

RaySafe X2 Solo DENT

X-ray meter for dental applications





Quality Assurance in Dental X-ray

Hundreds of millions of X-ray exposures are done every year in dental clinics around the globe. The majority are intraoral where the dose is relatively low, but these machines need to be checked, following the ALARA principles. Globally there are lots of analogue intraoral machines that may give many times the necessary dose, which is easily checked using a meter from RaySafe.

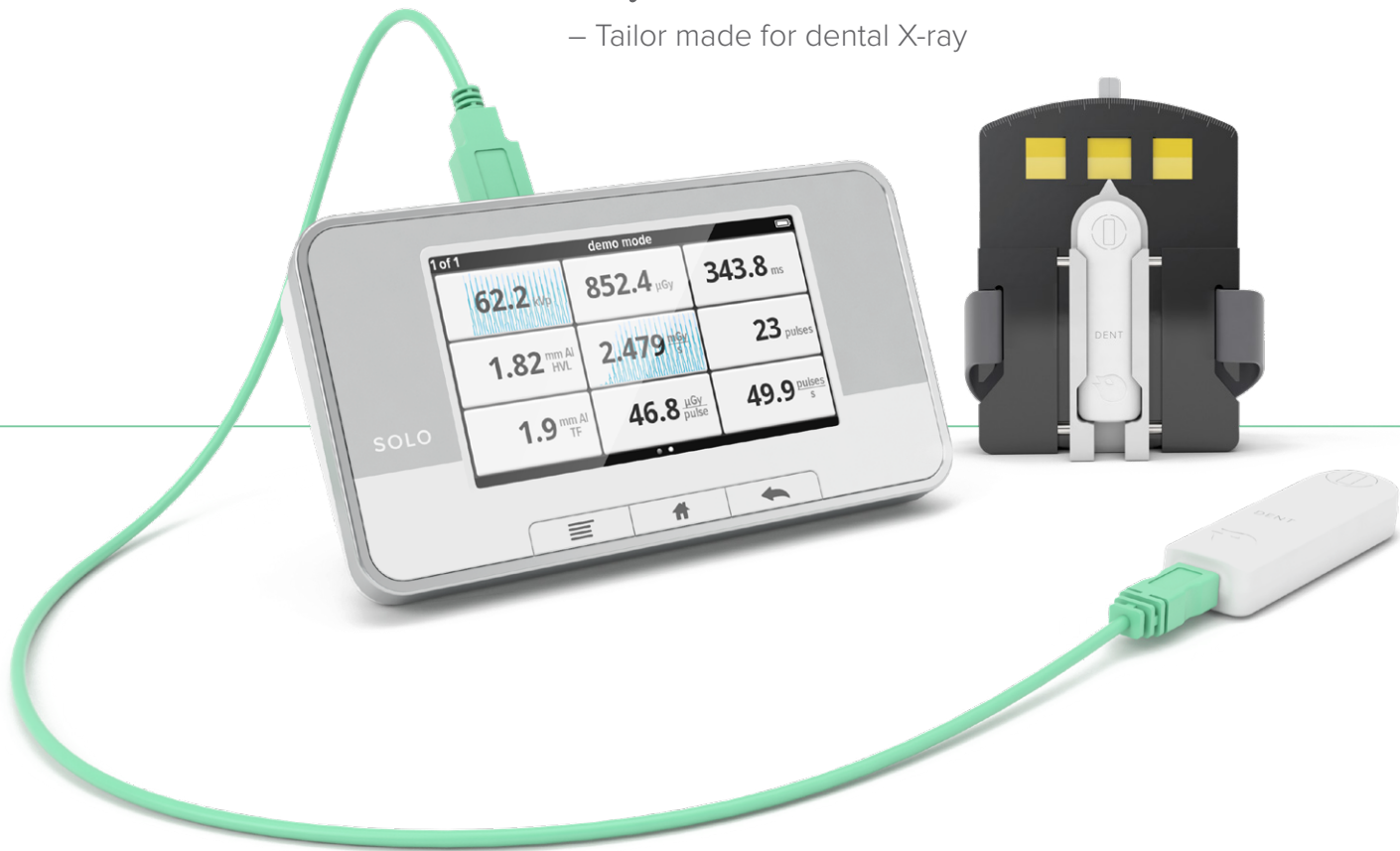
At your fingertips

From a measurement perspective, intraoral machines are easy to check. Panoramic, however is more challenging due to a very narrow radiation field, which requires accurate positioning of the sensor. RaySafe X2 Solo DENT makes these measurements easier than ever and is your complete tool for all measurement needs in the dental area.

Simplicity has always been a hallmark for Unfors RaySafe. Our simplicity comes from a careful balance of advanced sensor technology and intelligent signal processing. The result – a device that provides accurate measurements with the ultimate in user friendliness. Right at your fingertips.

RaySafe X2 Solo DENT

– Tailor made for dental X-ray



RaySafe X2 Solo DENT

– Leading precision designed for specific needs

The RaySafe X2 Solo DENT is a meter for quality assurance and service of dental X-ray machines. This fast and easy-to-use meter provides leading precision and tailor made measurement capabilities for all dental applications. RaySafe X2 Solo DENT covers all your needs:

- Supports all types of dental machines; Cone Beam CT, Panoramic and Intraoral.
- Options include HVL & Total Filtration as well as invasive mAs measurements.
- Measures dose, dose rate, kVp, exposure time, pulses, pulse rate and dose/pulse in the kV and dose rate ranges needed for dental applications.

In addition, with its minimal setup time, acquiring your first exposures take less than one minute. Because of its intuitive user interface and built-in intelligence, you can rapidly learn how to use the RaySafe X2 Solo DENT. The user will be able to focus on interpreting the measured data instead of focusing on how to obtain data. Ease-of-use saves time, but most importantly, it minimizes the risk of costly user errors.

Panoramic measurements

RaySafe X2 Solo DENT includes the brand new X2 Panoramic Holder. Correctly positioning the sensor in the narrow X-ray field of a Panoramic machine is now easier than ever:

1. Attach the holder to the X-ray machine.
2. Make an exposure with gafchromic film (included) to reveal the position of the X-ray beam.
3. Use the adjustment lever to align the sensor with the X-ray beam.

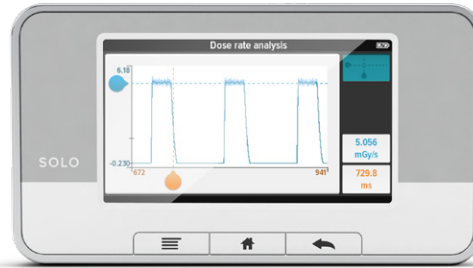
The markings on the holder makes it possible to go back to a previous position if needed.



X2 PANORAMIC HOLDER

RaySafe X2 technology

RaySafe X2 Solo DENT is built on the RaySafe X2 platform, highly esteemed for its user-friendliness and performance. Features of the X2 Solo DENT include:



WAVEFORM
Overview and simple analysis of kVp, dose rate or mAs.

LARGE TOUCH SCREEN

display for simple operation and a great overview of all measured parameters.

FULL WAVEFORMS

directly in the base unit for quick analysis of measurements.

NO SPECIAL SETTINGS

to handle different types of X-ray machines. Just connect and measure.

STACKED SENSORS

for easy positioning and minimum radiological footprint.

WIDE DYNAMIC RANGE

– no special modes for high sensitivity measurements.

BUILT-IN MEMORY

– up to 10 000 measurements with waveforms are stored in the base unit.

Options for RaySafe X2 Solo DENT

The following options are available to the RaySafe X2 Solo DENT:

HVL & TOTAL FILTRATION

With this option, RaySafe X2 Solo DENT will measure Half Value Layer (HVL) and Total Filtration in a single exposure avoiding the need of multiple dose measurements with different filters. RaySafe X2 Solo utilizes a stacked sensor with diodes having different filtration, and hence accurately calculates HVL. With the HVL & Total Filtration option installed, these parameters will be measured simultaneously as the other parameters and will be displayed on the main screen after each exposure.

RAYSAFE SERVICE PROGRAM

The RaySafe Service Program makes it possible to control your life cycle cost and will keep your instrument in perfect functional condition year after year. Available with a 12 or 24 months cycle, the RaySafe service program will extend the warranty of your meter up to 8 years. Also, members of the service program are prioritized and hence enjoy a faster turn-around time. The RaySafe service program can be pre-paid at the time of instrument purchase.

mAs

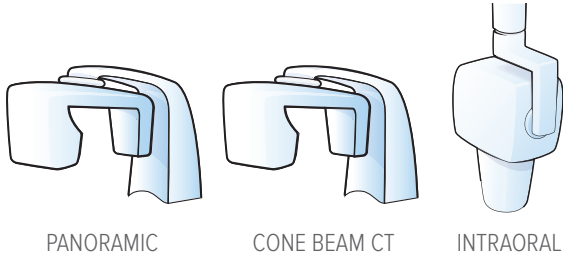
RaySafe X2 Solo DENT is available with or without mAs. The design allows to invasively measure tube current even for pulsed measurements.

X2 SOLO GENERAL

EMC	According to IEC 61326-1
SAFETY	According to IEC 61010-1
X-RAY METERS STANDARD	Complies with IEC 61674
EXPOSURES NEEDED	One
USB CABLES	2 m (6.6 ft), 5 m (16.4 ft) and 5 m active extender
SIZE BASE UNIT	34 x 85 x 154 mm (1.3 x 3.3 x 6.1 in)
WEIGHT BASE UNIT	521 g (18.4 oz)
OPERATING TEMPERATURE	15 – 35 °C (59 – 95 °F)
STORAGE TEMPERATURE	-25 – 70 °C (-13 – 158 °F)
POWER SOURCE	Rechargeable Li ion battery
BATTERY TIME	~ 10 hours intensive usage
BATTERY TESTED	According to UN 38.3
DISPLAY	4.3" LCD with capacitive touch
MEMORY	~ 10000 latest exposures
SOFTWARE	X2 View for data handling and analysis. Also exports data to Microsoft Excel.

TAILOR MADE FOR DENTAL MEASUREMENTS

The RaySafe X2 Solo DENT provides high precision measurements of all essential X-ray parameters for dental applications; Cone Beam CT, Panoramic and Intraoral X-ray. RaySafe X2 Solo DENT is designed to improve your productivity by its intuitive user interface, built-in intelligence, and minimal set-up time.



X2 mAs

mAs	
RANGE	0.001 – 9999 mAs
RESOLUTION	0.001 mAs
UNCERTAINTY	1 %
mA	
RANGE (PEAK)	0.1 – 1500 mA
RESOLUTION	0.01 mA
UNCERTAINTY	1 %
TIME	
RANGE	1 ms – 999 s
RESOLUTION	0.1 ms
BANDWIDTH	1 kHz
UNCERTAINTY	0.5 %
PULSES	
RANGE	1 – 9999 pulses
RESOLUTION	1 pulse
PULSE RATE	
RANGE	0.1 – 200 pulses/s
RESOLUTION	0.1 pulse/s
mAs/PULSE	
RANGE	0.001 – 9999 mAs
RESOLUTION	0.001 mAs
UNCERTAINTY	1 %
WAVEFORM	
RESOLUTION	125 µs*
BANDWIDTH	1 kHz

* automatically reduced for exposures longer than 3 s

X2 DENT SENSOR

WEIGHT	42 g (1.5 oz)
SIZE	14 x 22 x 79 mm (0.5 x 0.9 x 3.1 in)

ACTIVE COMPENSATION

Beam quality independent for the following ranges:

DOSE/DOSE RATE	40 – 130 kVp, 1 – 14 mm Al HVL
kVp	40 – 130 kVp, up to 1 mm Cu
TF	60 – 120 kVp, up to 1 mm Cu

DOSE

RANGE	1 nGy – 9999 Gy (0.1 µR – 9999 R)
UNCERTAINTY	5 % or 5 nGy (0.5 µR)

DOSE RATE

RANGE	1 µGy/s – 500 mGy/s (5 mR/min – 3400 R/min)
RESOLUTION	1 nGy/s (5 µR/min)
TRIG LEVEL	1 µGy/s (7 mR/min)
UNCERTAINTY	5 %

kVp

RANGE	40 – 130 kVp
MINIMUM DOSE	50 µGy (6 mR)
MINIMUM DOSE RATE (PEAK)	10 µGy/s (70 mR/min)
UNCERTAINTY	2 %

HVL (OPTIONAL)

RANGE	1 – 14 mm Al
MINIMUM DOSE	1 µGy (120 µR)
MINIMUM DOSE RATE (PEAK)	1 µGy/s (7 mR/min) at > 70 kV 2.5 µGy/s (17 mR/min) at 50 kV
UNCERTAINTY	10 %

TOTAL FILTRATION (OPTIONAL)

RANGE	1.5 – 35 mm Al
MINIMUM DOSE	50 µGy (6 mR)
MINIMUM DOSE RATE (PEAK)	10 µGy/s (70 mR/min)
UNCERTAINTY	10 % or 0.3 mm Al

TIME

RANGE	1 ms – 999 s
RESOLUTION	0.1 ms
BANDWIDTH	4 Hz – 4 kHz*
UNCERTAINTY	0.5 %

* automatically adjusted depending on signal level

PULSES

RANGE	1 – 9999 pulses
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PULSE RATE

RANGE	0.1 – 200 pulses/s
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DOSE/PULSE

RANGE	1 nGy/pulse – 999 Gy/pulse (0.1 µR/pulse – 999 R/pulse)
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WAVEFORMS

RESOLUTION	62.5 µs*
BANDWIDTH kV	0.1 – 0.4 kHz**
BANDWIDTH DOSE RATE	4 Hz – 4 kHz**

* automatically reduced for exposures longer than 1.5 s

** automatically adjusted depending on signal level

UNFORS RAYSAFE UNCERTAINTY DEFINITION

The expanded uncertainty is stated as the combined uncertainty of measurement multiplied by the coverage factor k=2, which assuming a normal distribution has a coverage probability of 95 % (complies with GUM by ISO (1995, ISBN 92-67-10188-9)).

Instrument specifications are subject to purchased configuration. All specifications may change without notice.

ADDITIONAL DENTAL X-RAY QA SOLUTIONS



RAYSAFE THINX INTRA



RAYSAFE X2



PRO-DENT SET

Unfors RaySafe offers comprehensive solutions for the X-ray room to measure the performance of X-ray equipment and to monitor medical staff dose in real-time. RaySafe helps you avoid unnecessary radiation.