



RTI

From Radiation
to Information

Piranha

The Black Piranha – Easy & Fast X-ray Quality Control

The Black Piranha with accessories makes X-ray QA easy and fast. Connection is automatic – just plug n play. The Quick Check feature identifies the probes you insert and selects the optimum Piranha settings for your measurements – sit back and let the Piranha do the work!

FRIENDLY & FAST

BOTH QUICK AND THOUGHTFUL

Everything happens in a flash! The Black Piranha is quick, Ocean 2014 is quick and therefore your daily QA-work will go quickly. Ocean can perform instant real-time analysis during your measurements. Ocean also prepares a report in the background as you go. So when the work is done, if you want a complete report of your work – just press print!

Use your tablet/laptop as both an interactive display during the measurements and as a powerful analysis tool when you are back at the office. All your measurements, along with the result and the report will be stored inside your tablet or laptop. No unnecessary, time-consuming data-transfer at the end of the day.

SIMPLY PLUG N PLAY

Everything happens automatically – just plug n play. The Quick Check can almost feel what you are about to do. The Quick Check feature identifies your probe and selects the optimum Piranha settings for your measurements. It can also be programmed to always start with the kind of set up that you usually start your QA-work with. There is really not much you have to think about before you begin – sit back and let the Piranha do the work!

A PIRANHA NEVER FORGETS

During the measurements you will only see the desired values on your tablet or laptop but since the Piranha continues to work behind the scenes, you always have access to all of the data from each measurement. This enables you to perform for instance trend analysis and study the history of each X-ray equipment – even months after you have completed your measurements.

Ocean PROFESSIONAL



Ocean QUICK CHECK



BLACK PIRANHA – THE MOST POWERFUL OF ALL PIRANHAS

The Black Piranha is powerful and unique – the strongest of all Piranhas. The power of the Black Piranha is absolutely impressive and its adaptability is remarkable.

PIRANHA FEATURE LIST

A COMPLETE QA SOLUTION INSTANTLY

The Piranha comes ready-to-use with everything you need included. It is really an all-in-one multifunction meter. Connect to your computer wireless or via USB and you have a complete QA-system! The number of Piranha models available ensures that you only pay for what you need. As your needs grow, you have unlimited ability to upgrade your Piranha.

POSITION CHECK

The Piranha has a unique feature that makes it possible to check the position of the detector before measuring. By using the “Position Check” function, you can verify that the detector area is fully irradiated. Possible field inhomogeneities are also neutralized.

RTI DOSE PROBE

The RTI Dose Probe is an external dose probe, designed to perform very low dose rate measurements for instance on image intensifiers. To avoid or minimize interference with AEC (Automatic Exposure Control) on X-ray equipment, the probe is very small. This also enables to fit it into the table bucky. Since it is a solid-state detector, no corrections for pressure or temperature are needed. Neither is bias voltage.

PIRANHA HIGH LIGHT LIST

- All-in-one multifunction X-ray meter
- One-shot HVL for Mammography, Radiography, CT, and Dental
- Solid-state detectors = no need to compensate for temperature & pressure
- Can measure on scanning beams as well as tomosynthesis
- Optimized for X-ray equipment from a large number of manufacturers
- Built-in energy compensation
- Can be used together with ion chambers
- Wide-range detection of total filtration
- 100 meters Bluetooth range
- Unique detector design to minimize position and rotation dependence
- Automatic recognition of external probes
- Small, compact & robust – easy to place
- Backscatter protected
- Long-lasting rechargeable battery
- Lead-free
- Always free firmware upgrades
- Firmware is easily updated via Internet or CD
- Upgradable to any model you want
- Up to 10-year warranty
- 2-year Calibration Cycle



BLACK PIRANHA – UNBEATABLE

The Black Piranha has unbeatable built-in corrections for radiography and fluoroscopy – everything from lowest filtrations of 1 mm Al up to 2 mm Cu. Without compromising on accuracy.

The Piranha is also complete within the mammographic area – one detector for all applications including scanning beams and tomosynthesis.

OCEAN 2014

GET INTO A GOOD FLOW

Ocean is RTI's versatile software for X-ray QA and QC. By using Ocean you can plan the measurements at your desk in advance, create checklists, add information as a pop-up window for a specific exposure and include instructions to simplify the work for you and your co-workers.

Waveforms can be studied immediately and setup by simply placing your meter under the X-ray beam, making an exposure and seeing the results instantaneously. The measured data can automatically be captured in your customized Ocean database or transferred into your current Excel® worksheets. When connecting the Piranha and Ocean using Bluetooth, Ocean performs auto-search/pairing to speed up and secure the Bluetooth communication.

With Ocean 2014 you get access to the full power of the Piranha instrument in a very intuitive way.

THE QUICK CHECK

By using the Quick Check mode in Ocean, you get the information on a need to know basis. This means that during your measurements, you instantly see the values of your parameters on the screen along with their waveforms. This helps you to quickly work through your measurements and optimize your time in the X-ray room.

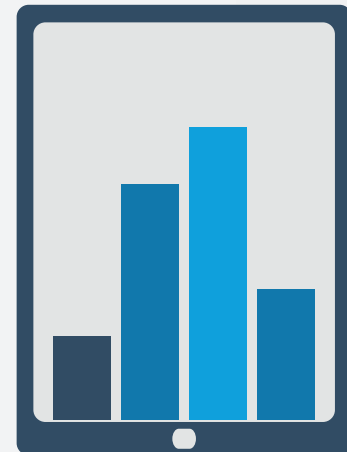
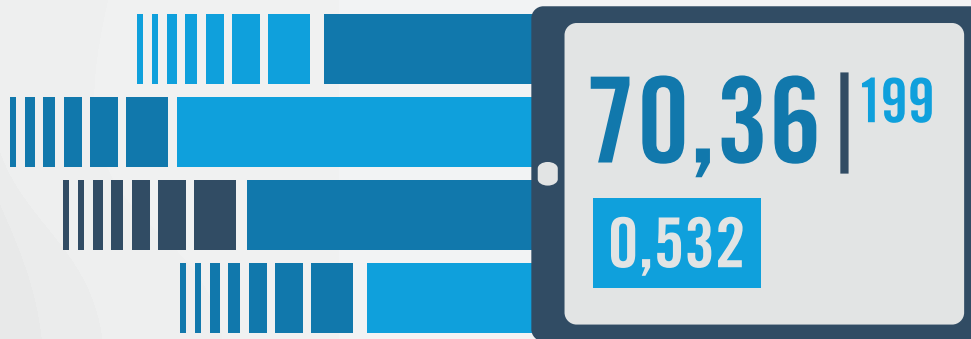
Quick Check is suitable for touch screens and is ALWAYS included when you purchase a Piranha from RTI.

THE PRO FLOW

When using the professional version of Ocean 2014, you really are in control of every part of the Black Piranha system. This will give you the most powerful wireless QA-system on the market.

The "pro flow" gives you the best of both worlds – the powerful work station with keyboard and mouse for planning the work, as well as the light and convenient display to bring to the X-ray room and quickly get all the measurements done.

When used on a tablet with keyboard, you plan your QA-work at the office: creating test sessions, list your test sites and build to-do lists over the quality work of your whole staff. After that you release the tablet from its keyboard and bring it along to the X-ray room, perform your measurements and if needed print out the report. Then you can return to your office, reattach the tablet to the keyboard and in your own pace continue with trend analysis, more detailed waveform analysis as well as uploading your measurements to a central storage (if requested).



Which Ocean version suits you the best?

	Connect	Professional
Quick Check function	•	•
Get started quickly	•	•
Perform simple and accurate measurements, display data and waveforms	•	•
Print out customized reports	•	•
Working with a flexible layout	•	•
Store your measurement set-up as a favorite which is displayed when you start Ocean next time	•	•
Add columns with "Set Values" (for automatic adjustments of the kV range)	•	•
Be able to export measurements to Excel® or Open Office	•	•
Have the possibility to re-measure previously stored measurements	•	•
Use CT Dose Profiler templates	•	•
Customize your CT Dose Profile measurements		•
Get an easy overview of the entire organization		•
Create QA not just for the X-ray machine but for the entire X-ray room		•
Possible to apply different analysis to measured data in a very flexible fashion		•
Add calculations which use the measured data as input		•

OUR PROMISE TO YOU

WE ARE COMMITTED TO A LONG TIME RELATIONSHIP

We offer more than just measuring instruments. We'd like to be your partner and help you in your daily work. We want you to trust and count on us. We promise to do our best to make it easy for you in your everyday working life.

As an owner and user of any RTI product, you are guaranteed to always receive prompt and professional support if required. Our large distributor network provides the opportunity of support in your own language.

Upgrade as needs arise. You can easily expand, improve and renew your instrument. Because we want you to be happy with your instrument to suit your needs or changing workflow requirements. Speak with your local salesperson about your upgrade requirements.

2-YEAR CALIBRATION CYCLE

To make it convenient for you we offer to keep track of when your instrument needs to be sent in for calibration. We will send you a reminder via e-mail two months before so you can plan your work and schedule the calibration in time. RTI Electronics is accredited in compliance with ISO/IEC 17025:2005 and certified according to ISO 9001:2008. This is a guarantee that our assignment is carried out impartially, fairly and based on internationally accepted standards.

It provides third-party assurance that we have the quality management system to ensure all of our calibrations to be consistently of the highest quality.

10-YEAR WARRANTY

The RTI conditional Extended Warranty Program for our instruments gives you up to 10 years warranty. Each product comes with a 24 month factory warranty. By joining the RTI Extended Warranty Program you will have the opportunity to increase your warranty 2 years at a time – for up to 10 years.



2021
ISO/IEC 17025





RTI
Piranha

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PIRANHA CASES

SOFT SHELL

RTI's Soft Shell Case is a perfect solution for storage and transportation of your Piranha and a selection of its accessories. The soft shell case fits perfectly for the Piranha and is smooth, easy and safe.



LIGHT-WEIGHT

Made of light-weight aluminum, the Piranha Premium ALU Case is attractive and just “the right size” to provide a space for the Piranha and all its accessories included in the popular Piranha Premium Kits. This case gives the Piranha user the perfect solution for transporting and storing the RTI X-ray QA test tools. Imagination and foresight are evident in this solution.

Open the two latches, and lift up the lid. You will notice the sturdy foam in the top of the case and in its sides. This helps keep each Piranha accessory secure in its own “cubby hole” until you need it. Pull up the top tray, and you have additional accessories, power supplies and extra storage space in the bottom level.



TOUGH

If a tough, dent-resistant, transport option is preferable, the new Piranha Premium Outdoor Case is the right case for you. Made with a rugged, high impact polypropylene exterior, this case is waterproof and can take a beating. Inside, it has many of the same design features as the Piranha Premium ALU Case.

The Piranha and any desired accessories are stored in two convenient, well-planned and compact layers.



ACCESSORIES

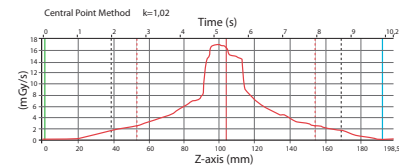
CT DOSE PROFILER

CT scanners are developing in a very rapid pace. The CT Dose Profiler has been designed to meet these new challenges as it provides a dose value for an unlimited beam length.

The CT Dose Profiler will, in just one shot, give you a complete picture of the dose profile and it can also give you all CTDI parameters, dose length product (DLP), geometric efficiency and full width at half maximum (FWHM).

With the CT Dose Profiler you only have to perform one helical scan, instead of the usual five axial scans, due to the automatic calculations in the program. The dose is measured in every point in the X-ray beam and the total dose profile is acquired regardless of how wide the beam is and without the drawbacks of traditional CT ionization chambers.

Pat. pend.



Dose (mGy) **42,88**
 DLP (mGycm) **655** CTDI_{vol} (mGy) **38,5**
 CTDI₁₀₀ (mGy) **36,6** CTDI_{hw} (mGy) **37,3**



Specifications CT Dose Profiler

Dose rate	40 nGy/s–760 mGy/s	Spatial resolution	0.3 mm
	0.26 mR/min–5200 R/min	Length	155 + 45 mm (extension)
Inaccuracy	±5 % or ±10 nGy/s	Diameter	12.5 mm

T20 – ALMOST NOT THERE

T20 is a solid state detector dedicated for measurements on radiographic and fluoroscopic systems when it is crucial that the detector itself does not have any effect on the system. This probes main task is measurements of the skin entrance dose and maximum dose rate in the radiographic and fluoroscopic field. T20 can be placed anywhere in the X-ray field and has a built-in correction filter which allows the detector to self-compensate for different beam energies.



Specifications T20

Dose	0.7 nGy–10 kGy, 80 nR–11 MR	Inaccuracy	±5 %
Dose rate	27 nGy/s–500 mGy/s	Backscatter protected	Yes
	10.8 mR/h–205.2 kR/h	Size	25 x 5 square millimeter
Dose per pulse	7 nGy/pulse–20 kGy/pulse	Length	318 mm (rod & detector)

The MAS-1 is an invasive probe that together with the Piranha provides you direct reading of mA and mAs as well as waveforms. The probe can be used to measure tube current for all modalities including fluoroscopic and radiographic exposures.



Specifications MAS-1

Ranges	0.001–9999 mAs, 0.1 mA–3000 mA
Inaccuracy	±1 % or ± 0.01 mA

The MAS-2 is clamped easily on the high voltage cable. No connection inside the X-ray generator is required. Connected to the Piranha, the MAS-2 is ready for non-invasive measurements, reading mA, mAs, and capturing an mA waveform.



Specifications MAS-2

Ranges	0.1 mAs–9999 mAs, 10 mA–4000 mA
Inaccuracy	±5 % or ±2 mA

The DCT10 is a pencil shaped ion chamber for CTDI measurements. It is intended for measuring and monitoring the exposure output level of CT scanners in a phantom or in air. **The Magna 1cc** ion chamber is designed especially for mammographic dose and dose rate measurements. It also has an excellent energy response and can be used for radiographic applications. (Chamber adapter required).

Specifications DCT10 and Magna 1cc

Air kerma rate DCT10	0.8 mGycm/s - 8 Gycm/s,
Inaccuracy	±6 % or ±0.08 mGycm/s (exp. time > 10 ms)
Air kerma rate Magna 1cc	0.25 mGy/s - 2.5 Gy/s
Inaccuracy	±6 % or ±0.025 mGy/s (exp. time > 10 ms)

The Light Probe measures the ambient light in the room as well as the brightness on monitors and film viewing boxes.

The Piranha Light Probe has the same spectral response as the human eye and complies with the CIE curve. This makes it reliable for all kind of measurements, independent of the light source.



Specifications Light Probe

Monitor, viewing box:	Ranges	0.03–72000 cd/m ²
	Inaccuracy	±5 % or ±6 mcd/m ²
Ambient light:	Ranges	0.01–24000 lx
	Inaccuracy	±5 % or ±0.2 mlx

Piranha Panoramic Holder provides easy and quick positioning for measurement on Panoramic systems. The holder has fluorescent guides, a feature that makes it possible to verify the detector position. Together with the Piranha's Position check, they ensure accurate and reproducible results.



The Chamber Adapter makes it possible to use Ion Chambers with the Piranha. It is primarily designed for Mammography and CT use, but can of course be used for other applications as well.



Specifications Chamber Adapter

Current Ranges	10 pA to 0.1 μA
Inaccuracy	±2 % or ±1 pA (exp. time > 10 ms)

SELECTION GUIDE

- Standard function
- Optional
- Models with external electrometer input
- Models without external electrometer input
- Special models

CHOOSE THE ONE THAT SUITS YOU

The Piranha models are divided into four main application groups - **Mammography**, **Rad & Fluoro**, **Dental** and **CT**. Feel free to choose just one or a combination of the groups. Check with RTI to see which one suits your needs the best, there are more configurations available than shown below.

Piranha Model	657	607	557	507	455	140	355	305	255	205	160
Tablet Compatible	●	●	●	●	●	●	●	●	●	●	●
Ocean Compatible	●	●	●	●	●	●	●	●	●	●	●
Waveform	●	●	●	●	●	●	●	●	●	●	●
Dose & Dose Rate	●	●	●	●	●	●	●	●	●	●	●
Quick HVL	●	●	●	●	●		●	●	●	●	
Mammography	●	●					●	●			●
Rad & Fluoro	●	●	●	●							●
Dental	●	●	●	●					●	●	●
CT	●	●	●	●	●	●					●
KVP & Time	●	●	●	●	●		●	●	●	●	
HVL & Total Filtration	●	●	●	●	●		●	●	●	●	
Dose Probe	●		●				●		●		●
CT Dose Profiler	●		●		●	●	●		●		●
Mas-1, Mas-2, , Mas-3, Light Probe	●		●		●		●		●		●
Ion Chamber	●		●		●	●	●		●		●

Rad & Fluoro.....Meters for radiography and fluoroscopy.

Mammography.....Meters for mammography.

CT.....Meters for CT.

Dental.....Meters for dental (intraoral, panoramic and CBCT).

kVp & time.....The meter measures kVp & time for supported modality.

HVL / Total Filtr......The meter measures HVL and total filtration using internal filters.

Dose & dose rate.....The meter measures dose and dose rate.

Waveform.....The meter can show kV and dose rate waveforms.

Dose Probe.....Useful when higher sensitivity and minimal perturbation of field are required.

CT Dose Profiler.....For CT dose profile measurement.

Ion Chamber.....Chamber Adapter is required.

SPECIFICATIONS BLACK PIRANHA

General Piranha

Weight	Approx. 405 g
Size	133 x 75 x 26 mm ³
Power source	Rechargeable batteries, external power supply
Battery life	Approx. 15 hours
Interface type	Built-in bluetooth and USB
Display unit	PC or RTI handheld display
Min. exp. time	0.1 ms

Waveform

Sampling rate	4–2000 samples/s
Recording time	0.1 ms–524 s

Rad/Flu/Dent/CT

Range	Inaccuracy	Quick HVL
35 – 160 kVp (Rad/Flu)	±1.5 %	Yes
35 – 105 kVp (Dent)	±1.5 %	Yes
45 – 160 kVp (CT)	±1.5 %	Yes
0.1 ms – 2000 s	±1 % or ±0.5 ms	
1 – 65535 pulses	±1 pulse	
15 nGy – 1000 Gy	±5 %	
2 µR – 100 kR	±5 %	
15 nGy/s – 450 mGy/s	±5 % or ±7 nGy/s	
1.7 µR/s – 50 R/s	±5 % or ±0.8 µR/s	
0.1 mR/min – 3000 R/min	±5 % or ±0.05 mR/min	
1 – 90 mm Al total filtr.	±10 % or ±0.3 mm	
1.2 – 14 mm Al HVL	±10 % or ±0.2 mm	

Mammography

Range	Inaccuracy	Quick HVL	Compr. Paddle
18 – 49 kVp (Mo/30 µm Mo)	1.5% ±0.7 kV	Yes	Yes
20 – 46 kVp (Mo/25 µm Rh)	2% ±1 kV	Yes	Yes
18 – 49 kVp (Mo/1.0 mm Al)	2% ±1 kV	Yes	Yes
25 – 49 kVp (Rh/25 µm Rh)	2% ±1 kV	Yes	Yes
20 – 49 kVp (W/0.70 mm Al)	1.5% ±0.7 kV	Yes	Yes
20 – 49 kVp (W/50 µm Rh)	2% ±1 kV	Yes	Yes
20 – 48 kVp (W/0.50 mm Al)	2% ±1 kV	Yes	Yes
20 – 40 kVp (W/55 µm Ag)	2% ±1 kV	Yes	Yes
20 – 40 kVp (W/75 µm Ag)	2% ±1 kV	Yes	Yes
0.1 ms – 2000 s	±1 % or ±0.5 ms		
1 – 65535 pulses	±1 pulse		
25 nGy – 1500 Gy	±5 %		
3 µR – 150 kR	±5 %		
25 nGy/s – 750 mGy/s	±5 % or ±0.04 µGy/s		
30 µR/s – 86 R/s	±5 % or ±4 µR/s		
1.8 mR/min – 5100 R/min	±5 % or ±0.3 mR/min		
0.19 – 0.8 mm Al HVL	±10 %		

Specifications RTI Dose Probe (External Probe)

Range	Inaccuracy
0.1 nGy–1.5 kGy, 12 nR–170 kR	±5 %
1 nGy/s–76 mGy/s	±5 %
0.4 mR/h–31 kR/h	±5 %
1 nGy/pulse–3000 Gy/pulse	±5 %
Backscatter protected	Yes
Size / Weight	20 x 45 x 7.4 mm ³ / 85 g
	0.79 x 1.8" x 0.2" / 3 oz

- The built-in energy compensation makes probes fulfill the IEC 61674 standard for dosimeters.
- Note that many Mammography and CT Manufacturers use individual beam qualities within the specified ranges above. The Black Piranha contains a large numbers of these qualities as well.
- Specifications in this folder may be changed without notice.



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FIND YOUR LOCAL DISTRIBUTOR AT WWW.RTI.SE

We offer more than just measuring instruments. We'd like to be your partner and help you in your daily work. We want you to trust us and count on us. We promise to do our best to make it easier for you in your everyday working life.



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