CDI® Blood Parameter Monitoring System 500

Continuous Blood Parameter Monitoring for Improved Blood Gas Management
The proven technology of the CDI® Blood Parameter Monitoring System 500 delivers continuous blood parameter readings, providing early detection of changes in patient status during cardiopulmonary bypass surgery.

**CDI System 500**

Based on optical fluorescence and reflectance technologies, the CDI System 500 continuously measures or calculates 11 critical blood parameter values during cardiopulmonary bypass. Access to continuous information is a key advantage in optimum patient management because it enables clinicians to react without delay to changes in blood parameter values.

**Less Than One Minute Response Time**

The CDI System 500 shunt sensor is designed to be placed in a shunt line where the blood is in direct contact with the system’s sterile microsensors. The system’s average response time for measured parameters pH, pCO₂, pO₂, and K⁺ is less than one minute.

**Easy Set Up and Calibration**

There is no warm-up time required for installation or calibration. Installing the sensor in the shunt line requires a few, simple luer connections. The shunt sensor also can be added after the initiation of bypass, facilitating set up in emergency cases.

**System Features**

- Self-diagnostic system verifies proper functioning of electronics and optics.
- System alerts provide visual and audible indicators when parameters fall outside user-specified limits.

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**Circuit Diagram with the CDI Blood Parameter Monitoring System 500**

[Diagram showing the CDI Blood Parameter Monitoring System 500 circuit with various components such as shunt sensors, oxygenator, arterial shunt sensor, and other components related to cardiopulmonary bypass.]
The CDI System 500 continuously measures or calculates pH, pCO₂, pO₂, K⁺, temp, SO₂, hematocrit, hemoglobin, base excess, bicarbonate and oxygen consumption. The CDI System 500 monitor displays blood parameter values in either numeric, graphic or tabular formats on its color LCD screen. Users select the preferred format for easy interpretation of continuous patient information.

**Numeric Format**

Arterial blood gases, K⁺, SvO₂ and Hct/Hgb

All parameters available (pH, pCO₂, pO₂ currently displayed)

Arterial blood gases and K⁺

**Graphic Format**

All parameters available (pH, pCO₂, pO₂ currently displayed)

**Tabular Format**

All parameters
**Monitor**
- Modular probes allow user to configure system to meet specific monitoring requirements.
- Color LCD display provides high visibility at a variety of viewing angles.
- Built-in handle for transportability.
- Integrated lead acid battery provides emergency power for 25 minutes (with no printing).

**Shunt Sensor**
- Direct contact with blood for fast response time.
- Can be added after initiation of bypass.
- Treated with covalently bound, non-leaching heparin.

**H/S Cuvette**
- Disposable cuvette clips easily to hematocrit/saturation probe.

**RS-232 Serial Interfaces**
- Takes inputs from pumping system to use and display blood flow.
- Provides outputs to data management systems or transmission to other external devices.

**Calibrator**
- Small footprint and built-in handle for transportability.
- Mountable onto monitor pole clamp (CDI517).
- Provides fast, automatic 2-point tonometered gas calibration.

**Integral Monitor Printer**
- Delivers documentation of system’s self-diagnostics, calibration verification, as well as displayed values.
As blood gas parameters fell outside of normal range more often, complication rates increased and more time was spent on mechanical ventilation, in the ICU, and in the hospital.


Continuous blood gas monitoring with the CDI 500 results in significantly improved blood gas management as determined by adherence to institutional protocols.


Ask your Terumo Cardiovascular Group sales representative for more information on these studies.
Monitor Power Requirements and Specifications
100 – 240 VAC, 50/60 Hz
12 – volt backup battery

Data Output Port: RS-232 Serial Interface

Model CDI510H Shunt Sensor
Sterile, heparin-treated
Priming volume 1.2 mL

System Display Update
Every six seconds

System Measurement Cycle Time
pH, pCO₂, pO₂ = one measurement per second
K⁺ = one measurement per six seconds
SO₂, Hct, Hgb = one measurement per 18 milliseconds

Specifications

<table>
<thead>
<tr>
<th>DISPLAYED PARAMETERS</th>
<th>SYSTEM OPERATING RANGES</th>
<th>RESOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>6.8 – 7.8 pH units</td>
<td>0.01 pH units</td>
</tr>
<tr>
<td>pCO₂</td>
<td>10 – 80 mm Hg (1.3 – 10.7 kPa)</td>
<td>1 mm Hg (0.1 kPa)</td>
</tr>
<tr>
<td>pO₂</td>
<td>20 – 500 mm Hg (2.7 – 66.7 kPa)</td>
<td>1 mm Hg (0.1 kPa)</td>
</tr>
<tr>
<td>K⁺</td>
<td>0.30 – 8.0 mmol/L</td>
<td>0.1 mmol/L</td>
</tr>
<tr>
<td>Temperature (T)</td>
<td>15° – 40° Celsius</td>
<td>1° Celsius</td>
</tr>
<tr>
<td>Oxygen saturation (SO₂)</td>
<td>60 – 100%</td>
<td>1%</td>
</tr>
<tr>
<td>Hematocrit (Hct)</td>
<td>17 – 38%</td>
<td>1%</td>
</tr>
<tr>
<td>Total hemoglobin (Hgb)</td>
<td>5.6 – 12.6 g/dL</td>
<td>0.1 g/dL</td>
</tr>
<tr>
<td>Oxygen consumption (VO₂)</td>
<td>10 – 400 mL/min</td>
<td>1 mL/min</td>
</tr>
<tr>
<td>BE</td>
<td>-25 – 25 mEq/L</td>
<td>1 mEq/L</td>
</tr>
<tr>
<td>HCO₃⁻</td>
<td>0 – 50 mEq/L</td>
<td>1 mEq/L</td>
</tr>
<tr>
<td>Blood flow</td>
<td>0 – 9.9 L/min</td>
<td>0.1 mL/min</td>
</tr>
</tbody>
</table>

PRODUCT SPECIFICATION
SIZE (H X W X D) WEIGHT
Monitor 11” x 12.5” x 6” 16.1 lb
Calibrator 12.5” x 8” x 8” 8.4 lb

(System Operating Ranges apply to software version 1.69.)

Ordering Information

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>UNITS/CASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor Configurations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500A</td>
<td>Monitor with one blood parameter module</td>
<td>1</td>
</tr>
<tr>
<td>500AHCT</td>
<td>Monitor with one blood parameter module and one Hct/Sat probe</td>
<td>1</td>
</tr>
<tr>
<td>500AV</td>
<td>Monitor with two blood parameter modules</td>
<td>1</td>
</tr>
<tr>
<td>500AVHCT</td>
<td>Monitor with two blood parameter modules and one Hct/Sat probe</td>
<td>1</td>
</tr>
<tr>
<td>540</td>
<td>Calibrator</td>
<td>1</td>
</tr>
</tbody>
</table>

Accessories for the CDI System 500
| CDI506 | Gas A, calibration gas for use with Calibrator 540 | 1 |
| CDI507 | Gas B, calibration gas for use with Calibrator 540 | 1 |
| 7310 | Printer paper | 5 |

Disposable Sensors for the CDI System 500
| CDI510H | Shunt Sensor, heparin treated | 20 |

Disposable H/S Cuvettes for the CDI System 500
| 6914 | 1/4” x 1/4” | 20 |
| 6913 | 3/8” x 3/8” | 20 |
| 6912 | 1/2” x 1/2” | 20 |

For information on Terumo Cardiovascular Group products:

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