



Measuring & Managing
Healthy Living



Safe, Reliable and Accurate

Body Composition RJL Bioelectrical Impedance Analyzers (BIA)

Quantum Series Product Catalog

October 2010

About RJL Systems	2
Which Quantum is right for you?	3
Quantum II	4
Quantum X	5
Quantum IV	6
Quantum III	7
Quantum Desktop	8
BC Software – Version 2.1	9
Accessories & Supplies	10 - 11

RJL Systems, Inc.
33939 Harper Avenue
Clinton Township, Michigan 48035 USA
Voice: 1-800-528-4513
Fax: 1-586-790-0205
www.rjlsystems.com

*Founder of the BIA industry
&
Providing BIA instruments & solutions for over 30 years*



ABOUT US - RJL Systems

- **HISTORY** - In 1979, RJL Systems developed the use of bioelectrical impedance analysis (BIA) to assess human body composition for the United States Navy, and was the first company to engineer and manufacture BIA analyzers. RJL analyzers were introduced to the commercial marketplace in 1981.
- **QUALITY** - RJL analyzers provide BIA measurements for users around the world – they are recognized as “research quality” because of their reputation for accuracy and reliability. Our instruments are considered the “Gold Standard” of the BIA testing industry.
- **PATENTS** - RJL has registered U.S. patents on our instruments, trademarks, and copyrights on our software and papers. Customers are buying products from the company that develops, engineers, and manufactures the Analyzers.
- **FDA CLEARANCES** - Quantum Analyzers have FDA clearance as a Class II medical device for safe use on the human body to collect BIA data. RJL is registered with the FDA as a Medical Device Manufacturer (Registration No. 1831675).
- **ISO STANDARD** - As of May 29th, 2008, RJL Systems was registered as an ISO-9001:2000 company and is ISO-13485 compliant.
- **QUALITY CONTROL** - RJL instruments go through a rigorous testing, calibration and inspection process that complies with ISO standards. Conformity of products and services to International Standards provides assurance about overall product quality, safety, reliability and accuracy.
- **CUSTOMER SUPPORT** - Any questions or customer support needed regarding our products will be handled by the professionals who designed and built the analyzers, and the related software.
- **OEM** - The Company’s 30+ years of engineering expertise and knowledge in BIA science make it uniquely qualified to provide custom-made instruments of any size or scope.
- **WEBSITE** - RJL Systems revised its website to provide in-depth information on BIA science and showcase the range of its products. If you sign up for the e-mail newsletter (via website), you will receive information on interesting new developments in the field of BIA science and/or RJL products.
- **WARRANTY-TECHNICAL SUPPORT** - All RJL products come with a warranty and continued technical and product support.

Which RJL QUANTUM (BIA) Analyzer is right for you?

Quantum Analyzers Comparison Chart

	QUANTUM II	QUANTUM X	QUANTUM III	QUANTUM IV	QUANTUM DESKTOP
Applications					
Whole human body composition	X	X	X	X	X
BC Software included	X	X	X	X	X
Farm and wildlife animals, including fish		X	fish option [2]	X	
Segmental BIA (each arm, leg and torso)				optional	
Monitor impedance values in real-time					X
Features					
External portable printer			X		X
Internal record storage [1]			X		X
Wireless communications (RF link)			X		
Real time BIA with internal storage					X
Data logger software included					X
PS-2 keyboard included					X
Resolution [3]	1.0 Ω	0.1 Ω	0.1 Ω	0.1 Ω	0.1 Ω
Battery type	Standard 9 Volt	Standard 9 Volt	Nickel Metal	Lithium Ion	Lead Acid

[1] The Quantum III can store 50 complete subject records. The Quantum IV stores a single resistance and reactance record. When the Quantum IV segmental option is used 13 zones of resistance and reactance data are stored (26 records). The Quantum Desktop can store 500 complete records or save 12,000 real time resistance and reactance data points with time stamps.

[2] The fish option of the Quantum III is designed to record hundreds of individual fish records while used at sea. These records can then be downloaded via the USB port to a PC for analysis.

[3] Resolution accuracy is greater with lower Ohm level (i.e 0.1 Ω provides higher measurement accuracy).



QUANTUM II BIA Analyzer



Instrument Kit Includes:

- ✓ Quantum II Analyzer
- ✓ Flexible Subject Cables
- ✓ Stay-Fresh Pack of Electrodes (200 ct. - enough for 50 tests)
- ✓ Test Resistor
- ✓ BC Software & User Manual
- ✓ Carrying Case (watertight, airtight, dustproof)
- ✓ Instrument User Manual
- ✓ 9 Volt Battery

\$1,990.00 with 1 year warranty

Product Overview - The Quantum II is an ideal choice for users who desire a BIA Analyzer that is compact and portable. The combined key features of the Quantum II and the accompanying BC software provide an easy-to-use, accurate and affordable instrument for revealing and monitoring changes in the composition of the human body.

BC Software - After testing with the Quantum II Analyzer, the measurements are entered into the BC software which performs the body composition analysis. The end results can provide guidance for an individual to improve their body composition using the diet and exercise wizard in BC.

Health Professionals - Many professionals in the health, fitness and nutrition fields know this instrument is very useful as scale weight alone does not provide enough information to manage an overall health plan for individuals. With the Quantum II, they have the ability to know when fat, fat-free mass and fluids are lost or gained, when working with patients and clients to improve body composition in relation to health and fitness management.

Institutional Researchers - For researchers, the Quantum II is designed to provide bioelectrical resistance and reactance measurements in a variety of populations. Extremely small changes in body composition can be illustrated due to the instrument's exceptional accuracy and repeatability. The results of testing with the Quantum II Instrument can provide the user with a method to monitor and historically track body composition changes.

Features of the Quantum II

- Measures resistance and capacitive reactance directly
- 50 KHz sinusoidal, extremely stable phase sensitive electronics.
- Subject is isolated from all electronic components with RJL instruments passive isolation technology
- Runs on a single 9 volt alkaline battery.
- Large 3.5 digit display.
- Membrane push button switches for "touch and run" operation.
- Advanced power management with auto shut-off (extending battery life).
- Detects when the subject is connected and instantly shuts off when the subject is disconnected.

Specifications

Automatic off :

When no subject is connected	5 seconds
When subject is disconnected	instant off
When a subject is connected	5 minutes

Constant current accuracy:

Nominal:	400 microamp max at 50 KHz +/- 1%
Regulation:	better than 0.1%
Range:	0 to 10,000 ohms resistive or capacitive

Resistance accuracy:

Nominal:	+/- 1.0 ohm
Range:	0 - 1000 ohms
Resolution:	1 ohm

Reactance Accuracy:

Nominal:	+/- 1.0 ohm
Range:	0-1000 ohm

QUANTUM X BIA Analyzer



Instrument Kit Includes:

- ✓ Quantum X Analyzer
- ✓ New Flexible Subject Cables
- ✓ Stay-Fresh Pack of Electrodes (200 ct. - enough for 50 tests)
- ✓ Test Resistor
- ✓ BC Software & User Manual
- ✓ Carrying Case (watertight, airtight, dustproof)
- ✓ Instrument User Manual
- ✓ 9 Volt Battery

\$2,490.00 with 1 year warranty

Product Overview - The Quantum X has the same compact size, portability and range (0 to 1000 ohms) as the [Quantum II](#), with a significant technical difference - the Quantum X has 10 times the resolution [1] of the Quantum II.

Health Professionals - This Analyzer is used by health professionals who want to use BIA to analyze human body composition as a whole body measurement. In addition, the Quantum X is also capable of performing BIA analysis on subjects such as domestic and wild animals and fish. These measurements may yield resistances of less than 100 ohms and require increased resolution.

Institutional Researchers - The Quantum X is an ideal instrument for biologists and other researchers who need to measure and collect BIA data with a higher resolution. Measurements with the Quantum X are quick, repeatable and accurate. Its portability gives researchers the option to use it in the field in all different environments.

1. The Quantum X has 0.1 ohms of resolution (resistance and reactance) and the Quantum II has 1.0 ohms of resolution.

Features of the Quantum X

- Large 4.5 digit display
- Advanced power management with auto shut-off, extending battery life
- Subject is isolated from all electronic components with passive isolation technology
- 50 Khz sinusoidal, extremely stable phase sensitive electronics
- Measures resistance and capacitive reactance directly
- Membrane push button switches for "touch and run" operation
- Detects when subject is connected and instantly detects when subject is disconnected.

Specifications

Automatic off :

When no subject is connected	5 seconds
When subject is disconnected	instant off
When a subject is connected	5 minutes

Constant current accuracy:

Nominal:	400 microamp max at 50 KHz +/- 1%
Regulation:	better than 0.1%
Range:	0 to 10,000 ohms resistive or capacitive

Resistance accuracy:

Nominal:	+/- 1.0 ohm
Range:	0 - 1000 ohms
Resolution:	0.1 ohm

Reactance Accuracy:

Nominal:	+/- 1.0 ohm
Range:	0-1000 ohms
Resolution:	0.1 ohms

NEW QUANTUM IV – BIA Analyzer



Instrument Kit Includes:

- ✓ Quantum IV Analyzer
- ✓ Flexible Subject Cables
- ✓ Stay-Fresh Pack of Electrodes
(400 ct. - enough for 100 tests)
- ✓ Test Resistor
- ✓ USB Cable (6 ft)
- ✓ BC Software & User Manual
- ✓ Carrying Case (watertight, airtight, dustproof)
- ✓ 12 Volt Universal Battery Charger
- ✓ Instrument User Manual
- ✓ Internal Rechargeable Lithium Ion batteries

\$2,490.00 with 1 year warranty

Product Overview - The Quantum IV is an advanced BIA Analyzer with features and specifications that are not available in traditional RJL products. It is extremely accurate and easy to use with an enclosure that has a comfortable curved ergonomic design. The internal lithium-ion rechargeable batteries can be recharged using either the included AC adapter or an optional foldable solar panel.

Key Features - The Quantum IV precisely measures resistance and reactance at 50 KHz. Many new features such as a four line bright back lit LCD, isolated USB port and micro-controller calibration are standard. The firmware of the Quantum IV can easily be upgraded from a PC connected to the Internet. The versatile micro-controller and circuit design allow it to be tailored to specific customer requests with minimal effort, such as language locale (German, Italian, and Spanish).

BC Software - BC software is included with the Quantum IV. Resistance and reactance data from the instrument can be either manually entered into BC or automatically retrieved safely using the USP port cable while connected to a human subject.

Features of the Quantum IV

- **Specifications** – Same as the Quantum X with additional features
- **Lithium Ion Batteries** - Two 800 milliamp hour rechargeable lithium ion batteries
- **4 Line LCD Display – What is displayed** - The first two lines are the measured resistance and reactance values with 0.1 ohms of resolution. Phase angle and impedance are also displayed on the bottom two lines.
- **USB Communications** - The USB port serves several functions. The most important is downloading or upgrading the firmware (program) in the internal micro-controller. As new features are developed at RJL Systems for the Quantum IV, they can be transferred to instruments by the user, thereby eliminating obsolescence.
- **Environment Temperature** - The Quantum IV has design features that greatly reduce the effects of hot and cold environment temperatures. There is less than a one percent change of full scale resistance and reactance from -20 to 60 degrees centigrade.
- **Battery Charger** - Included with the Quantum IV is a 12 volt universal (world-wide) 120 – 240 VAC battery charger.
- **Rear panel** - The Quantum IV back panel is labeled with CE and other compliant symbols for acceptance into most worldwide regulatory bodies. These symbols are permanently engraved into the enclosure.

QUANTUM III BIA Analyzer



Instrument Kit Includes:

- ✓ Stand Alone Quantum III Analyzer
- ✓ Mini Thermal Printer
- ✓ Wireless Radio Frequency Communications
- ✓ Serial and USB Cables
- ✓ 6-Pin Subject Cables
- ✓ Stay-Fresh Electrode Pack - Enough for 50 tests
- ✓ Test Resistor
- ✓ BC Software and User Manual
- ✓ Carrying Case (watertight, airtight, dustproof)
- ✓ Internal Rechargeable Lithium Ion batteries
- ✓ Instrument user manual

\$3,990.00 with 1 year warranty

Product Overview - The Quantum III is used to assess human body composition from whole-body measurements. The Quantum III Analyzer is one of RJL's Quantum lines of accurate and reliable BIA instruments. Self-contained and portable, the Quantum III was designed to give the user a variety of technical options as to how data is recorded, stored, viewed and printed.

Product Features - Despite its compact size and portability, it is a self-contained instrument of measuring and recording BIA data. It does not require a PC to record and store information – hundreds of time-stamped records can be stored in its non-volatile internal memory. The large keypad makes it easy to enter subject information and create a complete body composition record and report. The internal Lithium Ion batteries last for approximately 3 hours of continuous use, and can be safely fully recharged within a few hours.

The user has two options to print body composition reports: 1) the portable thermal printer or 2) use the wireless radio frequency link for printing graphic reports on a PC within a 300 ft range. The wireless link complies with most worldwide regulatory standards.

BC Software - Human body composition data can also be saved in the [BC Software](#) database on a PC for further analysis and historical tracking of individuals.

The Quantum III is extremely accurate and fast - it can perform a complete body composition analysis and generate a printout or send data to a PC in a matter of minutes.

Features of the Quantum III	Specifications
<ul style="list-style-type: none"> ➤ Specifications – Based on the QuantumIV design and specifications with additional features ➤ Large easy-to-read keypad for entering subject information ➤ Thermal printer that prints body composition reports on 4" paper within seconds ➤ Secure Bluetooth RF communications for printing graphic reports on a PC up to 300 ft. ➤ Hundreds of subject records can be save in internal non-volatile memory and retrieved with a PC ➤ Real time clock and calendar that use the internal Lithium Ion batteries 	<p><u>Constant current accuracy:</u> Nominal: 400 microamp max at 50 KHz +/- 1% Regulation: better than 0.1% Range: 0 to 10,000 ohms resistive or capacitive</p> <p><u>Resistance accuracy:</u> Nominal: +/- 1.0 ohm Range: 0 - 1000 ohms Resolution: 0.1 ohm</p> <p><u>Reactance Accuracy:</u> Nominal: +/- 1.0 ohm Range: 0 - 1000 ohms Resolution: 0.1 ohm</p>

QUANTUM DESKTOP BIA Analyzer



Instrument Kit Includes:

- ✓ Quantum Desktop Analyzer
- ✓ Lemo Subject Cables
- ✓ Stay-Fresh Pack of Electrodes
- ✓ BC Software & User Manual
- ✓ Datalogger Software & User Manual
- ✓ Mini Thermal Printer
- ✓ One Roll Thermal Paper
- ✓ Portable PS/2 keyboard
- ✓ Carrying Case (watertight, airtight, dustproof)
- ✓ Instrument User Manual

\$4,990.00 with 1 year warranty

Product Overview - The Quantum Desktop instrument is designed to be a portable instrument. It can be used to analyze human body composition or perform BIA analysis on biological materials such as animals, fish, plants, or specific segments of the human body (i.e. chest, muscle groups, and organs) [1].

When used for measuring human body composition, it can retrieve resistance and reactance values from the subject, perform all of the body composition calculations, and print a basic report using the attached thermal printer. Data entry (subject ID, height, weight, etc) is accomplished with the included keyboard.

Its accuracy, record storage instrument, and printing capability reduce errors in data entry. It is built to specifications necessary to comply with peer review literature guidelines and traditional BIA instruments.

BC Software - This instrument can temporarily store patient records then transferred later to the **BC Software** for historical tracking and printing of more detailed reports. It can be directly connected to a PC and interact with BC Software.

Key Features - The desktop also measures resistance and reactance as **real time** events. Real time BIA records a steady stream of data with adjustable sampling rates from one millisecond to several hours between samples. It can save up to 15,000 records with individual time stamps in its internal non-volatile memory that can be retrieved at a later time.

The Data Logger software allows the instrument to be used as an impedance plethysmograph, recording real-time changes in resistance and reactance, and displaying them on the screen. Its use is intended for investigational purposes only.

(1) RJL Systems only provides software for estimating human body composition from a whole-body measurement. Users wishing to do segmental body composition analysis or study nonhuman organisms must acquire software or equations elsewhere. **BC** is packaged with the Quantum Desktop.

Features of the Quantum Desktop

- Operates as a standalone real time BIA instrument that can store 15,000 time stamped records in non-volatile memory
- 0.1 ohms resolution – resistance and reactance
- Can be safely connected to a PC and subject at the same time
- Data sampling from 1 millisecond to hours
- BC software can directly read resistance and reactance values from the subject
- Portable PS/2 keyboard included for set-up
- Internal battery operated UPS (uninterrupted power supply) for 4 hours to assure no record losses during a power failure

Specifications

Isolation Barrier

Nominal: 10,000 megohm at 1000 VDC
Subject leads to analog ground

Constant current accuracy:

Nominal: 400 microamp max at 50 KHz +/- 1%
Regulation: better than 0.1%
Range: 0 to 10,000 ohms resistive or capacitive

Resistance accuracy:

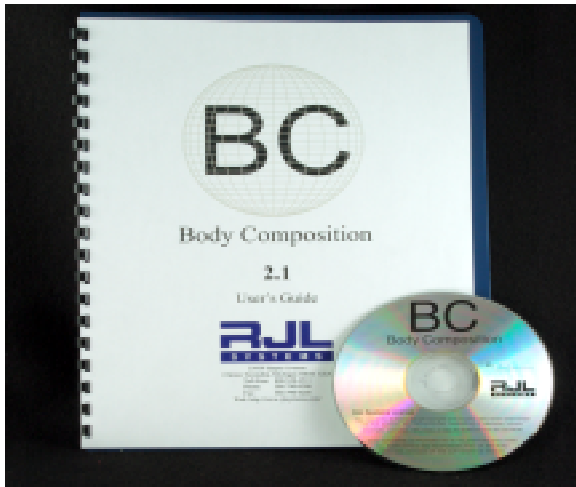
Nominal: +/- 1.0 ohm
Range: 0 - 1000 ohms
Resolution: 0.1 ohm

Reactance Accuracy:

Nominal: +/- 1.0 ohm
Range: 0-1000 ohms
Resolution: 0.1 ohm

BC Body Composition Software - Version 2.1

Features of BC



- Estimates body composition and other values:

FAT	TBW	BMR	Phase Angle
FFM	ICW	DEE	Impedance
BMI	ECW		
- Historical graphs and reports allow tracking changes over time.
- Provides sample exercises and diet plan to help promote a healthy lifestyle.

Included FREE with every BIA instrument, or \$250.00 if purchased separately.

BC software is ideal for the health care professionals monitoring and recording changes in body composition. Scale weight alone does not provide enough information to help create customized healthy weight management programs for individuals. After testing with a RJL BIA Analyzer, the measurements are entered into the BC software which performs the body composition analysis. The results can provide suggestions for effective lifestyle changes to improve body composition by using the diet and exercise wizard included in the software.

Body composition changes can be easily monitored over time with historical graphic and/or numeric reporting.

BC is also able to import patient information from databases created by RJL instruments' previous body composition software packages and some more advanced body composition analyzers.

BC 2.1 provides numerous sets of prediction equations for estimating body composition, including:

NHANES-III (General Population)	<i>Instrument Requirements</i>
<ul style="list-style-type: none"> ▪ Pediatric (Ages 9 – 14) ▪ New Pediatric (Ages 4 – 19) (Also validated for obese children) ▪ Mexican Adults (Male & Female) ▪ Native Americans ▪ Obese (BMI > 30) ▪ African American (Obese) ▪ Athletic ▪ HIV ▪ BIA-103 (Provided for historical purposes only) ▪ All Body Types (BMI adjustable) 	<p><u>MINIMUM:</u></p> <p>Windows PC with 133 MHz processor or faster Windows 95 / 98 / ME / NT / 2000 / XP / Vista 800 x 600 screen resolution 30 MB disk space 32 MB memory</p> <p><u>RECOMMENDED:</u></p> <p>Windows PC with 300 MHz processor or faster Windows 2000 / XP / Vista 1024 x 768 screen resolution 30 MB disk space greater than 64 MB memory</p>

Body Composition Electrodes and Supplies



100 Electrode Package 25 BIA tests (\$1.10 per test)

Shipped in a sealed pack with 10 sheets of 10 electrodes each.

The electrodes' expiration date is printed on the back of each package.

\$27.50 / pack



Stay Fresh 200 Electrode Pack 50 BIA tests (\$0.90 per test)

Shipped in a re-usable plastic box with two electrode packages. Keeps electrodes from drying out once the package is opened.

\$45.00 / pack



Stay Fresh 500 Electrode Box 125 BIA tests (\$0.80 per test)

Contains one Stay Fresh pack and three additional electrode packages. The most economical way to buy electrodes when doing many BIA tests.

\$100.00 / box

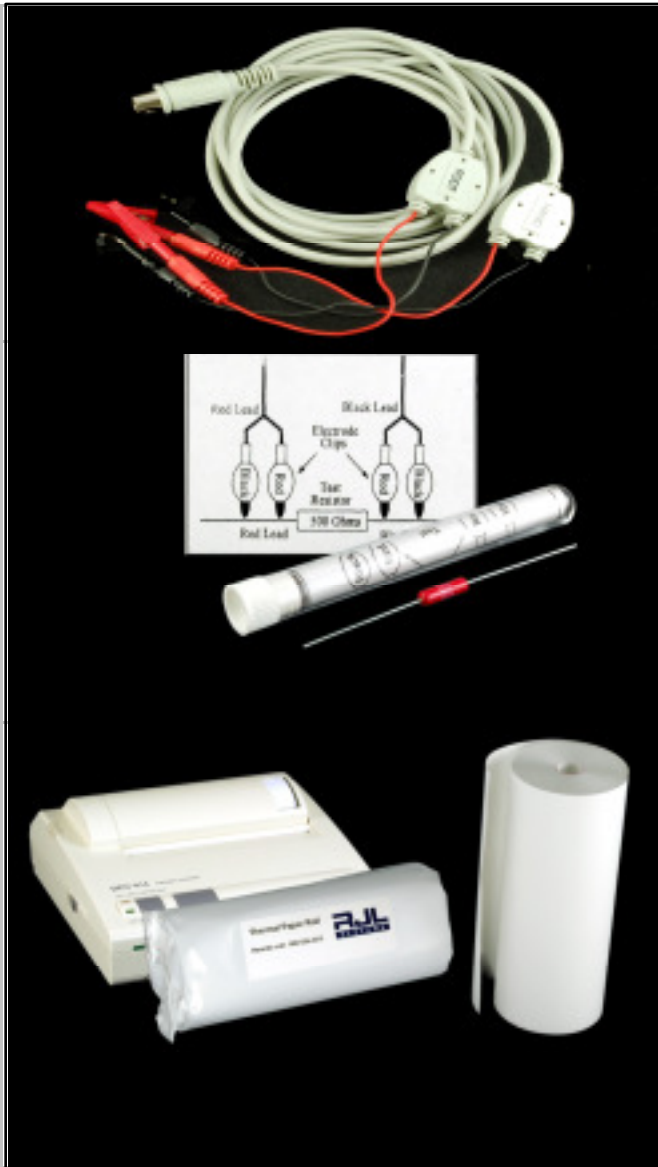


Electrode Placement Card

Flexible laminated electrode placement card that educates new BIA users how to place electrodes on the hand and foot to assure repeatable measurements. The back of the card has BIA “do's and don'ts”

Free when requested

BIA Instruments Accessories & Supplies



Din/Lemo Subject Cable

6.0 foot subject cable for the Quantum II, Quantum X, and Quantum Desktop BIA instruments.

Also available in custom configurations.

\$110.00 / cable

Precision BIA Test Resistor

500.0 Ohm resistor calibrated to 0.1 percent with zero capacitance.

Used to test and maintain all BIA instruments from most manufactures.

Free when requested

Thermal Printer Paper Roll

for printers:

- Citizen PD-24
- Seiko DPU-414

These printers are included with the Quantum III and Quantum Desktop BIA instruments

\$5.00 / roll

Please note:

RJL Systems always keeps our warehouse fully stocked so our customers get what they need, when they need it. If you need assistance selecting the right products, or need urgent delivery service, please feel free to contact us by using our on-line website or call.

RJL Systems, Inc.
33939 Harper Avenue
Clinton Township, Michigan 48035
Voice: 1-800-528-4513
Fax: 1-586-790-0205
www.rjlsystems.com