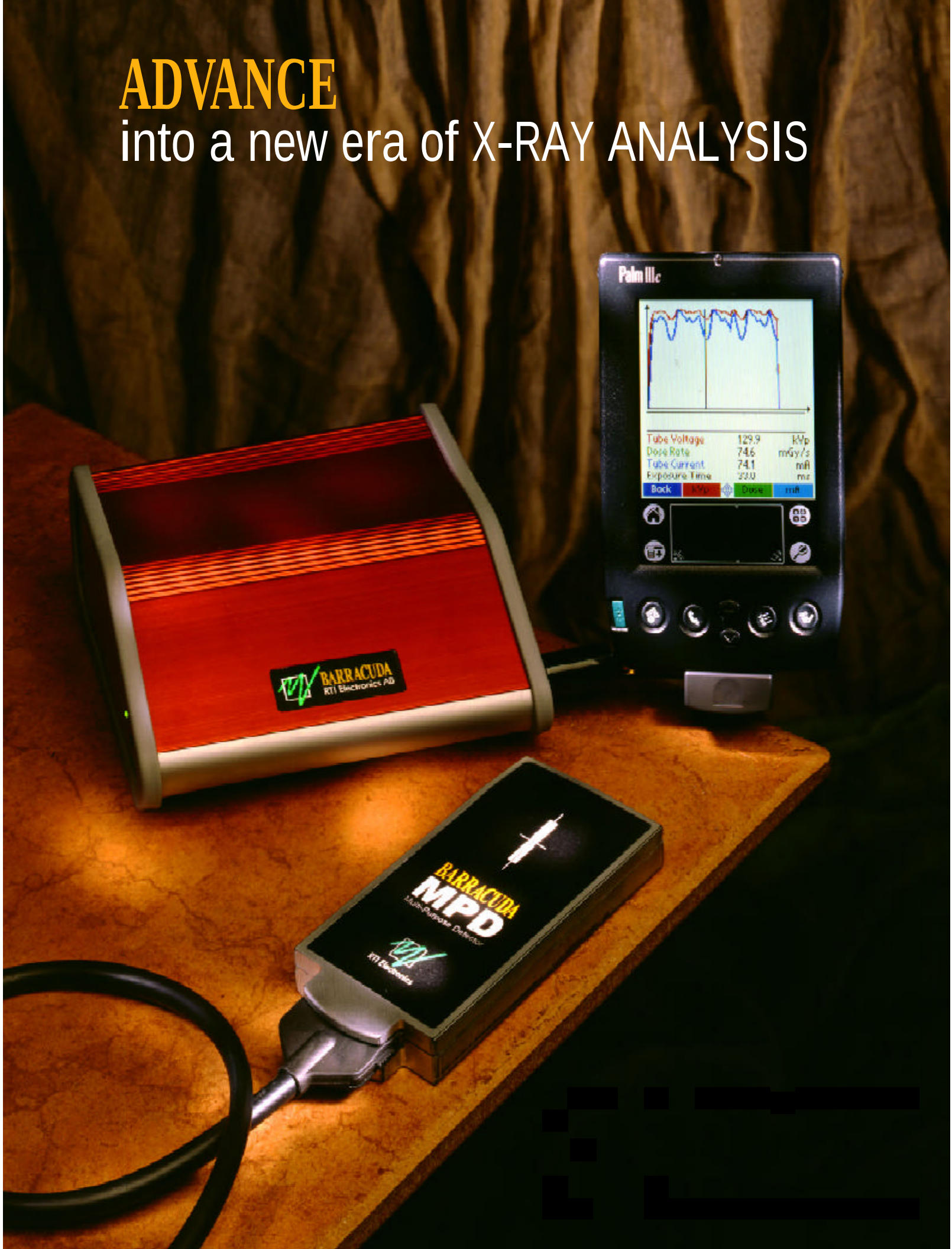
# ADVANCE
## into a new era of X-RAY ANALYSIS



# RTI Electronics Introduces the X-RAY ANALYZER for the 21st Century


**The BARRACUDA X-Ray Analyzer from RTI Electronics with the MPD (Multi-Purpose Detector) and handheld computer with RTI QABrowser.**

elimpex
Medizintechnik GesmbH

# BARRACUDA. A new concept. A new product. A new way to do X-ray analysis.

## NEW CONCEPT

The concept was developed over the last five years by the company with over 20 years experience in radiation measurements, RTI Electronics. The goal: invent an intuitive, non-invasive X-ray test device that *does it all.* It had to be accurate and quick. It needed to measure all modalities and any kind of exposure. It had to perform quick checks or extensive calibrations. It had to be able to record all this data for future use and interface with existing reports. Also, rapidly changing technology demanded expandability and a very high sampling rate. It had to be compact and lightweight. It had to do what "you want it to do!"


One of the latest innovations from RTI is the Multi-Purpose Detector. The MPD measures kVp for Rad, Mammo, Fluoro, CT, Dental, Cine, Pulsed Fluoro, and Panoramic Dental.

Introducing, the BARRACUDA from RTI Electronics. Certainly the name is new. But more importantly, the BARRACUDA is totally new, "from the ground up!" The design, the electronics, the detector, and the display are all new. The BARRACUDA is definitely the X-Ray Analyzer for the 21st century.

## NEW PRODUCT

First, you will notice the compact size. It weighs less than 2 kg (4 lbs). But don't be fooled. That red cabinet packs a lot of power. Coupled with RTI's new MPD (Multi-Purpose Detector) and a handheld or notebook computer, the BARRACUDA will perform as an X-Ray Analyzer should perform for the 21st century.

Modular design allows the BARRACUDA to grow with ever changing technology.

The BARRACUDA is fast. Select the 500 kHz sampling frequency to capture an accurate representation of a 100 kHz waveform. Nothing does it faster.

The BARRACUDA can measure kVp, time, mA, mAs, dose, dose rate, dose/pulse, HVL, illuminance, and luminance all in one exposure! Only one detector, the MPD, is needed to measure kVp, time, dose, dose rate, dose/pulse, and HVL for Rad, Mammo, Fluoro, Dental, Panoramic Dental, Cine, Portables, and Pulsed Fluoro. It also measures kVp and time for CT and low output small field Fluoro type devices. And, this is just the beginning!

The BARRACUDA accommodates both solid-state detectors and ion chambers for exposure measurements. The BARRACUDA can measure and display both the digital numeric data and the

corresponding waveforms from only one exposure. In fact, waveforms can be measured from any detector. The BARRACUDA gives you waveforms for kVp, time, mA, mAs, dose, dose rate, dose/pulse, illuminance, luminance, and...


The BARRACUDA gives you the choice of using a handheld computer with the new RTI QABrowser or your notebook computer with oRTIgo 2002 software for data acquistion and display.

**A NEW WAY**

The BARRACUDA is easy to use. The new QABrowser provides a straightforward and time saving solution for your X-Ray measuring protocols. For use with your handheld computer, the QABrowser provides an intuitive and easy-to-read menu tree, stepping you through each selected measurement and application. All the usual protocols are included, even one for FDA's MQSA. All measured data is stored for later synchronization with your personal computer. The handheld computer can be attached to the BARRACUDA or can be positioned right beside you at the generator console.

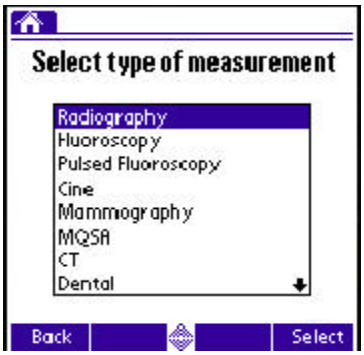
Flexibility. If you wish, the BARRACUDA can be linked directly to your laptop computer. Measured data can then be acquired using oRTIgo QA 2001software and the BARRACUDA. Reports can be generated using oRTIgo 2002 or by simply importing data to your custom spreadsheets.

The BARRACUDA is designed to keep you current with ever changing technology. Six slots in the back of the BARRACUDA house application modules for various types of measurements. Modules can be added to empty slots to provide for new technology and unique applications. That is, you could have four types of electrometers measuring simultaneously! Custom application modules can be designed for specific types of measurements with your BARRACUDA.

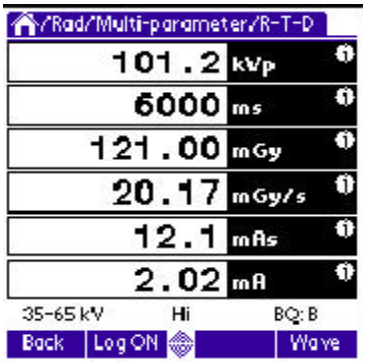

From ion chambers to mAs probes, the BARRACUDA supports them all. Also, owners of existing solid-state detectors and probes manufactured by RTI can use them with their new BARRACUDA.

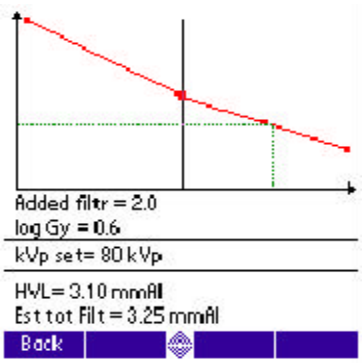
Service and Support. The modular design enhances the serviceability of the BARRACUDA. Free firmware upgrades are available for the life of the BARRACUDA via the internet. Product support will also be enhanced by the internet. Of course, you will be kept informed of the latest product applications and changes with the BARRACUDA newsletter.

BARRACUDA. It was designed with you in mind. Whether you are an X-ray service or biomedical engineer, a physicist, a government inspector, or a manufacturer of X-ray machines, the BARRACUDA gives you a customized solution for all your X-Ray QA needs.
The BARRACUDA *does it all!*






# You have it all in the palm of your hand!

The RTI QABrowser provides a quick and efficient way to acquire and display measured data. Using the technology of today's popular handheld computer, RTI has combined the functionality of the BARRACUDA with the convenience and power of any Palm compatible device. RTI has created the QABrowser.

Simplicity. The new RTI QABrowser easily steps you through your QA applications. Select your measurement type: Rad, Mammo, Fluoro.... Select parameter. Next, select a parameter and choose an application such as accuracy, reproducibility, linearity, HVL, or MQSA. The QABrowser features a "real-time" display, which can show up to 6 values simultaneously. Of course, waveforms are available for all measurements. You can even display multiple waveforms simultaneously.

The QABrowser is also convenient. A handheld computer with QABrowser may be attached to the BARRACUDA during exposures or used remotely at the generator console. All the measured data is stored in a log file. Data from the log file can be printed directly to an infrared printer, e-mailed, or synced with your computer for importing to your favorite spreadsheet or other software containing your reports.

The QA Browser is a powerful program that allows you to measure everything you want to measure. Yet, it is simple and elegant. What else would you expect from RTI!

The RTI QABrowser works with Palm Powered computers using OS 3.5. Pictured are the TRGpro, Palm IIIc, and Palm m105.

The specifications below are valid for a typical BARRACUDA system. Note that the BARRACUDA is modular in design and can be purchased in many different configurations.

## BARRACUDA Cabinet

The cabinet can house up to six different application modules. PC communication via USB or RS232. Handheld computer communication via RS232.

## Multi-Purpose Detector with Signal Extension Module

The Multi-Purpose Detector measures kV, time, pulses, dose, dose rate, dose per pulse, HVL, and waveforms. Calibrations are available for radiography, mammography, and CT. The radiography calibration also includes fluoroscopy, dental and panoramic dental. For the waveform sampling, memory sizes from 32 kB to 512 kB are available. The mammography calibration includes calibrations for Mo/Mo, Mo/Rh, Rh/Rh, Rh/Al, and W/Rh.

| *Parameter* | *Range* | *Accuracy* |
|---|---|---|
| kVp MAM | 22 – 55 kVp | ±2 % or ±0.7 kVp |
| kVp RAD/Dent | 35 – 155 kVp | ±2 % |
| kVp CT | 75 – 150 kVp | ±2 % |
| Exp. time | 0.1 ms – 9999 s<br>1 – 9999 pulses | ±1 % or ±0.5 ms |
| Dose | 0.1 µGy – at least 1000 Gy<br>11.4 µR – at least 100 kR | ±5 %<br>±5 % |
| Dose rate | 0.2 µGy/s – 320 mGy/s<br>23 µR/s – 36 R/s<br>1.4 mR/min – 2200 R/min | ±5 % or ±0.02 µGy/s<br>±5 % or ±2.3 µR/s<br>±5 % or ±0.14 mR/min |
| Total Filtration | 2.0 – 40 mm Al | ±10 % or ±0.3 mm |

*Sampling rate* 7 – 470 kHz

*Maximum sampling times for kV & radiation waveforms for different sampling rates and memory sizes.*

| | *32 kB* | *128 kB* | *512 kB* |
|---|---|---|---|
| 7 kHz | 1.12 s | 4.5 s | 17.9 s |
| 29 kHz | 280 ms | 1.12 s | 4.5 s |
| 117 kHz | 70 ms | 280 ms | 1.12 s |
| 470 kHz | 17.5 ms | 70 ms | 280 ms |

Note: When an mA waveform is sampled at the same time the maximum time is still the same.

The Signal Extension Module enables waveform sampling with external mAs probes. With the Signal Extension Module the radiation output can be recorded with an oscilloscope. It also has a trigger in and trigger out capability for use with an oscilloscope.

## Electrometer Module

The Electrometer module measures current, charge, and exposure time from an attached detector. The conversion factor for the detector from a current and charge value to a dose and dose rate value is stored internally in the BARRACUDA for automatic conversion and display. The Electrometer module accepts many existing RTI detectors and probes used with the PMX-III and Solidose such as the R100 solid-state detector, mAs probes, light meters, and CT probes. The Electrometer Module is available in three configurations: a single channel without bias, a single channel with bias for use with ion chambers with triax connectors, and a twin channel without bias.

| *Parameter* | *Range* | *Accuracy* |
|---|---|---|
| Charge | 0.1 pC – at least 100 mC | ±2 % |
| Current | 2 pA – 10 µA[1] | ±2 % or ±0.5 pA |
| Exp. time | 1 ms – 9999 s | ±1 % or ±0.5 ms |
| Bias (EMM-Bias only) | ±300 V | |

## R100 Dose Detector

The R100 dose detector measures dose and dose rate or exposure and exposure rate when connected to the Electrometer Module.

| *Parameter* | *Range* | *Accuracy* |
|---|---|---|
| Dose | 2 nGy – at least 10 kGy<br>0.25 µR – 20 kR | ±5 % |
| Dose rate | 0.04 µGy/s – 160[1] mGy/s<br>4 µR/s – 18[1] R/s<br>0.26 mR/min – 1100 R/min | ±5 % or ±0.01 µGy/s<br>±5 % or ±1 µR/s<br>±5 % or ±0.06 mR/min |

[1] For EMM-Bias the maximum dose rates are 2.5 times lower.

## Display Units

The BARRACUDA requires either a handheld Palm compatible computer or a Personal Computer for a display device. The handheld computer uses the RTI QABrowser for simplicity of use and presentation of data. The handheld computer can be used either on a holder connected to the BARRACUDA cabinet, or with an 8 m interface cable. Recommended handheld computers are HandEra 330, m130, m500, and m515.

| | |
|---|---|
| *Handheld computer requirements* | Palm OS v3.5 or higher, 8 MB memory, and connector compatible with Palm IIIc, m105, m130, m500, m505, or m515 |

With a PC, oRTIgo 2002 QA software is used for storing data to a database, printed reports, and advanced waveform analysis.

## Accessories

| | |
|---|---|
| Invasive mAs probe, MAS-1 | 0.1 – 2200 mA |
| Non-invasive mAs probe, MAS-2 | 10 – 4000 mA |
| Non.invasive mAs probe, MAS-3 | 0.1 – 4000 mA |
| Light meter, L100 | 0.03 – 60 000 cd/m²<br>0.01 – 20 000 lx |
| CT ion chamber, WDCT10 | 0.05 mGycm/s – 250 Gycm/s<br>0.3 Rcm/min – 1700 kRcm/min |
| Ion chamber Magna 1 cc | 0.04 mGy/s – 200 Gy/s<br>0.3 R/min – 1400 kR/min |

Other ion chambers with triaxial BNT and TNT connectors can be used with the Barracuda.

Cases, HLV stand, HVL filters, and adapter cables for triaxial BNT and TNT connectors.

## Physical Specifications

| | | |
|---|---|---|
| Cabinet | Weight | appr. 1000 g |
| | Size | 155 × 135 × 62 mm<br>0.61” × 0.53” × 0.24” |
| Multi-Purpose Detector | Weight | appr. 250 g |
| | Size | 110 × 55 × 13 mm<br>0.43” × 0.21” × 0.05” |
| Power | | 6 power alkaline batteries type LR6 or rechargeable NiMH (size AA), or an external power supply. |

**BARRACUDA is CE-marked according to Medical Device Directive (MDD) class 1m.**



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