Contents

What is BIA? 2
Which Quantum is right for you? 3
RJL BC Education Series 4
Quantum II 5
Quantum III 6
Quantum IV 7
Quantum Desktop 8
Quantum X 9
BC Software (PC/Mac) 10
BC Software (iPad) 11
Accessories & Supplies 12 -14
About RJL Systems 15
What is BIA?

BIA, or Bioelectrical Impedance Analysis is a safe, reliable, and accurate way to measure key body composition elements. By viewing changes in body composition, biomarkers and the electrical properties of the body, practitioners can easily chart progress. BIA analysis is quick, painless and noninvasive, using four electrodes placed on the body – no needles or bloodwork required.

BIA can be performed on any living thing – humans, animals and even plants. It can be used in clinical, educational or research settings. Body composition assessment provides healthcare professionals and their clients with an accurate and powerful window into overall health.

A Unique Solution for Healthy Lifestyle Plans
This new health tool is unlike any other. It provides fast, accurate and repeatable measures of overall body composition, including:

- Fat
- Fat Free Mass (lean body mass)
- Total Body Water (intracellular and extracellular)
- Lean Dry Mass
- BMR (basal metabolic rate)
- DEE (daily energy expenditure)
- Lean Soft Tissue
- Bone Mineral Content
- Skeletal Muscle Mass

Monitor and Manage Progress
When you are trying to assist your clients in maintaining good health habits, providing accurate, repeatable measurements is a powerful tool. Using the complete body composition analysis provided by RJLs’ Quantum series, clients will see exactly how much progress they make -- and they’ll want to keep going.

The RJL BIA device comes with all necessary components including the unit, software, and educational materials (including teaching videos).
### Which RJL Quantum Body Composition Analyzer is Right for You?

#### Applications

<table>
<thead>
<tr>
<th></th>
<th>Quantum II</th>
<th>Quantum X</th>
<th>Quantum III</th>
<th>Quantum IV</th>
<th>Quantum Desktop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole human body composition</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BC Software included</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Animals and fish</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>optional</td>
</tr>
<tr>
<td>Segmental BIA (each arm, leg and torso)</td>
<td>optional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitor impedance values in real-time</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
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</table>

#### Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Quantum II</th>
<th>Quantum X</th>
<th>Quantum III</th>
<th>Quantum IV</th>
<th>Quantum Desktop</th>
</tr>
</thead>
<tbody>
<tr>
<td>External portable printer</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Internal record storage</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Wireless communications (RF link)</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real time BIA with internal storage</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Data logger software included</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>PS-2 keyboard included</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Resolution [4]</td>
<td>1.0 Ω</td>
<td>0.1 Ω</td>
<td>0.1 Ω</td>
<td>0.1 Ω</td>
<td>0.1 Ω</td>
</tr>
<tr>
<td>Battery type</td>
<td>Alkaline 9 Volt</td>
<td>Alkaline 9 Volt</td>
<td>Nickel Metal Hydride</td>
<td>Lithium Ion</td>
<td>Gel Cell</td>
</tr>
</tbody>
</table>

[1] RJL does not supply software or equations for analyzing animal data.

[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] 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.

[4] Resolution accuracy is greater with lower ohm level (i.e. 0.19 provides higher measurement accuracy).
RJL BODY COMPOSITION
PROFESSIONAL EDUCATION SERIES

RJL Systems has released four new professional education tools for the use of Bioelectrical Impedance Analysis (BIA) in an Integrated/Preventive Medical Model. The educational series provides a full spectrum of education for practitioners, advanced practitioners, support staff, and hospital and clinic administrators, tailored to each need.

Our team has conducted meetings and interviews of physicians, administrators, naturopaths, chiropractors, and medical support staff members for over a year, before compiling their findings in each of the four levels of education.

With over 4,000 research studies and scientific articles on BIA to date, and over 40,000 RJL BIA devices around the globe, this new educational series is sure to enhance the value of your investment.

Current program offerings include:

**Technician Level Education**
This short video provides your technician the proper protocol for BIA to ensure accurate results.

**Educator / Lifestyle Practitioner**
This pre-recorded webinar provides a practitioner an overview of Bioelectrical Impedance Analysis science, proper protocol, software report options, and a sampling of how successful practitioners have developed customized, targeted strategies for their patients.

**Advanced Practitioner**
The Advanced Practitioner Level webinar includes a refresher on BIA science, technology, and protocol along with an in-depth discussion of practitioner tips on BIA values such as TBW, ICW, ECW, Phase Angle, Fat, and Lean Dry Mass. Regularly scheduled monthly webinars are available, or privately scheduled webinars are available to meet the needs of the most demanding schedules.

**Administrator**
This webinar is designed for P&T Committee Members, Practice Optimization Consultants, and Decision Making Entities for hospitals, multiple clinic practices and franchises. The focus of this webinar is how BIA can optimize those environments, improve patient care and reduce operating expenses.

To learn more, please visit rjlsystems.com/education/
Product Overview - The Quantum II is an ideal choice for users who desire a body composition 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.

Healthcare Professionals - Many professionals in the health, fitness and nutrition fields use our instruments because 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 - The Quantum II provides bioelectrical resistance and reactance measurements, which can include equation choices for 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.
Product Overview - The Quantum III is used to assess human body composition from whole-body measurements. 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 - This compact, self-contained and portable Quantum device measures and records BIA data. It does not require a PC to record and store information – dozens of time-stamped records can be stored in its internal memory. The large keypad makes it easy to enter subject information and create a complete body composition record and report. The internal NiMH 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) a 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.

includes
• Stand Alone Quantum III Analyzer
• 1 Year Warranty
• Mini Thermal Printer
• Wireless Radio Frequency Communications
• Serial and USB Cables
• 6-Pin Subject Cables
• 1 Stay-Fresh Electrode Pack (200 ct. - enough for 50 tests)
• Test Resistor
• BC Software & User Manual (on USB drive)
• Carrying Case (watertight, airtight, dust proof)
• Internal NiMH batteries

features
• Specifications – Based on the Quantum IV 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 RF communications for printing graphic reports on a PC up to 300 ft.
• Hundreds of subject records can be saved in internal memory and retrieved with a PC
• Real time clock and calendar

specifications

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 %
Range: 0 - 1000 ohms
Resolution: 0.1 ohm

Reactance Accuracy:
Nominal: +/- 1.0 %
Range: 0 - 1000 ohms
Resolution: 0.1 ohm
Product Overview - The Quantum IV is our newest release for healthcare professionals and in providing an accurate and easy to use ergonomic design, internal lithium-ion rechargeable battery.

Key Features – The Quantum IV precisely measures resistance and reactance at 50 KHz. Many new features such as four line, bright green OLED display, and the ability to use the Quantum IV for nine hours continuously before needing a recharge. Making the perfect instrument for the office or on the go.

The USB port serves several functions, but is used primarily for upgrading the firm in the internal microcontroller. As new features are at RJL Systems for the QIV, they can be transferred to the instrument by the user.

In addition to English, there is a user-selectable option for Spanish, Italian, German languages.

BC Software – BC Software is included the Quantum IV. Resistance and Reactance data from the instrument can be either manually entered into BC, or automatically retrieved using the USB cable while connected to a human subject.

Includes

- Quantum IV Analyzer
- 1 Year Warranty
- Flexible Subject Cables
- 2 Stay-Fresh Electrode Packs (400 ct. - enough for 100 tests)
- Test Resistor
- USB Cable (6 ft.)
- BC Software & User Manual (on USB drive)
- Carrying Case (watertight, airtight, dust proof)
- 12 Volt Universal Battery Charger
- Instrument User Manual (on USB drive)
- Internal Rechargeable Lithium Ion battery

Features

- OLED Display – Displays the measured resistance and reactance values with 0.1 ohms of resolution, phase angle, and impedance.
- Easy Upgrades - Upgrades can be performed via the USB port or an Internet-connected PC.
- Environment Temperature - The Quantum IV design greatly reduces the effects of hot and cold environment temperatures. There is <1% change of full scale resistance and reactance from -20 to 60 degrees centigrade.
- Battery Charger - Included 12 volt universal 120 – 240 VAC battery charger. (Not shown)
- Rear panel - The back panel is labeled with compliant symbols for acceptance into most worldwide regulatory bodies.

Specifications

<table>
<thead>
<tr>
<th>Constant Current Accuracy:</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Resistance Accuracy:</th>
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<td>Nominal: +/- 1.0 %</td>
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<tr>
<td>Resolution: 0.1 ohm</td>
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<tbody>
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<td>Nominal: +/- 1.0 %</td>
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<tr>
<td>Resolution: 0.1 ohms</td>
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</table>
Product Overview - The Quantum Desktop instrument is portable. It can be used to analyze human body composition or perform body composition 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 (name, 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. Stores hundreds of records for later download to BC Software.

BC Software - This device will temporarily store patient data along with BIA results for later transfer to BC software for historical tracking and detailed report printing options. 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 samples with individual time stamps in its internal 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 order a customized instrument, and acquire software or equations elsewhere.
**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.

**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.

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**INCLUDES**

- Quantum X Analyzer
- 1 Year Warranty
- New Flexible Subject Cables
- Stay-Fresh Pack of Electrodes (200 ct. - enough for 50 tests)
- Test Resistor
- Carrying Case (watertight, airtight, dust proof)
- Instrument User Manual (on USB drive)
- 9 Volt Battery

**FEATURES**

- 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**

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<table>
<thead>
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<tbody>
<tr>
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<tr>
<td>Range:</td>
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<tr>
<td>Resolution:</td>
<td>0.1 ohm</td>
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</table>

<table>
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<tr>
<th>Reactance Accuracy:</th>
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<tbody>
<tr>
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<td>+/- 1.0%</td>
</tr>
<tr>
<td>Range:</td>
<td>0-1000 ohms</td>
</tr>
<tr>
<td>Resolution:</td>
<td>0.1 ohms</td>
</tr>
</tbody>
</table>
**Product Overview** - Scale weight alone does not provide enough information to help create customized healthy weight management programs for individuals. BC software is ideal for the healthcare professionals monitoring and recording changes in body composition.

After testing with an RJL body composition 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 food and fitness ideas included in the software.

Body composition changes can be easily monitored over time with historical graphic and/or numeric reporting. Optional input fields include blood pressure, vitamin D, HbA1C, lipid panel, and waist, wrist, and neck circumferences.

BC is also able to import patient information from databases created by RJL’s previous body composition software.

BC provides numerous sets of prediction equations for estimating body composition. See below.
Product Overview - NEW! For the iPad®. BC software is ideal for the health care professionals monitoring and recording changes in body composition.

After testing with an RJL body composition 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. Optional input fields include blood pressure, vitamin D, HbA1C, lipid panel, and waist, wrist, and neck circumferences.

BC is also able to import patient information from databases created by RJL’s previous body composition software.

BC provides numerous sets of prediction equations for estimating body composition. See below.

**POPULATION EQUATION OPTIONS**

- NHANES-III (General Population)
- 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)

**FEATURES**

- 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.

**REQUIREMENTS**

Minimum:  
Will work on all iPad® and iPad Mini® models.

Recommended:  
iPad® 2 or newer
100 Electrodes: Pack
25 BIA tests ($1.20 per test)
Shipped in a sealed pack with 10 sheets of 10 electrodes each. The electrodes’ expiration date is printed on the front of each package.
Visit rjlsystems.com for pricing 92500P

200 Electrodes: Stay Fresh 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.
Visit rjlsystems.com for pricing 92500S

500 Electrodes: 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.
Visit rjlsystems.com for pricing 92500B

5000 Electrodes: Case
1250 BIA tests ($0.72 per test)
Contains ten Stay Fresh packs and 50 total electrode packages. The most economical way to buy electrodes when doing high volume BIA tests.
Visit rjlsystems.com for pricing 92500C
DIN Subject Cable
For all Quantum III and IV analyzers and Quantum II and X models with a serial number ending in “D.”
Also available in custom configurations.
Visit rjlsystems.com for pricing

Lemo Subject Cable
For all Quantum Desktop analyzers, and Quantum II and Quantum X without a serial number ending in “D”
Call For Pricing

4” Wide Paper Roll for Thermal Printer
For printers included with the Quantum III and Quantum Desktop analyzers.
Visit rjlsystems.com for pricing

Precision BIA Test Resistor
Used to check calibration on all RJL body composition analyzers. Includes Resistor and Instruction card.
Free Upon Request
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 contains quick reference information. Note: The Electrode Placement Card is also available as a free download from our website.

Free Upon Request

Please Note:

RJL Systems 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 online or by phone.

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Clinton Township, MI 48035 USA
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ABOUT RJL SYSTEMS

HISTORY - RJL Systems was incorporated in November, 1979 in Detroit, Michigan with the intention of building precision electronic instruments for medicine and industry. Customers included Ford Motor Company, Valassis Coupons and Wayne State University, to name a few. The first BIA instruments were built for the U.S. Navy in 1981, to study the hydration status of soldiers in cold weather high altitude environments on Mt. McKinley, Alaska. The basic innovative design principles used in the Mt. McKinley instruments are used today in all RJL Systems BIA devices. Founder, Rudolph J. Liedtke, has overseen more than 25 years of BIA development, making RJL instruments a world standard.

PATENTS - RJL has registered U.S. patents on our instruments, trademarks and software. RJL customers can rest assured that they are purchasing from the industry leader.

FDA CLEARANCES - Quantum Analyzers have FDA clearance as a Class II medical device for safe use on the human body to collect bioelectrical impedance assessment data. RJL is registered with the FDA as a Medical Device Manufacturer (Registration No. 1831675).

ISO STANDARD - RJL Systems is honored to be ISO-13485:2003 Certified.

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, repeatability and accuracy. RJL analyzers are chosen by practitioners, educators and researchers around the globe, who consider us the “Gold Standard” of the BIA testing industry.

OEM - The engineering team at RJL Systems has over 35 years of engineering experience and expertise in the science of BIA, making us uniquely qualified to provide custom-made instruments for any size, scope or purpose.

WEBSITE – Our website is designed to provide you with a comprehensive list of resources from the invention of BIA to exciting innovations for the future. By signing up for our e-newsletter (via website), you receive free product, software and education updates.

WARRANTY - All RJL Quantum Analyzers come with a full year warranty, with the option to purchase an extended warranty.

CUSTOMER SUPPORT – All customer inquiries and technical support questions are handled by the professionals who designed and built the analyzers and software – right here in Michigan.

REV. 052015