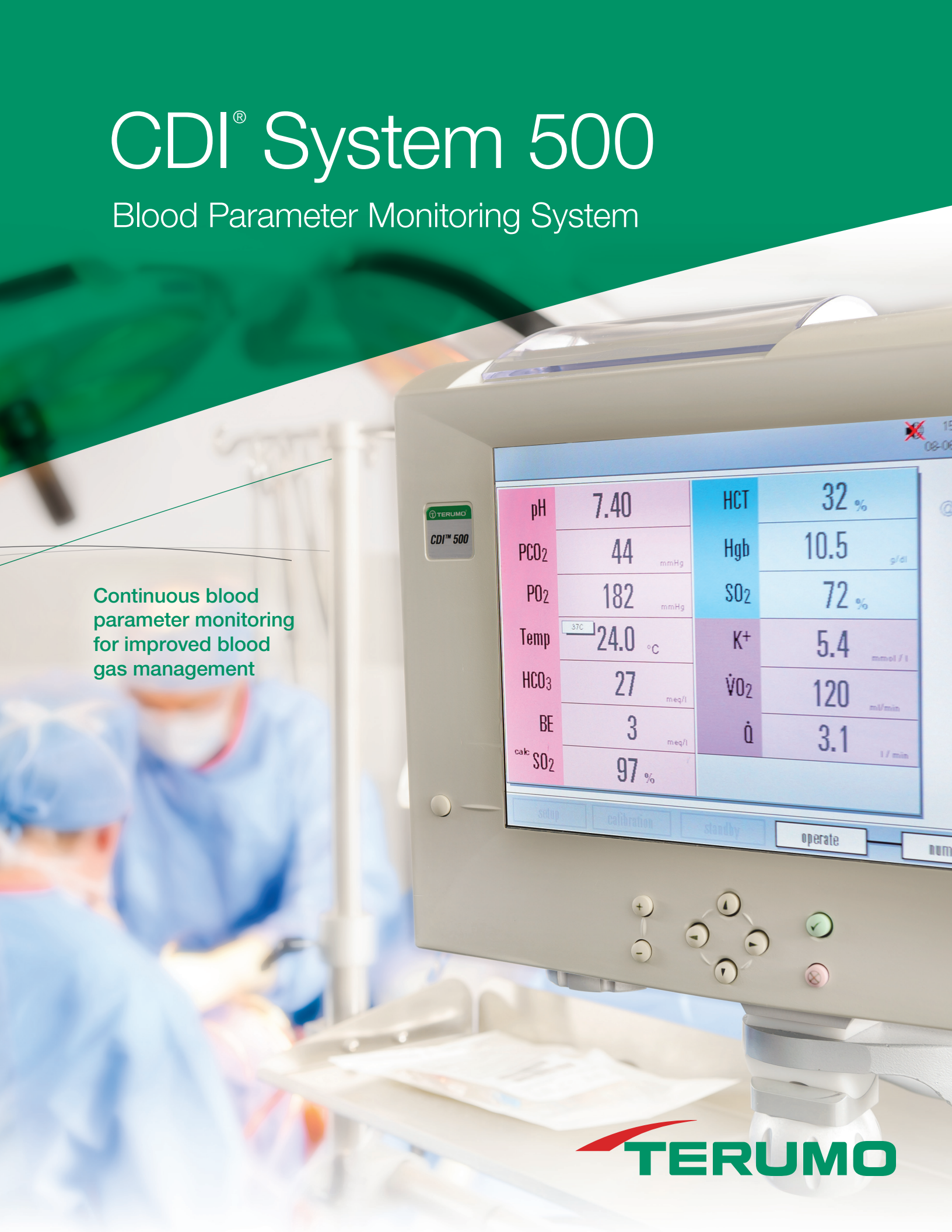
CDI® System 500

Blood Parameter Monitoring System

Continuous blood parameter monitoring for improved blood gas management



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The world's most trusted and used continuous in-line blood gas monitor

For more than 15 years, the CDI® Blood Parameter Monitoring System 500 (CDI System 500) has been trusted and used by the world's leading cardiac hospitals to continuously measure and calculate vital blood parameters during cardiopulmonary bypass. Terumo Cardiovascular Group proudly continues to serve our customers with the leading technology available today.

Based on optical fluorescence and reflectance technologies, the CDI System 500 continuously measures or calculates 11 critical blood parameter values, including: pH, pCO_2, pO_2, potassium (K^+), oxygen saturation, hematocrit, hemoglobin, and temperature.

The proven technology of the CDI System 500

Only the CDI System 500 shunt sensor measures pH, pCO_2, pO_2, and potassium

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. Accurate measurements of these critical parameters provide clinicians with the information to improve patient care:

- **pH and pCO_2** – to monitor for and classify metabolic and respiratory alkalosis/acidosis
- **pO_2** – to more consistently control partial pressure of oxygen, avoiding hyper/hypoxia
- **pCO_2** – to monitor for excessive or deficient levels of carbon dioxide in the bloodstream, which could result in hyper/hypocapnia
- **Potassium (K^+)** – to quickly identify conditions that may lead to hyper/hypokalemia

Constant monitoring of the patient's changing condition

Blood parameters can change rapidly during cardiopulmonary bypass-supported procedures due to a multitude of dynamic conditions. Blood gas analyzers only reflect the patient's clinical condition for the exact moment the sample is drawn. The blood sample results may not reflect recent changes in blood gas parameters and patient conditions.

The CDI System 500 provides continuous monitoring, and system alerts provide visual and audible indicators when parameters fall outside user-specified limits.

Quick recognition of fluctuations in critical physiological parameters

The system's average response time for measured parameters (pH, pCO_2, pO_2 and K^+) is in seconds. These real-time system updates enable you to identify undesirable trends quickly.

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The CDI® System 500 measures or calculates pH, pCO_2, pO_2, K^+, temperature, SO_2, hematocrit, hemoglobin, base excess, bicarbonate, and oxygen consumption

Monitor

- Modular probes allow user to configure system to meet specific monitoring requirements.
- Large, color LCD display provides high visibility at a variety of viewing angles.
- Integrated battery pack ensures uninterrupted operation for 25 minutes.
- Monitors blood/patient in either actual or 37˚ C temperature mode to allow for Alpha stat or pH stat management.
- Displays blood parameter values in either numeric, graphic, or tabular formats.
- Integral monitor printer provides documentation of system's self-diagnostics and calibration verification, as well as displayed values.
- RS-232 serial interfaces accept inputs from pumping system to use and display blood flow, and provide outputs to data management systems or transmission to other external devices.
- Built-in handle for transportability.

Monitor Pole Clamps

Available in two arm lengths, 7 inches and 4½ inches, that attach to standard heart-lung machine poles.

Cable Head Bracket

Cable head assembly slides into the bracket for mounting to standard heart-lung machine poles.

Calibrator

- Fast 2-point gas calibration assures shunt sensor is performing to specifications.
- Small footprint and built-in handle for transportability.
- Mountable onto monitor pole clamp.

Shunt Sensor

- Unique fluorescence sensor technology measures pH, pCO_2, pO_2, and K^+.
- Simple installation of the sensor into the shunt line using luer connections.
- May also be added after the initiation of bypass, facilitating set up in emergency cases.
- Treated with covalently bound, non-leaching heparin.

H/S Cuvette

- Optical reflectance technology provides accurate readings of venous SO_2/Hct/Hgb.
- Disposable cuvette clips easily to hematocrit/saturation probe.
- Available in three connector sizes: ¼ x ¼, ⅜ x ⅜, and ½ x ½ inches.

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The CDI® System 500 quickly alerts you to changes in patient status

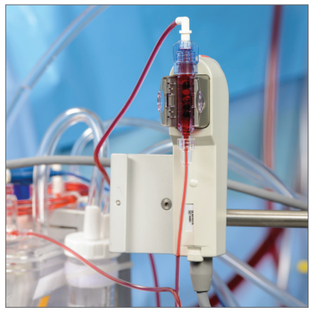
Continuous in-line monitoring during cardiopulmonary bypass surgery is a critical component of perfusion safety and improving patient outcomes. Studies have shown that appropriate regulation of blood gas parameters is essential to avoid the negative outcomes linked to sub-optimal blood gas parameter control. More precise and accurate control of blood gas parameters could potentially improve:

- Cardiac function
- Renal function
- Pulmonary function
- Cerebral function
- Transfusion requirements
- Ventilator requirements
- ICU stays
- Post-operative hospital stays

Fast, easy set up

The shunt sensor is placed in the cable head.

The cable head, with sensor attached, is placed in the calibrator.



The sensor and probe head are installed in the circuit with two luer connections. The design allows placement in a variety of circuit locations.

Learn why the world's leading Cardiac Centers trust only the CDI System 500. Ask your Terumo Cardiovascular Group representative for more information on peer-reviewed studies that link continuous monitoring to improved outcomes.

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Specifications

Displayed Parameters	System Operating Ranges	Resolution
pH	6.8 to 7.8 pH units	0.01 pH units
pCO_2	10 to 80 mm Hg (1.3 to 10.7 kPa)	1 mm Hg (0.1 kPa)
pO_2	20 to 500 mm Hg (2.7 to 66.7 kPa)	1 mm Hg (0.1 kPa)
K^+	3.0 to 8.0 mmol/L	0.1 mmol/L
Temperature (T)	15° to 40° Celsius	0.1° C
Oxygen saturation (SO_2)	60 to 100%	1%
Hematocrit (Hct) (15° < T <40° C)	17 to 38%	1%
Total hemoglobin (Hgb)	5.6 to 12.6 g/dL	0.1 g/dL
Oxygen consumption (VO_2)	10 to 400 mL/min	1 mL/min
Base Excess (BE)	-25 to 25 mEq/L	1 mEq/L
Bicarbonate (HCO_3)	0 to 50 mEq/L	1 mEq/L
Blood flow (Q)	0 to 9.9 L/min	0.1 mL/min

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.

(Displayed Parameter Values apply to software version 1.69.)

Monitor power requirements and specifications

100-240 VAC, 50/60 Hz

12 volt backup battery

Data Output Port: RS-232 serial interface

Pumping Systems Input Port: RS-232/RS-485 serial interface

Model CDI510H Shunt Sensor

Sterile, heparin-treated

Priming volume 1.2 mL

System measurement cycle time

pH, pCO_2, pO_2 = one measurement per second

K^+ = one measurement per six seconds

SO_2, Hct, Hgb = one measurement per eighteen milliseconds

System display update

Every six seconds

Ordering Information

Catalog #	Description	Units/Case
Monitor Configurations		
500AHCT	Monitor with one blood parameter module and one Hct/Sat probe	1
500AVHCT	Monitor with two blood parameter modules and one Hct/Sat probe	1
Calibrator		
540	Calibrator	1
Accessories for Use with 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
CDI517	Monitor pole clamp, 7" (17.8 cm) arm length, calibrator mount	1
CDI518	Monitor pole clamp, 4.5" (11.4 cm) arm length	1
CDI519	Cable head bracket	1
Disposable Sensors for Use with CDI System 500		
CDI510H	Shunt Sensor for use with CDI System 500, heparin treated	20
Disposable H/S Cuvettes for Use with CDI System 500		
6914	¼" x ¼" connectors	20
6913	⅜" x ⅜" connectors	20
6912	½" x ½" connectors	20
6934	¼" x ¼" with 6" (15.2 cm) extension tube	10
6933	⅜" x ⅜" with 6" (15.2 cm) extension tube	10
6932	½" x ½" with 6" (15.2 cm) extension tube	10

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