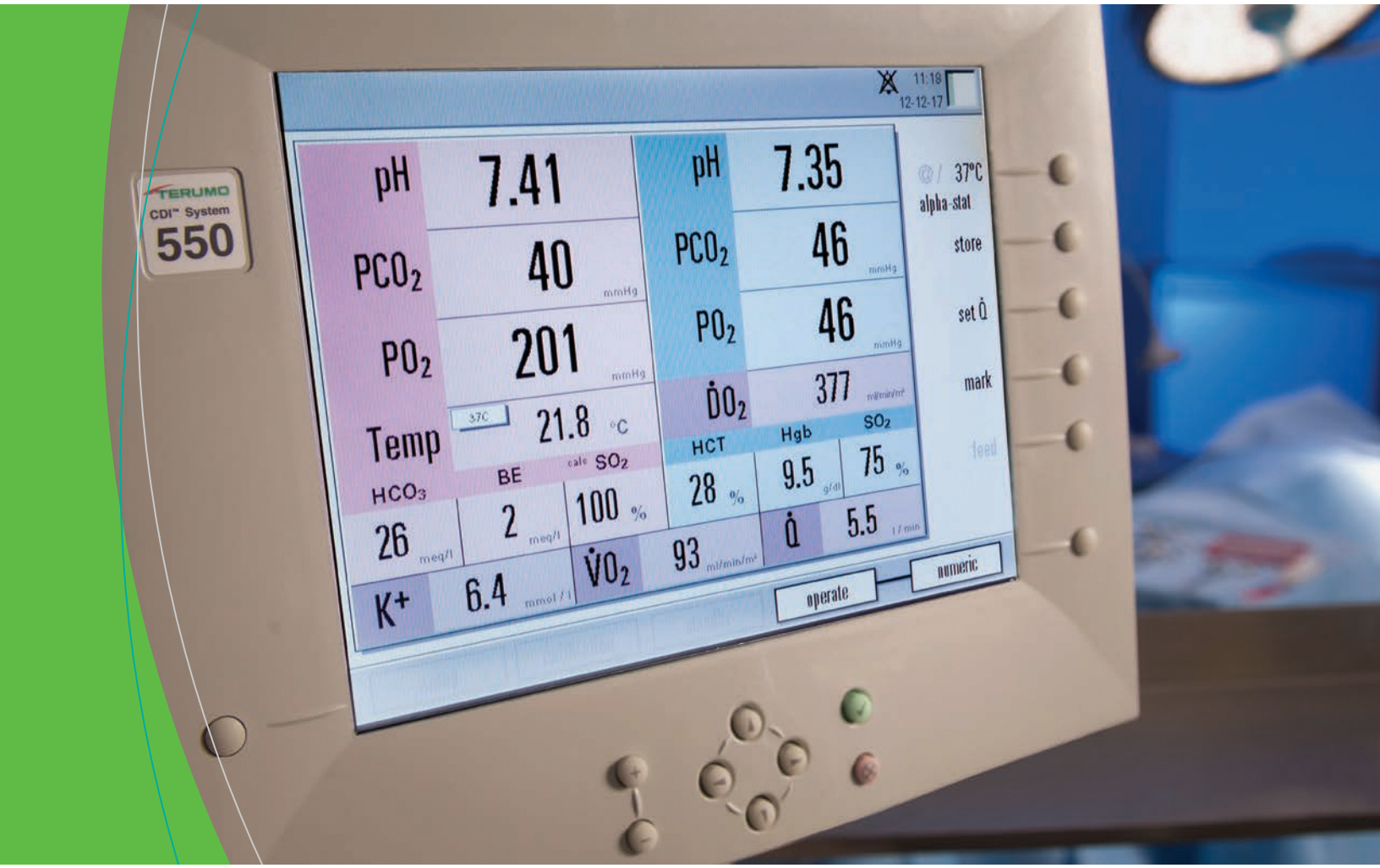
CDI® Blood Parameter Monitoring System 550

Real-time monitoring of DO_2 as one of 12 key blood parameters



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CDI® Blood Parameter Monitoring System 550

The standard in the industry for continuous in-line blood parameter monitoring

With the addition of in-line monitoring of oxygen delivery (DO_2), CDI System 550 provides the continuous information needed to reduce the risk of acute kidney injury, improve patient outcomes and save hospital costs.

Real-time monitoring of DO_2, one of 12 key blood parameters, provides critical information required for goal directed perfusion, helping to achieve optimal perfusion during cardiopulmonary bypass surgery.

User selectable limits provide alerts when values are approaching critical DO_2 thresholds.

CDI System 550 offers a full range of next-generation features, including market-leading optical fluorescence technology, a high-visibility LCD screen, advanced probe design, IEC 60601-1 3rd Edition compliance, and more.

Proven technology and exceptional quality backed by Terumo's dedicated support make the CDI System 550 the smart choice.

Why you need to know the DO_2 story.

What is DO_2?

DO_2 is oxygen delivery or "O_2 delivery". It is an indicator of the amount of oxygen being delivered to the patient during bypass.

DO_2 is a calculated value based on the blood hemoglobin level, arterial oxygen saturation, pump flow and the arterial partial pressure of oxygen. It can be indexed to the size of the patient by using body surface area (BSA) in the formula. The CDI System 550 allows the user to enter the patient's body surface area. DO_2 is expressed in mL/min or mL/min/m^2 if indexed to BSA. DO_2 is an important indicator of perfusion.

What is Acute Kidney Injury?

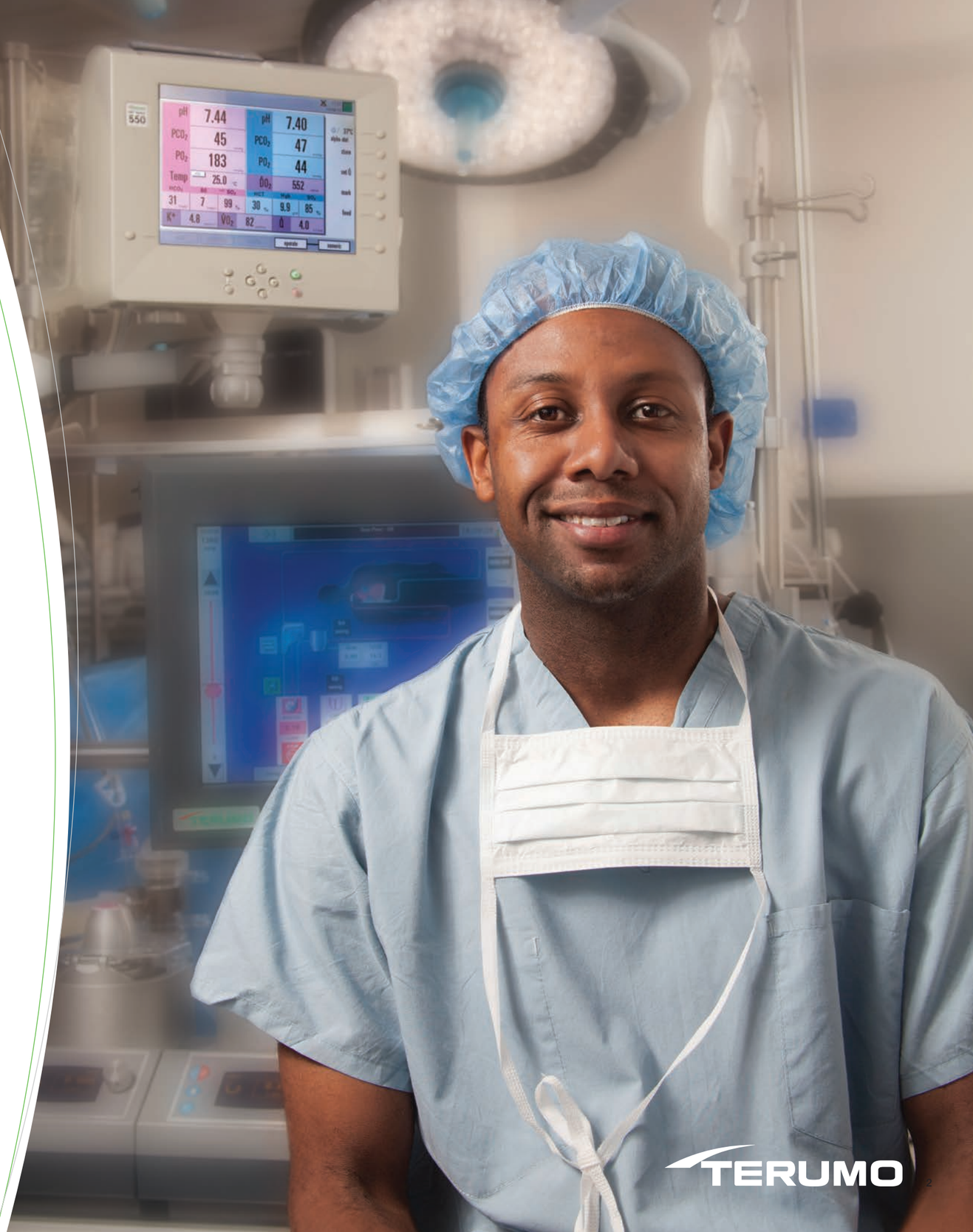
Acute Kidney Injury (AKI) is defined as an abrupt or rapid decline in renal filtration function. It is an episode of kidney failure or kidney damage that happens within a few hours or a few days. AKI causes a build-up of waste products in the blood and makes it hard for the kidneys to keep the right balance of fluid in the body.

Next to the brain, the kidney is very sensitive to the oxygen level in the blood as well as the flow rate. Less-than-optimal oxygen delivery can cause organ damage.

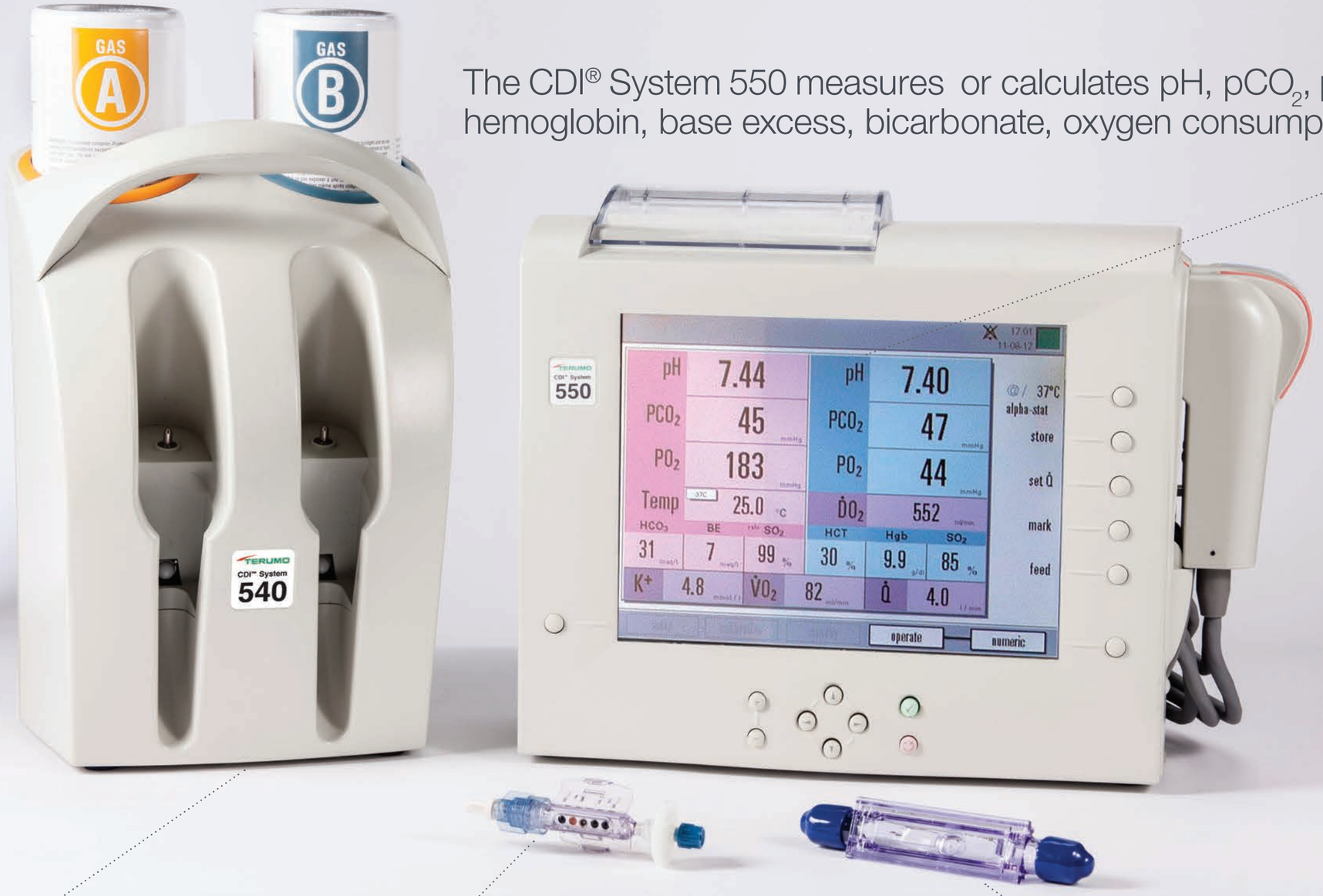
AKI results in longer ICU stays, longer hospital stays, and higher costs especially when the patient requires dialysis. Kidney injury can be chronic or acute, and increases morbidity and mortality.

Why does it matter?

O_2 delivery and O_2 consumption values provide the perfusionist valuable information for the maintenance of optimal metabolic performance of the patient while being supported on cardio-pulmonary bypass. This helps assure that all critical organs, including the brain, gut, liver and kidneys are having their individual oxygen demand needs met satisfactorily. The kidneys are particularly sensitive to even short-term oxygen deficit. Numerous clinical studies have demonstrated that careful monitoring of DO_2 during cardiac surgery and maintaining a threshold level during cardiopulmonary bypass dramatically reduce kidney injury.

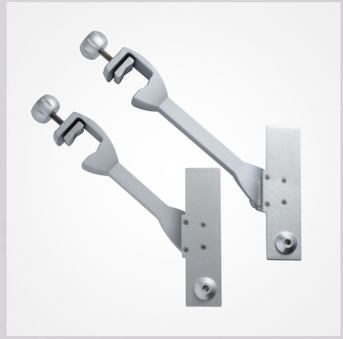


The CDI® System 550 measures or calculates pH, pCO_2, pO_2, K^+, temperature, SO_2, hematocrit, hemoglobin, base excess, bicarbonate, oxygen consumption and oxygen delivery



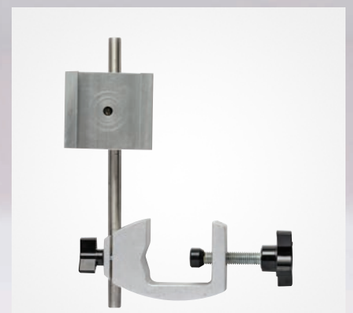
Monitor

- Large, color liquid crystal display provides high visibility at a variety of viewing angles.
- Self-diagnostic system verifies proper functioning of electronics and optics.
- System alerts provide visual and audible indicators when parameters fall outside user-specified limits.
- 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.
- 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 facilitates 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 two-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 550 quickly alerts users 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 potentially improves:

- 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 have trusted Terumo's CDI Systems for more than 30 years.

Ask your Terumo Cardiovascular Group representative for more information on peer-reviewed studies that link adequately maintained levels of oxygen delivery to improved outcomes and reduced hospital costs.

Product Specifications

Displayed Parameters	System Operating Ranges	System Display Ranges
pH	6.8 to 7.8 pH units	6.5 to 8.5 pH units
pCO_2	10 to 80 mmHg (1.3 to 10.7 kPa)	10 to 200 mmHg (1.3 to 26.7 kPa)
pO_2	20 to 500 mmHg (2.7 to 66.7 kPa)	10 to 700 mmHg (1.3 to 93.3 kPa)
K^+	3.0 to 8.0 mmol/L	1.0 to 9.9 mmol/L
Temperature (T)	15° to 40 °C	1° to 45 °C
Oxygen saturation (SO_2)	60 to 100%	35 to 100%
Hematocrit (Hct)	15 to 45%	12 to 45%
Total hemoglobin (Hgb)	5.0 to 15.0 g/dl	4.0 to 15.0 g/dl
Oxygen Consumption (VO_2) Oxygen Consumption (Indexed)	10 to 400 ml/min	10 to 400 ml/min 1 to 999 ml/min/m^2
Oxygen Delivery (DO_2) Oxygen Delivery (Indexed)	10 to 2000 ml/min	10 to 2000 ml/min 1 to 20000 ml/min/m^2
Base Excess (BE)	-25 to 25 mEq/L	-25 to 25 mEq/L
Bicarbonate (HCO_3)	0 to 50 mEq/L	0 to 50 mEq/L
Blood flow (Q)		0.0 to 9.9 L/min

Product Specification	Size (H x W x D)	Weight
Monitor	28 cm x 38 cm x 17 cm	7.9 kg
Calibrator	32 cm x 21 cm x 26 cm	3.81 kg

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 CDI 510H Shunt Sensor

Sterile, heparin-treated
Priming volume 1.2 ml

Ordering Information

Catalog #	Description	Units/Case
Monitor Configurations		
550AHCT	Monitor with one blood parameter module and one hematocrit/saturation probe	1
550AVHCT	Monitor with two blood parameter modules and one hematocrit/saturation probe	1
Calibrator		
540	Calibrator	1
Accessories for Use with CDI® Systems		
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 Systems		
CDI510H	Shunt Sensor for use with CDI Systems, heparin treated	20
Disposable H/S Cuvettes for Use with CDI Systems		
6914	¼" connectors	20
6913	⅜" connectors	20
6912	½" connectors	20
6934	¼" with 6" (15.2 cm) extension tube	10
6933	⅜" with 6" (15.2 cm) extension tube	10
6932	½" with 6" (15.2 cm) extension tube	10

Display Update

Every six seconds

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

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