

# Barracuda



The Barracuda is a new X-ray multimeter from RTI Electronics. The Barracuda can measure kVp, time, dose, dose rate, dose/pulse, pulse rate, waveforms, and HVL on all modalities with one detector. It also measures mA, mAs, light, and CT dose with additional detectors. Together with a handheld computer you have a stand-alone meter that can do everything. The QABrowser software provides an intuitive user-interface that makes it extremely simple to setup the meter for different measurements. For advanced QA-applications a PC software, oRTIgo 2002, is available. The Barracuda is small and compact: Only one meter and one detector is needed and it comes in a customized case.

## Radiography and Fluoroscopy

Barracuda measures on all type of radiography and fluoroscopy X-ray systems with continuous or pulsed radiation. It is extremely sensitive, 100 times more sensitive than other kVp meters. It measures an accurate kVp at 50 kVp and 0.050 mA at 50 cm! No manual corrections of measured values are required since the Barracuda analyzes the beam quality, including total filtration, during each exposure and applies necessary corrections automatically.

## Computed Tomography

Barracuda can measure important parameters such as kVp, scan time, CT dose and CTDI on computed tomography systems. The unique design of the kVp detector makes it extremely simple to measure kVp compared with other meters. The Barracuda detector can be positioned on the patient table and measure the kVp with full accuracy while the table is moving and the detector is "passing through" the X-ray field. The CT dose and CT dose index can be measured by connecting an external CT ionization chamber and a CT phantom.

## Dental and Panoramic (OPG) Dental

Barracuda is designed to measure on both conventional and panoramic (OPG) dental systems. Its unique ability to verify the position of the detector, and confirm that the whole detector is irradiated correctly, simplifies the measurement and gives more accurate readings than other meters. A special holder is available to safely attach and position the detector to the panoramic system.

## Mammography

Barracuda supports most common target/filter combinations that are used in modern mammography systems. Barracuda is the only X-ray multimeter with solid-state detector that measures kVp, exposure time, dose, dose rate, and HVL in the whole range and no manual corrections are required. The Barracuda is also very sensitive and will measure kVp accurately also on mammography systems with low output. The design of the detector also makes it possible to measure on mammography systems using the latest technology with scanning beams.



# Specifications

## General

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

## Barracuda Cabinet

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

## Multi-Purpose Detector with Signal Extension Module

The Multi-Purpose Detector measures kVp, time, pulses, dose, dose rate, dose per pulse, pulse rate, HVL, total filtration and waveforms. Calibrations are available for radiography, mammography, and CT. The radiography calibrations also includes fluoroscopy, dental and panoramic dental. The mammography calibrations includes target/filter combinations Mo/Mo, Mo/Rh, Mo/Al, Rh/Rh, Rh/Al, W/Rh and W/Al.

Parameter	Range	Inaccuracy
kVp M	20 - 49 kV	±1.5 % or ±0.7 kV
kVp R/F, D	35 - 155 kV	±1.5 %
kVp CT	75 - 150 kV	±1.5 %
Irrad. time	0.1 ms - 2000 s 0 - 65535 pulses	±1 % or 0.5 ms ±1 pulse
Dose	0.1 µGy - 1000 Gy ±5 % 11 µR - 100 kR	
Dose rate	0.2 µGy/s - 350 mGy/s 23 µR/s - 36 R/s	±5 % or ±0.02 µGy/s ±5 % or ±0.14 mR/min
Total filtration	1.5 - 38 mm Al equiv.	±10 % or 0.3 mm (60 - 120 kV, HF/DC)
Quick HVL	1.2 - 14 mm Al equiv.	±10 % or 0.2 mm

## Electrometer Module

The electrometer module measures current, charge, and exposure time from the attached detector. The electrometer module accepts many existing RTI detectors and probes such as R100, R100B, mAs probes, light detector, CT probes as well as ionization chambers from other manufacturers. Different models of electrometer modules are available; single channel with or without bias, twin channel without bias and a 1 channel wide-range with bias.

Parameter	Range <sup>1)</sup>	Inaccuracy
Charge	50 fC - >100 mC	±1 % or ±12.5 fC ±0.5 % above 100 pC
Current (wide-range)	2 pA - 10 µA -2 pA - -4.8 µA 40 fA - 10 µA	±1 % or ±0.5 pA ±0.5 % above 100 pA ±1 % or ±4 fA ±0.5 % above 100 pA
Irrad. time	0.1 ms - 34000 s 1 - 65535 pulses	±1 % or ±0.5 ms ±1 pulse
Bias	±300 V	+20/-10 V

## R100B Dose Detector

The R100B dose detector measures dose and dose rate when connected to an electrometer module.

Parameter	Range <sup>1)</sup>	Inaccuracy
Dose	0.10 nGy - >1.5 kGy ±5 % 0.012 µR - 170 kR	
Dose rate	1.0 nGy/s - 76 mGy/s 0.1 µR/s - 8.7 R/s	±5 % or ±0.25 nGy/s ±5 % or ±0.025 µR/s

<sup>1)</sup> The ranges specified is valid for a combination of modules.

## Display Unit

The Barracuda requires either a handheld Palm compatible computer or a PC for a display device. The handheld uses the RTI QABrowser for simplicity and presentation of data. With PC, oRTIgo 2002 QA software is used for acquiring, storing of data and reporting. Waveforms can be measured both when using handheld computer and PC.

<b>Handheld computer requirements</b>	Palm OS v3.5 or higher, 8 MB memory and connector compatible with Palm Tungsten T, T2, T3, m500, m505, and m515
<b>Recommended model</b>	Tungsten T3
<b>Interface</b>	Wireless Bluetooth, RS232
<b>PC requirements</b>	Windows 95, NT, 98, Me, 2000 or XP
<b>Interface</b>	Wireless Bluetooth, RS232 or USB

## Accessories

Probe/Detector	Range <sup>1)</sup>
Invasive mAs probe, MAS-1	0.1 - 3000 mA, 0.001 mAs -
Non-invasive mAs probe, MAS-2	10 - 4000 mA, 0.1 mAs -
Non-invasive mAs probe, MAS-3	0.1 - 2000 mA, 0.01 mAs -
Light detector, L100	0.03 - 72000 cd/m <sup>2</sup> 0.01 - 24000 lx
CT ionization chamber	4 µGycm - 35 MGycm 160 µGycm/s - 7 kGycm/s
Ionization chamber, Magna 1 cc	1.2 Rcm/min - 34 MRcm/min 5 µGy/s - 250 Gy/s 30 mR/min - 1500 kR/min

<sup>1)</sup> The ranges specified is valid for a combination of modules.

Other ionization chambers can be used with Barracuda. Adapter cables may be required.

Cases, HVL stand, HVL filters, dental panoramic holder, and adapter cables for ionization chambers with triaxial BNT and TNT connectors.

## Physical Specifications

Cabinet	Weight approx. 1000 g Size 155 x 135 x 62 mm 6.1" x 5.3" x 2.4"
Multi-Purpose Detector	Weight appr. 250 g Size 122 x 55 x 14 mm 4.8" x 2.1" x 0.55"
Power	6 power alkaline batteries type LR6 or rechargeable NiMH (size AA), or an external power supply
Operation time	Typically 5-6 h with NiMH (2100 mAh)