot{Q}_t$ | Cardiac output |
| *V*(B) | Volume of blood |
| *(T)* | Denotes temperature-corrected value (pH(*T*), $pCO_2(T)$, $pO_2(T)$, $pO_2(A,T)$, $pO_2$(a/A,*T*), $pO_2$,(A-a,*T*), RI(*T*), *F*Shunt(*T*) *p*50(*T*) $pO_2$(a,*T*)/$FO_2$(I) $pO_2$(x,T)) |

## Input parameters

| Type | Definition |
|---|---|
| User ID/Name | Operator identification |
| Patient ID | Patient identification number |
| Patient name | Patient name, first and last |
| Sample type | Arterial, Venous, Mixed Venous, Capillary, Other fluids, Proficiency test |
| Patient type | User-defined up to 6 |
| Draw time | Time of day the sample was taken |
| Sample site | Other, brachial left/right, femoral left/right, radial left/right, finger left/right, heel left/right, scalp, umbilical cord, arterial line, PA catheter, bypass pump |
| Drawn by | ID of person drawing the sample |
| Pt. temp | Patient temperature |
| Room number | Patient room location |
| Accession number | Unique sample order number |
| Department (patient) | Patient department location |
| Department | Department responsible for sample analysis |
| Date of birth | Date patient was born |
| Weight | Units of lbs or kg |
| Birth weight | Units of oz, g, or kg |
| Gestational age | 0–99 weeks |
| Height | Units of inches, cm, or meters |
| Measured $O_2$ sat | Measured oxygen saturation |
| Measured Hb | Measured hemoglobin concentration |
| $FO_2(I)$ | Fraction of oxygen in dry inspired air |
| Baro | Barometric pressure |
| Default ctHb | Default ctHb value |
| Liter Flow | Liters-per-minute flow of oxygen to the patient |
| Order date | Date the sample was ordered |
| Physican | ID of person ordering the test |
| Gender | Male, female, unknown |
| Note | Free text, 100 characters |
| $pO_2(\bar{v})$ | Oxygen tension of mixed venous blood |
| $sO_2(\bar{v})$ | Oxygen saturation of hemoglobin in mixed venous blood |
| $\dot{V}O_2$ | Oxygen consumption |
| $\dot{Q}_t$ | Cardiac output |
| *V*(CO) | Volume of carbon monoxide, input value for measurement of *V*(B) |
| *F*COHb(1) | Used for determining blood volume |
| *F*COHb(2) | Used for determining blood volume |

# General information

## Hardware

### Computer specifications

Microsoft Windows®XP Embedded operating system
Minimum 1 GB hard drive
ETX single board CPU
Minimum 512 MB EDO-RAM

### Interface

Barcode reader
Serial line RS232
RJ45 Ethernet port
2 USB 1.1
PS2 keyboard

### Printer

Optional custom header:
25 characters max per line
Thermal sensitive
Paper width: 80mm ± 1.10

### Display

Full visual graphic array (VGA)
Full active Thin Film Transistor (TFT)
800 x 600 resolution
Resistive touch screen

## Software

### Correlation correction

Standard correlation mode:
For whole blood; all parameters available
Other fluids mode: For all parameters except Hct

### Data capacity

Patient results: 500
System cycle results: 500
Manual QC results: 500
2-point cal. results: 500
Event records: 1500
Security records: 1500
User IDs: Unlimited

### Printer display options

Autoprint (on/off)
Select derived parameters
Five lines for custom header
Temperature corrected results
QC ranges with results
Select input variables
Reference ranges with results
Analyzer name (user-defined)
Edit log

### Security and QA features

Automatic, on-board QC$^3$ quality control system
Seven programmable user-access levels
Unlimited User ID and access-level verification
Automatic lockout of parameter that fails QC or option to inactivate individual sensors for failed calibration
QC statistics and on-board Levey-Jennings plots
Air-in-sample detection
Mandatory input fields

### Communication

**HIS/LIS communication**
High-level protocols:
- ASTM (E1394-97)
- ASTM 6xx
- HL7 (Version 2.2/2.5)
- POCT1-A*

Low-level serial protocols:
- ASTM (E1381-95)

Low-level network protocols:
- TCP/IP

**RADIANCE communication**
Interface via Ethernet adapter

## Additional information

### Dimensions

| | | |
|---|---|---|
| Width | 22 cm | 9 in |
| Height | 40 cm | 16 in |
| Depth | 28 cm | 11 in |
| Weight | 8.5 kg | 19 lbs |

### Other

| | |
|---|---|
| Startup time | After sensor cassette change:<br>~ 8 min (~ 20–25 min with glucose) |
| Operating environment | 12–28 °C / 54–82 °F |
| Altitude correction | 2290 m/7513 feet above sea level |
| Power | 100–240 VAC, 50/60 Hz, 130 VA |
| Thermostat control | 37.0 °C ± 0.2 within 10 sec |

* Not available at the time of the release

# Analyzer performance

## Sensor cassette

| | |
|---|---|
| Sample volume | ~ 105 µL |
| Cycle time | ~ 140 sec |
| Shelf life | 90 days |
| Storage temperature | 5–25 °C / 41–77 °F |

## Model with and without QC$^3$

| SC80 | 25/30 | 50/30 | 100/30 | 200/30 | 300/30 | 300/15 |
|---|---|---|---|---|---|---|
| Patient tests | 25 | 50 | 100 | 200 | 300 | 300 |
| In-use lifetime (days) | 30 | 30 | 30 | 30 | 30 | 15 |
| **Automatic QC** | | | | | | |
| QC$^3$ enabled | x | x | x | x | x | x |
| QC$^3$ not enabled | x | x | x | x | x | x |

## Solution pack

| | |
|---|---|
| In-use lifetime | Dependent on number of patient and QC samples and frequency of calibration. Up to 30 days maximum. |
| Shelf life | 90 days |
| Storage temperature | 5–25 °C / 41–77 °F |

| | Solution 1 | Solution 2 | Solution 3 | Solution 4 |
|---|---|---|---|---|
| Fluidic cycles | 230 | 110 | 110 | 110 |
| Pouch volume | ~ 440 mL | ~ 220 mL | ~ 220 mL | ~ 220 mL |

## Calibration data

| Details | Default interval | Interval options | Duration |
|---|---|---|---|
| Automatic: 1-point cal | With measurement | - | - |
| Automatic: 2-point cal as part of system cycle | 8 hours | Every 2, 4 or 8 hours or manual | 7 min. system cycle |
| tHb calibration | 90 days | 0–180 days | 7 min. including system cycle |

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# ACUTE CARE TESTING

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