

SPECIFICATIONS BLACK PIRANHA

PIRANHA GENERAL

Size	133 x 75 x 26 mm
Weight	Approx. 400 g
Display	PC or Windows Tablet
Software	Ocean (Complete Software for QA)
Database Support	Yes
Trend Analysis	Yes
Interface Type	Built-in Bluetooth and USB
Detector Position Check	Yes
Simultaneous Dose Measurements	Yes (max 2 detectors)
Use of Dose Detector with Active AEC	Yes****
Bluetooth Range	100 m (free-in-air)
USB Cables	Not needed but included
Power Source	Rechargeable Li ion battery, ext. power supply
Battery Life	~ 15 hours
Battery Tested	According to UN 38.3
Exposures Needed for Measurement	One
Min. Exposure Time	0.1 ms
Memory	Unlimited
Operating Temperature	-15–35°C
Storage Temperature	-10–50°C
Backscatter Protection	Yes (Internal detector, RTI Dose Probe, RTI T20)
Warranty	2 years
Extended Warranty	Up to 10 years
Calibration Cycle	2 years
Standard	Complies with relevant parts of the standards IEC 61674 and IEC 61676 for Dosimetric instruments.
EMC Tested	According to IEC 61326-1:2012
PTB Approval	DE-17-M-PTB-0070

ISO/IEC 17025:2005 CALIBRATION LABORATORY

Tube Potential	Mam, R/F, CT, Dental
Dose	Mam, R/F, CT, Dental
Dose Area Product	R/F
Dose Length Product	CT
Tube Current and Charge	Mam, R/F, CT, Dental
Photometry	Luminance, Illuminance
Electrometers	Current, Charge



*RTI Dose Probe

**CT Dose Profiler

***RTI Light Probe

****RTI T20

Colored specifications: Features unique for RTI instruments.

All specifications are based on the Black Piranha model 657.

Specifications in this folder may be changed without notice.

PIRANHA RADIOGRAPHY/FLUOROSCOPY

Included in main unit	Yes
Total Filtration	60–120 kVp, 1–90 mm Al or 2 mm Cu

Auto Compensation

Dose/Dose Rate	50–150 kVp, 1–90 mm Al or 2 mm Cu
kVp	50–150 kVp, 1–90 mm Al or 2 mm Cu

Dose

Range	0.1 nGy–1500 Gy*
Inaccuracy	5 %

Dose Rate

Range	1 nGy/s–320 mGy/s*
Resolution	0.2 nGy/s*
Trig Level	40 nGy/s
Inaccuracy	5% or 0.25 nGy/s

kVp

Range	35–160 kVp
Minimum Dose Rate	0.1 μ Gy/s
Inaccuracy	1.5%
PPV	Yes

HVL

Range	0.72–13 mm Al
Minimum Dose Rate	0.1 μ Gy/s
Inaccuracy	10% or 0.2 mm Al
Quick HVL in one exposure	Yes

Total filtration

Range	1.0–90 mm Al
Minimum Dose Rate	0.1 μ Gy/s
Inaccuracy	10% or 0.3 mm Al

Pulses

Range	1–65535 pulses
Minimum Peak Dose Rate	0.23 μ Gy/s
Minimum Pulse Width	0.5 ms at 1.8 μ Gy/s*

Pulse Rate

Range	0.5–180 pulse/s
Minimum Peak Dose Rate	0.23 μ Gy/s

Dose/Pulse

Range	1 nGy/pulse–0.9 Gy/pulse*
Minimum Peak Dose Rate	0.23 μ Gy/s*

Time

Range	0.1 ms–2000 s
Resolution	0.5 ms
Bandwidth	1 kHz
Inaccuracy	1 % or 0.5 ms
Effective Time	Yes (Effective Exposure time)

Waveforms

Resolution	0.5 ms
Bandwidth kV	\leq 1 kHz
Bandwidth Dose Rate	\leq 1 kHz

*RTI Dose Probe

Colored specifications: Unique features for RTI instruments only.

PIRANHA CT

kV

Range	45–160 kVp
Inaccuracy	1.5%
PPV	Yes

Time

Range	0.1 ms–3400s
Resolution	≥0.5 ms
Bandwidth	≤1 kHz
Inaccuracy	1% or 0.5 ms

CTDI

Dose Profile**	Yes**
Maximum Beam Width	Unlimited**

Dose Length Product

Range	1.8 nGycm**–22 kGycm** at 10 mm collimation
Inaccuracy	5% **

Dose

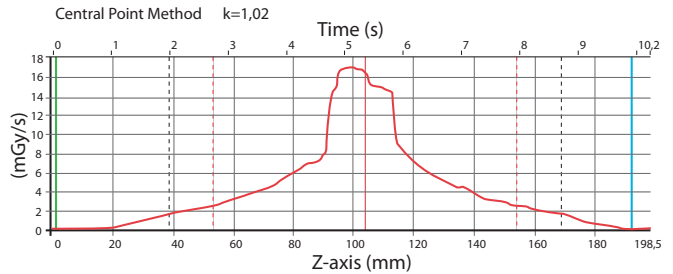
Range	1.8 nGy–22 kGy**
Inaccuracy	5% **

Dose Rate

Range	67 μGy/s–2.2 mGy/s**
Inaccuracy	5% **

Waveforms

Resolution	≥0.5 ms
Bandwidth	≤1 kHz



Dose (mGy)
(C2-C1) 42,88

DLP (mGycm) 655 CTDI_{vol} (mGy) 38,5

CTDI₁₀₀ (mGy) 36,6 CTDI_w (mGy) 37,3



**CT Dose Profiler

Colored specifications: Unique features for RTI instruments only.

PIRANHA MAMMOGRAPHY

Included in main unit	Yes
Tailormade calibrations for different manufacturers	Yes
Full mammo range available without adding extra filters or repositioning or changing detector.	Yes

Auto Compensation

kV/Dose/Dose Rate & HVL	Mo/Mo	18–49 kVp
	Mo/Rh	20–46 kVp
	Mo/Al	18–49 kVp
	Mo/Cu	40–49 kVp
	Rh/Rh	25–49 kVp
	Rh/Ag	27–40 kVp
	Rh/Cu	40–49 kVp
	W/Rh	20–49 kVp
	W/Ag	20–40 kVp
	W/Al	20–49 kVp
	W/Cu	40–49 kVp

Tailormade Calibrations

kV/Dose/Dose Rate & HVL	Fujifilm: Amulet innovality
	GE: Pristina
	IMS: Giotto
	Hologic: Selenia, Selenia Dimensions, Affirm Prone

Dose

Range	1 nGy–1000 Gy
Inaccuracy	5%

Dose Rate

Range	25 nGy/s – 530 mGy/s
Inaccuracy	5%

kVp

Range	18–49 kVp
Minimum Dose Rate	0.2 μ Gy/s
Inaccuracy	1.5% or \pm 0.7 kV for Mo/Mo
PPV	Yes

HVL

Range	0.19–4.3 mmAl
Minimum Dose Rate	0.2 μ Gy/s
Inaccuracy	10%
Quick HVL	Yes

Time

Range	0.1 ms–2000 s
Resolution	0.5 ms
Bandwidth	1000 Hz
Inaccuracy	1% or 0.5 ms

Pulses

Range	1–9999 pulses
-------	---------------

Pulse Rate

Range	0.5–180 pulses/s
-------	------------------

Dose/Pulse

Range	8 nGy/pulse–0.9 Gy/pulse
Minimum Dose Rate	0.46 μ Gy/s

Waveforms

Resolution	0.5 ms
Bandwidth	1000 Hz

Colored specifications: Unique features for RTI instruments only.

PIRANHA MAS-1

mAs

Range	0.001–9999 mAs
Resolution	0.001 mAs
Inaccuracy	1%

mA

Range	0.1–3000 mA
Resolution	0.01 mA
Inaccuracy	1% or 0.01 mA

Time

Range	0.1 ms–34000 s
Resolution	0.5 ms
Bandwidth	500 Hz
Inaccuracy	1% or 0.5 ms

Pulses

Range	1–65535 pulses
Resolution	1 pulse
Inaccuracy	1 pulse

Pulse Rate

Range	0.5–100 Hz
Resolution	0.5 Hz

mAs/Pulse

Range	0.001–9999 mAs
Resolution	0.001 mAs
Inaccuracy	1%

Waveform

Resolution	0.5 ms
Bandwidth	0.5 kHz

PIRANHA MAS-2 (NON INVASIVE)

mAs

Range	0.1 mAs–9999 mAs
Resolution	0.01 mAs
Inaccuracy	5%

mA

Range	10 mA–4000 mA
Resolution	1 mA
Inaccuracy	5% or 2 mA

Time

Range	0.1 ms–34000 s
Resolution	0.5 ms
Bandwidth	1 kHz
Inaccuracy	1% or 0.5 ms

Pulses

Range	1–65535 pulses
Resolution	1 pulse
Inaccuracy	1 pulse

Pulse Rate

Range	0.5–100 Hz
Resolution	0.5 Hz

mAs/Pulse

Range	0.1–9999 mAs
Resolution	0.01 mAs
Inaccuracy	5%

Waveform

Resolution	0.5 ms
Bandwidth	0.5 kHz

PIRANHA SURVEY*

Weight	85 g
Size	45x19x7 mm
Standard	Complies with IEC standard EN 60601-1-3
Active Compensation	Flat energy response. No compensation required.

Trig Models

Manual	Yes. Manual start / stop of measurement
Auto	Yes. Trig with threshold 40nGy/s

Air Kerma

Range	1 nGy/s–150 mGy/s
Resolution	0.2 nGy/s
Inaccuracy	5% or 0.25 nGy

Air Kerma Rate

Range	1 nGy/s–150 mGy/s
Inaccuracy	5% or 0.9 μ Gy/h

Mean Energy

Range	18–160 keV
Inaccuracy	5%
Minimum Dose Rate	4 mGy/h

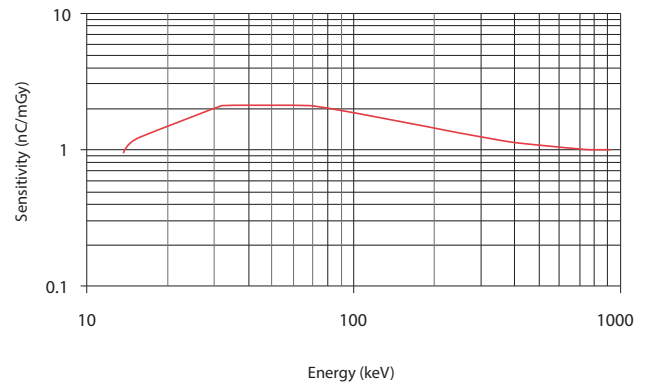
Time

Range	0.1 ms–2000 s
Resolution	0.5 ms
Bandwidth	\leq 1 kHz
Inaccuracy	1 % or 0.5 ms

Waveform

Resolution	0.5–64 ms
Bandwidth	\leq 1000 Hz
Minimum Dose Rate	No limitation

Typical Response for Survey:



*RTI Dose Probe

PIRANHA LIGHT

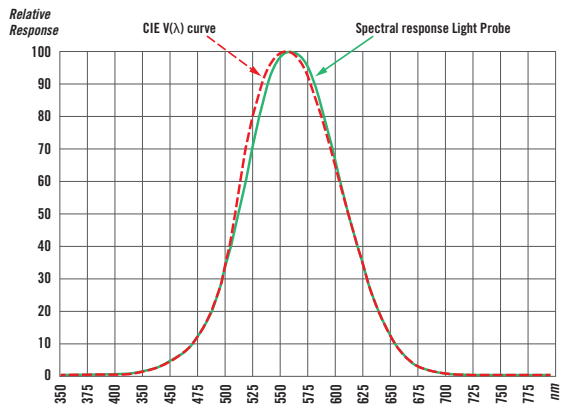
Weight	190 g***
Size	79 x 47 x 29 mm***

Luminance

Range	0.04–128000 cd/m ²
Resolution	0.5 mcd/m ²
Aperture Angle	3.6°
Measurement Area	∅ 7
Inaccuracy Illuminant	5%

Illuminance

Range	0.014–48000 lux
Resolution	0.2 mlux
Uncertainty Illuminant A	5%
Deviation from human eye (λ) (f1')	See figure
Cosine Deviation (f2)	<3%



***RTI Light Probe

FIND YOUR LOCAL DISTRIBUTOR AT WWW.RTIGROUP.COM



RTI – World Headquarters

Flöjelbergsgatan 8 C
SE-431 37 Mölndal
SWEDEN

Phone: + 46 31 746 36 00
E-mail: sales@rtigroup.com
www.rtigroup.com

RTI – US Office

33 Jacksonville Road, Bldg. 1
Towaco, NJ 07082
USA

Phone: 1-800-222-7537
E-mail: sales.us@rtigroup.com
www.rtigroup.com