



## The Quantum Workstation

The future in Cardiothoracic  
Perfusion Management



Safer Solutions for  
Safer Hospitals



Your “flight deck” into Perfusion Management.

The revolutionary new range of Quantum Perfusion Systems from Spectrum Medical enhances patient and clinician safety during Cardiopulmonary Bypass and ECMO procedures. With a pioneering dedication to system modularity, Spectrum Medical can provide advanced customized Perfusion Systems for today’s clinical best practice and the new best practices of the future.

The Quantum Workstation is your “flight deck” for the management of the advanced Quantum Perfusion System. Integrated solutions and system modularity facilitates expanded functionality of the Workstation to include patient ventilation, the delivery of cardioplegia and complete Perfusion systems. Third generation software and a 15" high-resolution portrait touch screen provides a unique user experience that is easily adapted into clinical practice.

As a standalone system the Quantum Workstation is the world’s first Patient Monitor designed specifically for the safe delivery of extracorporeal circulation. Manufactured from medical grade aluminum materials and with the latest touch-screen technologies, the Quantum Workstation complies with the latest medical and safety regulations in accordance with ISO 62304 and ISO 60601.

### **Perfusion Data Management:**

Recognized as the leading provider of integrated Data Management, Spectrum Medical now includes the “vendor neutral” VIPER Data Management Software

as a standard feature on the Quantum Workstation. As a fully HL7 compliant system, Spectrum’s EMR technology allows for the integration of third party devices, the real-time bi-directional flow of discreet HL7 data with the hospital’s EHR provider and optional pdf(s) at the conclusion of the case.

### **Integrated Non-Invasive Diagnostics:**

Using Spectrum Medical’s unique non-invasive and real-time diagnostic technologies, the Quantum Workstation provides an entry level package of patient diagnostics that include SaO<sub>2</sub>, SvO<sub>2</sub> and Hb/Hct.

### **3rd Party Device Connectivity:**

With the integration of Spectrum Medical’s proven 3rd party device connectivity software, the Quantum Workstation can interface in real-time to all Patient Monitors, Cerebral Oximetry Monitors and many other 3rd party devices using LAN, RS232 and WiFi.



# Central Display System

Art Flow <b>2.92</b>	SaO <sub>2</sub> <b>96</b>	SvO <sub>2</sub> <b>85</b>	FiO <sub>2</sub> <b>79</b>	Sweep <b>2.1</b>	L rSO <sub>2</sub> R <b>68 71</b>	Venous Temp <b>36.1</b>	BP <b>95 / 74</b>
Ven Flow <b>2.93</b>	Hb <b>15.1</b>	PO <sub>2</sub> <b>224</b>	PCO <sub>2</sub> <b>47</b>	CVP <b>7</b>		Bladder Temp <b>35.3</b>	MAP <b>(81)</b>



## Central Display System:

The conduct of extracorporeal support requires primary focus on patient care and immediate access to critical clinical data with minimal distraction from either the patient or the bypass circuit.

Typically, important clinical data is found on a range of monitors from different vendors in a variety of locations, the Quantum Workstation using a world first Central Display System eliminates these potentially unsafe distractions and the need for a secondary monitor.

## Building Your Future

Ventilation and Vacuum Management

Cardioplegia Management

Heart Lung Systems

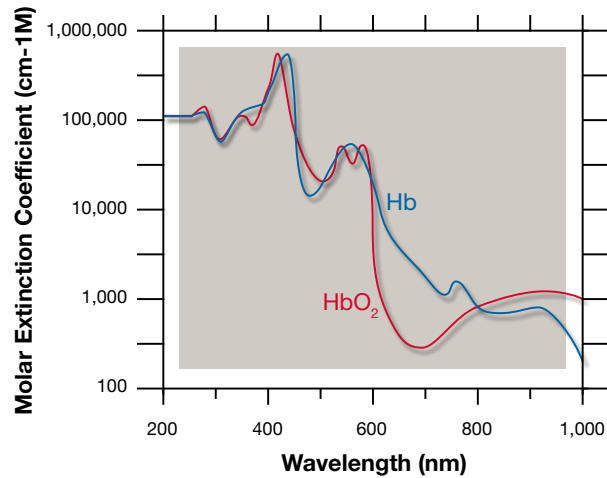
ECMO Systems

# Non-Invasive Measurement of SaO<sub>2</sub>, SvO<sub>2</sub> & Hemoglobin

## The Measurement of SaO<sub>2</sub> and SvO<sub>2</sub>

The Measurement of O<sub>2</sub> saturation is achieved by analyzing a specific region of the oxy-hemoglobin absorption curve. The use of this non-invasive optical shape recognition technology ensures the measurement of O<sub>2</sub> is highly accurate and extremely repeatable to its pre-shipped calibrations over the lifetime of the product.

Using a miniature scanning spectrometer and infrared LED, the system measures the reflected amplitude of light at 100 discrete wavelengths.



A specifically developed algorithm derives the relative contributions from both the fully oxygenated and the reduced oxygenated absorption curves to calculate an actual O<sub>2</sub> concentration.

## The Measurement of Hematocrit and Hemoglobin

Spectrum Medical again uses non-invasive technology for a continuous reading of Hematocrit (15 to 50%) and Hemoglobin (5 to 17g/dl).

Infrared light from an LED is passed through a flowing tube of blood. A photodiode detects a receiving light level and converts the resultant light energy into a proportional electrical output.

The sensors are delivered pre-calibrated with a high and low concentration value. Software algorithms linearize this relationship and convert the incoming signal to an actual value of Hemoglobin and a calculated measurement of Hematocrit.

## Sensor Sizes

HCT/ SO <sub>2</sub> Part Number	Tube ID	Tube Wall	Tube OD	Flow Probe Part Number
3003-010-023	3/16	1/16	5/16	H5XLA
3003-010-024	3/16	3/32	3/8	N/A
3003-010-022	1/4	1/16	3/8	H6XLE
3003-010-021	1/4	3/32	7/16	H7XLH
3003-010-020	3/8	3/32	9/16	H9XLM
Venous Only	1/2	3/32	11/16	H11XLD

# Total Customer Support

Sentinel and Vigilance Total Care programs define the standards by which other providers are measured!

With an absolute dedication to customer support and a total solutions approach to maximizing equipment availability within the hospital, Spectrum Medical has designed a two-tier customer support program called Sentinel Total Care and Vigilance Total Care.

## Sentinel Total Care:

**Extended Warranty** on your Quantum Perfusion System including Associated Accessories (sensors, cable assemblies) for its 10-year life at no cost to the customer. Quantum products beyond economic repair will be replaced with latest “new build” technologies.

**Annual Servicing** Includes all required servicing visits performed by dedicated Spectrum Medical’s service personnel and the cost of all servicing items.

**Emergency Loan Equipment** provided if the defective equipment cannot be rectified within 24 hours of being returned to Spectrum Medical.

**Annual Software Updates** During the service visit the Quantum Software will be maintained to latest standards including changes to user functionality, updates to enhance maintainability, reliability and protocol changes to third party device driver software at no cost to the customer. Software deployment is subject to prior customer approval and training via webinar or in-house at Spectrum Medical is included free of charge.

**Telephone Support** (within standard working hours).

## Vigilance Total Care – includes Sentinel Total Care, plus:

**Accidental Damage** including accessories (sensor, cable assemblies) for the 10-year life of your Quantum Product at no cost to the customer.

**Vigilance Server** is a revolution in customer support and uses technology developed for Spectrum Medical’s Perfusion Data Management System. The Vigilance Maintenance Application which is integrated within a hospital Server System provides for the real-time monitoring and fault diagnosis of electronic and functional sub-systems. Being integrated within the hospital’s I.T. structure the Vigilance Maintenance Application supports the outbound reporting of real-time system status to Spectrum Medical and inbound technical support.

**Quantum Instant Access** To maximize operational up time of the Quantum Perfusion System, Spectrum Medical will, and at it’s discretion, deploy a “bonded inventory” of critical Quantum modules within a secure hospital location. Customers will have immediate 24-hour access to this bonded stock and more importantly prior approval from Spectrum Medical will not be required.

Spectrum Medical must be notified as soon as practically possible that the bonded stock has been used.

# Perfusion Data Management



## From VIPER to VISION and LIVE VUE

VISION is a sophisticated server application that is the hub of Spectrum Medical's EMR technology. VISION automates the system-wide maintenance of software, the creation and transfer of patient records, and the storage and retrieval systems for complex clinical data sets.

LIVE VUE is Spectrum Medical's web-based near real-time remote access tool. System privileges allow for the remote viewing of live clinical data, while hardware configuration supports detailed and simultaneous viewing of multiple patients.

**Spectrum Medical**

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MEDICAL ELECTRICAL EQUIPMENT  
WITH RESPECT TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY  
IN ACCORDANCE WITH UL 60601-1/CAN/CSA C22.2 No. 601.1