

Flexible Heart Lung Machine
Solutions for all of your
Cardiopulmonary Bypass
Procedures



Quantum Solutions for the O.R.

The Family of Quantum Workstations

Introducing the Quantum Heart Lung Machine. Setting new global standards in its ease of use, patient centric safety systems, and configuration flexibility for a wide range of Cardiopulmonary Bypass Solutions.

Your gateway into the management of the world’s most advanced Heart Lung Machine.



The New York HLM Frame

- The robust and compact Stainless Steel Space Frame construction improves usability by significantly reducing both footprint and weight. The independent placement of system modules allows fine-tuning of overall ergonomics, which leads to improved patient focus and safety.
- The compact modular design and customization opportunities offer an unprecedented degree of flexibility in the optimization of perfusion circuits focused on lowering hemodilution for improved patient outcomes.
- Integrated into the Stainless Steel Space Frame is the Quantum Power Management Module with approximately four hours of battery life. The Power Management Module can support a maximum of fifteen Quantum Modules.
- All power management cabling is contained within the stainless steel frame to improve both ergonomics and system durability. Integrated software provides for efficient power regulation and auto-recognition of connected Quantum Modules.



The 15" Quantum Workstation

The 15" Quantum Workstation has been designed to support a wide range of perfusion procedures utilized during Cardiac Surgery. Using its high-resolution touch screen technology the 15" Quantum Workstation Supports the centralization of critical patient data and optimal EMR generation.

The 15" Quantum Workstation is supplied with Spectrum Medical's proven non-invasive measurement of O₂ Saturations and Hb/Hct and supports connectivity to a wide range of Quantum modules.

Systems interoperability and patient safety is fundamental to Spectrum Medical and its commitment to partnering with customers to improve patient outcomes. The new 15" Quantum Workstation has an integrated 3rd party device connectivity solution that enables the central display and transfer of critical real-time continuous clinical information.

The Quantum Pump Control Module

The Quantum Pump control Module provides complete manual support of your Quantum Heart Lung Machine with Functionality that includes alarm management, pump management, and the delivery of cardioplegia.

Introducing the Quantum Air Manager+

The Quantum Sensor Module

Precision gas blending with integrated VAVD

Proven non-invasive measurement technologies provide flexible cost-effective management of Cardiopulmonary Bypass.

The Quantum Air Manager +

The ultra-compact Quantum Air Manager + delivers precision regulated FiO_2 & CO_2 within a sweep flow range of 0.025 to 10 L/m and an integrated vacuum control function for the management of Venous Drainage during Cardiopulmonary Bypass.

To further improve patient safety the Quantum Air Manager + provides real time monitoring of the following gas ventilation parameters.

- Incoming Supply Pressures of Air, O_2 , CO_2 and Vacuum.
- O_2 and CO_2 Gas Concentrations and Pressures to the Oxygenator
- Overall Gas Flow to the Oxygenator (Sweep)
- PO_2 and PCO_2

Functionality is further enhanced with the inclusion of three Flow channels (including emboli detection) , three pressure and temperature channels plus a two-position reservoir level detection system.



The Quantum Sensor Module

The Quantum Sensor Module is designed to provide the complete range of perfusion circuit parameters required for the safe management of Cardiopulmonary Bypass and the measurement of DO_2 .

The sensor module includes:

- Three temperature measurements
- Three pressure measurements

- Three flow measurements (including emboli and bubble detection)
 - A two-position reservoir level detection system
- Offering complete flexibility, the Quantum Sensor Module can be connected directly to the Quantum Workstation or to any locations on the Quantum Perfusion Console.

The Quantum Centrifugal Pump CP37

Perfusion Roller Pump

The world's latest and most advanced Centrifugal Pump technology setting new standards for patient safety, hydraulic performance and hemolysis.

A Quantum leap in usability and perfusion systems' functionality.

Spectrum Medical's next generation Quantum Centrifugal Pump provides exceptional levels of performance along with significantly reduced prime volumes. The integration of a single sapphire bearing and patented hydro-dynamic balancing technology ensures levitation at low RPMs leading to significantly reduced heat generation and hemolysis.

The CP37 is integrated directly with the Quantum Perfusion System and can be connected to any port location within the Quantum Console to

optimize the design of cardiopulmonary bypass circuits.

The CP37 is Spectrum Medical's most powerful Centrifugal Pump and is designed to support a wide range of clinical applications in the O.R.

With its 3/8 port and a prime volume of only 37cc, the CP37 is rated to 8 liters/min at 800 mmhg.

PC1036 biocompatibility coating and the availability of a hand crank further improves patient safety.



The compact range of Quantum direct drive peristaltic roller pumps are provided with 4", 6" and 8" raceway diameters which maximize both flexibility and compactness when optimizing HLM design. In particular, the introduction of the mid-range 6" pump option eliminates the current compromise that compels users to use 8" pumps in medium flow applications.

The Quantum Universal Clamping System supports the mounting of pumps into multiple locations and pump change times of less than 60 seconds. Importantly, Quantum's pump detection software eliminates user intervention when adding or exchanging pumps.

Smart LEDs enable visual identification of pump function and color coordination with both the Quantum Workstation and the Quantum Pump Control Module

Spectrum Medical's universal tube clamping system is designed to eliminate the frustration of using current tube clamping solutions and color coded plastic inserts. A single 'bobbin' solution allows for the clamping of all tubing diameters associated within the selected size of raceway.

The Quantum Venous and Arterial Clamp

Perfusion clamping solutions for cardiopulmonary procedures.



The Quantum Clamp is controlled via the Quantum Workstation and can be configured to support percentage occlusion for both arterial and venous circuits. Continuing the Quantum Philosophy of seeking to improve overall system ergonomics, wherever possible, the Quantum Clamp includes two channels of flow measurement and emboli detection, two channels of pressure measurement and a two-position reservoir level detection system.

An interlocking lid complete with safety latch, color-coded LEDs and a mechanical override system maximise system safety.



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