Quantum Perfusion



Flexible Support Solutions for Extracorporeal Perfusion

Spectrum Medical

Quantum Perfusion Systems

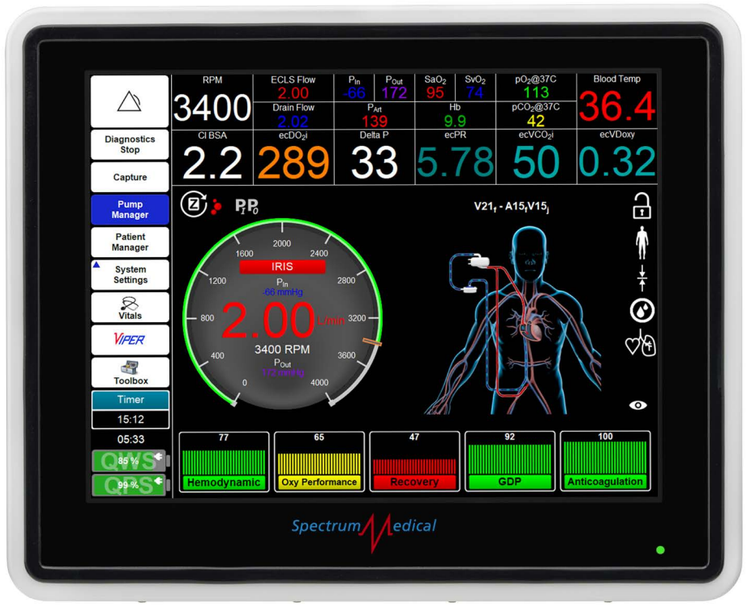
Leading the world in recirculatory support Technology.



Mirandola Perfusion System with the optional transport capability.

The Quantum Workstation Elite

Your gateway into the management of the World's most advanced Perfusion Patient Safety System supporting complex procedures.



Quantum Workstation Elite

The Quantum Workstation Elite

The 12" Quantum Workstation Elite has been designed to offer the ultimate in clinical flexibility when supporting Extracorporeal Perfusion procedures.

The Quantum Workstation integrates two channels of flow measurement, four channels of pressure and temperature measurement, and Spectrum Medicals proven non-invasive measurement of O_2 Saturations and Hb/Hct.

As a standalone technology the Quantum Workstation Elite can modulate two CP-22 NG Quantum Centrifuge Pumps or two Quantum 4" Roller Pumps (or any combination). When connected to a perfusion system with a Quantum Power Pack the Quantum Workstation can modulate both 6" and 8" roller pumps. Furthermore, The Quantum Workstation Elite supports connectivity to a wide range of Quantum modules including the Quantum Ventilation Lite.

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

The Quantum Ventilation Lite

Finally, a fully integrated “single solution” Ventilator technology designed to provide the safe delivery of patient ventilation for the Membrane Oxygenator.



Quantum Ventilation Lite

The Quantum Ventilation Lite is a world first solution designed to manage Membrane ventilation, including the blending of gases, integrated patient safety systems and perfusion diagnostics.

The ultra-compact Quantum Ventilation Lite employs the very latest gas blending technologies to provide the user with a variety of features.

The Quantum Ventilation Lite delivers precision regulated FiO_2, CO_2 with a sweep flow range from 0.025 to 10 L/m when flowing a single gas e.g. O_2 and up to a maximum flow rate of 20 L/m when modulating the delivery of two gases e.g. 60% FiO_2.

To ensure system performance and safety the ventilation system has a fully integrated secondary monitoring system that continuously compares actual measured values with user defined set-points and activates an alarm when the discrepancy between the two systems is greater than 10%.

The Quantum Ventilation Lite, combined with its patented PaO_2 and $PaCO_2$ measurement technologies, provides a decision support capability and an auto regulation function for the modulation of gas flows and gas concentrations when setting PaO_2 and $PaCO_2$ target values.

To further improve patient safety the Quantum Ventilation Lite provides real-time monitoring of the following gas-ventilation parameters:

- Incoming Supply Pressures of Air, O_2 & CO_2
- O_2 and CO_2 Gas Concentrations & Pressures to the Oxygenator
- Overall Gas Flow to the oxygenator (SWEEP)
- $FeCO_2$ concentrations

Integrated within the Quantum Ventilation Lite is Spectrum Medical’s full range of Non-Invasive Diagnostic and Calculated Physiologic Measurements. To further improve usability the system includes the measurement of Flow (including bubble detection), Pressure and Temperature.

The Quantum “IRIS” Transport System

Combining future technologies with proven Quantum performance to maximise patient safety during transport.

Maximum Intelligence , Maximum Safety



The Quantum IRIS Transport System with optional G Clamp and Hand Crank

Spectrum Medical is proud to present its long-awaited Quantum Transport System known around the world as IRIS.

Without doubt the world’s most compact transport system solution, weighing less than 6 kgs, while maintaining the intelligence and sophistication you come to expect from Spectrum Medical. The flexible low noise pump drive system supports Spectrum’s Next Gen CP20 NG and CP22 NG Centrifuge pump heads.

The Quantum Transport System includes:

- 2 Flow channels with bubble detection.
- 4 Pressure Channels (inlet, pre and post oxy, and Delta P)
- Venous and Arterial Saturation plus Hb/ Hct
- DO_2 and VO_2
- Temperature

Furthermore, the Quantum Transport System supports connectivity to the Quantum Elite to ensure data captured during transport can be transferred to the patient's record.

The Quantum Transport System has next level interoperability with Spectrum Medical’s Extracorporeal Perfusion Technologies including the new generation Mirandola frame, the Quantum Elite and the Quantum Ventilation Lite.



Not for sale in the US Market.

Presenting a range of low-noise Quantum flexible Pump Drive systems to support a wide range extracorporeal support in ICU.

Centrifuge Pumps

The CP-22 NG Quantum Centrifugal Drive System is both compact and powerful and can be used to support a wide range of Perfusion circuits. Central to the Quantum philosophy is to ensure system flexibility and equipment utilization. The CP22 Motor Drive System can be integrated with either the Mirandola frame or directly connected to the new Quantum Workstation Elite. The availability of a hand-crank further improves patient safety.





Quantum Pump Drive Systems

Roller Pumps

The compact range of Quantum direct drive peristaltic roller pumps are provided with 4", 6" and 8" raceway diameters which maximizes both flexibility and compactness when optimizing Perfusion System design.

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.



The Quantum Sterile Technologies

Introducing the Quantum Oxygenator a revolution in membrane gas transfer technology combining a unique fluid path design and low pressure drops.

Total Surface Area (Ventilation Efficiency)

Spectrum Medical's revolutionary laminated membrane construction significantly increases gas exchange efficiency, minimises pressure drop and priming volume. The unique construction eliminates the current compromise between fibre bundle compression and low priming volume.

Maximum Fluid Dynamic Performance

Spectrum Medical continues its commitment to patient safety with the integration of its patented Quantum Vortex Flow technology. This innovation in fluid dynamics ensures that low velocity sections and dead space within the fluid path has been eliminated and is central to Spectrum Medical's "anti-thrombotic" strategy.

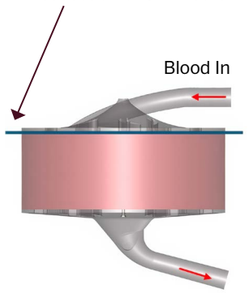
This unique design concept in conjunction with the Quantum Vortex Flow and Fibre Separation technologies guarantees that the total surface area of the laminated bundle construction is subjected to a circulating blood flow with a guaranteed full volume wash out of less than 3 seconds when flowing blood at 5 lpm.

Biocompatible

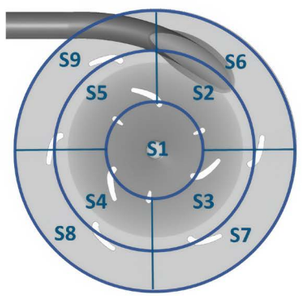
Resulting from significant process research, a world first in the application of PC1036 cross-linked biocompatible coating to a fibre membrane construction. Superior adhesion qualities, elasticity and surface smoothness maximises antithrombotic performance throughout the life of the product.

Round shape design → 2. Uniform fiber perfusion

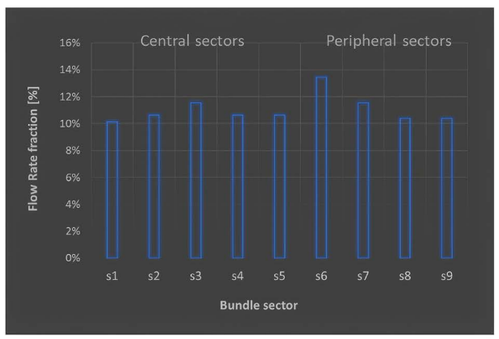
Inlet section of OXY fibers



Fiber bundle sectors (S1 - S9)



Blood flow on different fiber sectors from CFD analyses



Uniform distribution of blood flow through the fibers
No corner → No stagnant Areas

The Quantum Oxygenator

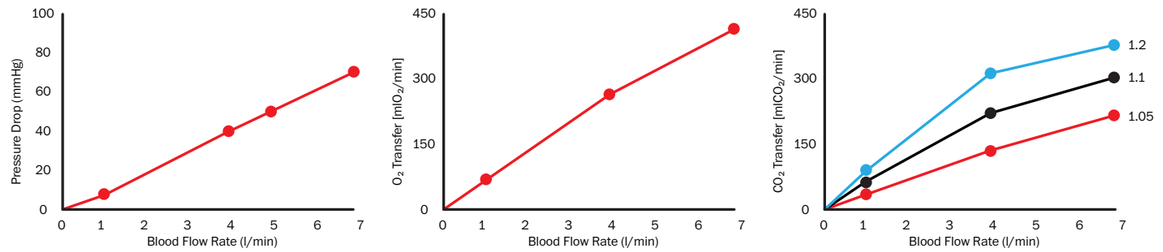
Proprietary membrane technology ensures industry leading gas exchange.

Sizes available:

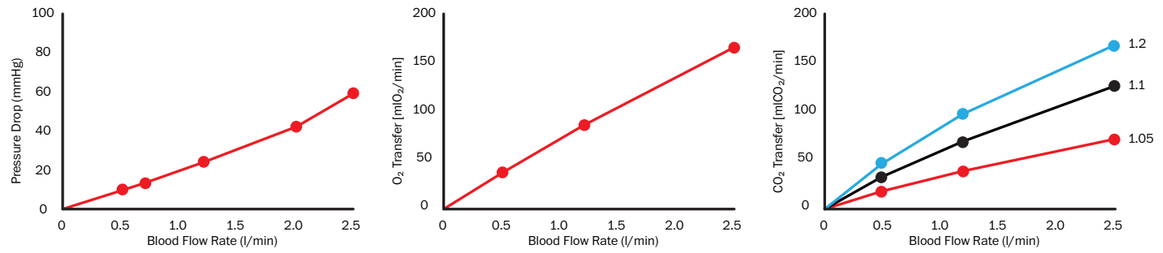
Adult VT-200
Pediatric VT-75



Quantum Perfusion Blood Oxygenator VT-200



Quantum Perfusion Blood Oxygenator VT-75



Keep Checking our website for updates.

Performance of the device were obtained in agreement with ISO 7199 Standard (37˚C)

The Next Generation Quantum Centrifugal Pump

CP-20 NG (1/4) and CP-22 NG (3/8)

Spectrum Medical's next generation range of Quantum Centrifugal Pumps provide exceptional levels of performance along with significant reductions in prime volume. 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 haemolysis.

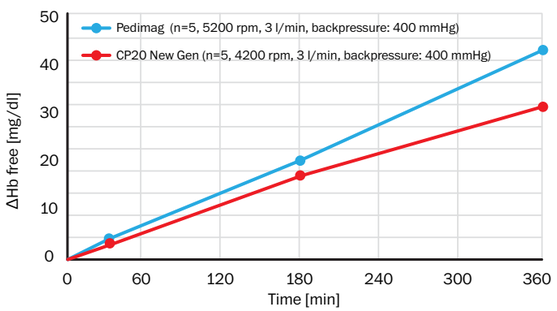
In-line pressure and temperature measurement of both the arterial and venous lines can now be accomplished without compromising the safety of the circuit.

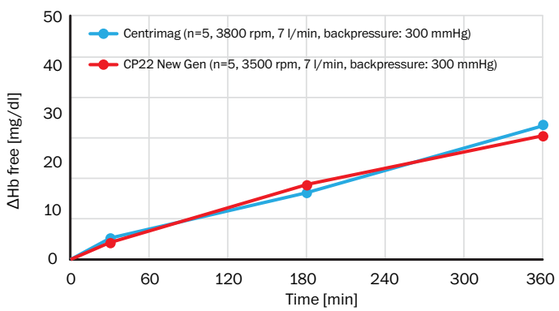


CP-20 NG



CP-22 NG





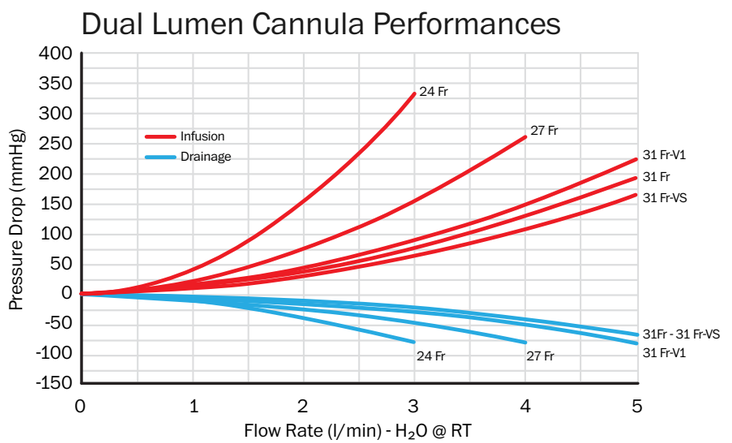
The Quantum Dual Lumen Technology

Spectrum Medical's revolutionary range of Dual Lumen Cannulas minimizes recirculation during respiratory support.

Spectrum Medical's new Dual Lumen Cannula allows for venous drainage and reinfusion of blood via the internal jugular vein during support procedures lasting up to 6 hours.

The device exploits a single site insertion which reduces the invasiveness of extracorporeal procedures. It is inserted via the right internal jugular vein. Blood is drained through the lumen of the outer catheter and returned through the lumen of the inner catheter. The device features multiple inflow openings in the outer catheter limiting the circulation of unoxygenated blood.

The Cannula is supplied in different sizes and different lengths and is coated with Spectrum Medical's crosslinked biocompatible PC1036.



Quantum Informatics - 26

Informatics - 26 is Spectrum Medical's latest generation software solution that revolutionizes real-time patient safety and the future development of clinical best practice for Extracorporeal Life Support.

System Architecture & H.I.S. Integration (VISION)

About VISION Server - VISION is the gateway to Quantum Informatics. It automates software, Windows and security updates, provides web-based remote access, and manages user privileges. VISION runs on a hospital-supplied server and integrates with Active Directory.

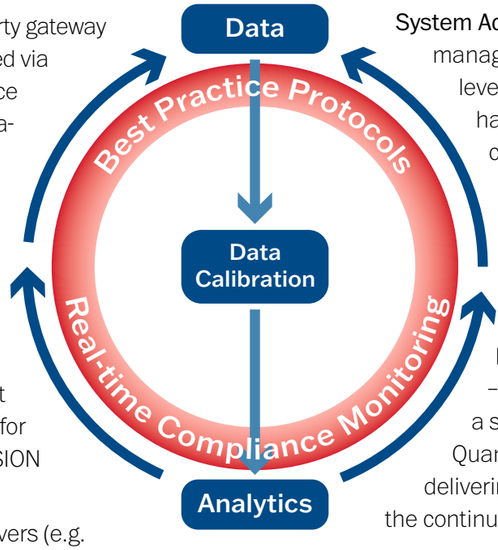
Two-way H.I.S. and 3rd party gateway communication is delivered via a MIRTH-supplied interface engine. A built-in SQL database stores patient data long-term and streams active data to LIVE VUE and bedside Patient Safety Systems.

Medical Device Connectivity - A world-leading connectivity solution, built in – eliminating the need for 3rd party middleware. VISION supports:

- 3rd Party Gateway Servers (e.g. Philips, GE)
- Direct connectivity to Physiologic Monitors, Ventilators, etc.
- Middleware solutions
- Hospital Information Systems (via Mirth)
- The Quantum Workstation Platform

Analytics, Administration & Reporting

Case Playback - Retrospectively replay stored patient data from the VISION SQL database in real-time – waveforms, physiological trends, blood gases. With H.I.S. integration, playback can also include medications, alerts and personnel activity. Ideal for training and Morbidity & Mortality meetings.



System Administration - Day-to-day management at the physician level. VISION's web interface handles real-time profile creation, modification and deployment of the active Patient Safety System.

Dashboards & Reporting - Partnered with LOGI Analytics – a recognised leader in data visualisation – the LOGI tool-set is now a standard module within Quantum Informatics – 26, delivering clinical analytics across the continuum of care.

Real-time Compliance - QI-26 closes the loop between Data, Calibration, Compliance and Analytics, surfacing Best Practice Protocols directly at the point of care.

Sentinel Total Care

Absolute dedication to customer support and a total solutions approach to a "trusted partner status".

Software Updates:

Spectrum Medical is committed to the continuous improvement of your Quantum technologies. We continually review, enhance, and add software functionality driven by evidence-based clinical usage and trends. Any software deployment is subject to prior customer approval and training via Spectrum Medical.

On Site Customer Support:

A Spectrum Medical Product Specialist will perform all required routine servicing to ensure optimum performance of your Quantum Perfusion System. Visiting Product Specialists will also provide additional user training and configuration support to enhance your clinical practice. Using dedicated Product Specialists as opposed to traditional service personnel is a unique strategy with Sentinel Total Care covering all associated service visit costs (travel, labour, and spare parts).

Extended Warranty:

Sentinel Total Care includes comprehensive protection in the event of any breakdown of your Quantum System. Coverage includes modules, sub-assemblies, and any associated accessories (sensors, cables, clamp assemblies, batteries, etc.). Quantum products beyond economical repair will be replaced with the latest 'new build' technologies at no additional cost.

Accidental Damage:

No questions asked, unintentional damage protection, including all Quantum accessories. Quantum products beyond economical repair will be replaced with the latest 'new build' technologies at no additional cost. Sentinel Total Care allows you to effectively manage your budget with no sudden large Purchase Order

Emergency Loan Equipment:

Spectrum Medical will dispatch complimentary loan equipment if your defective equipment cannot be rectified within 24 hours of being returned to a Spectrum Medical Service Centre. To maximise equipment uptime our loan equipment stays with you until you receive a repaired or new replacement module from Spectrum Medical.

Quantum Sterile Products Support:

Quantum Sterile products including Centrifuge Pumps, Oxygenators and Cannulas supplied that have exceeded their expiration date can be return to Spectrum Medical for exchange. Please note Quantum SuperPACs are not covered by this clause.

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