RaySafe ThinX measures X-ray radiation. The instrument is always on, triggered by radiation. You don't need any correction tables, since the active compensation feature automatically applies corrections for variation in beam filtration.

1

Position RaySafe ThinX on a flat surface. Position the collimator of the X-ray machine close to the sensor area.

2

Expose.

3

Read the values on the display.

If the detected waveform is pulsed, the number of pulses will automatically be displayed.

BATTERY REPLACEMENT

When the yellow LED is blinking, please replace the battery:

1. Remove the battery cover.

2. Replace the battery (CR2450).

3. Put the cover back. The instrument is ready to use.

CLEANING

Use a damp cloth for cleaning.

INSTRUMENT VERSIONS

This manual is valid for 1302023-A.

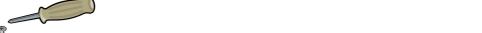## SUPPORT

Do not hesitate to contact Unfors RaySafe for support:

Technical support

+49 731 175 492-20
technicalsupport@raysafe.com

Service

+46 31 719 97 10
customerservice.se@raysafe.com

RaySafe ThinX Intra

SPECIFICATIONS

GENERAL
EMC tested according to EN 61000-6-1:2007 and EN 61000-6-3:2007.

Dimension:	108x45x13 mm
	(4.3x1.8x0.5 in)
Weight:	70 g (2.5 oz)
Display:	128x64 pixels LCD
Power on:	auto, radiation triggered
Power off:	150 s after exposure
Battery:	3V, CR2450
Trig level:	0.1m Gy/s (0.7 R/min)

DOSE
Range:	20 µGy – 999 mGy
	(2.3 mR – 114 R)
	at > 70 kV
Minimum dose at 50 kV:	
	100 µGy (11.4 mR)
Resolution:	1 µGy (0.1 mR)
Uncertainty:	5 %

DOSE RATE
Range:	0.1 mGy/s – 100 mGy/s
	(0.7 R/min – 685 R/min)
	at > 70 kV
Minimum dose rate at 50 kV:	
	0.5 mGy/s (3.4 R/min)
Resolution:	0.01 mGy/s (0.1 R/min)
Uncertainty:	5 %

KVP
Range:	45 – 100 kVp
Resolution:	0.5 kVp
Uncertainty:	3 %

HVL
Range:	1.0 – 10.0 mm Al
Resolution:	0.1 mmAl
Uncertainty:	10% or 0.2 mm Al

EXPOSURE TIME
Range:	10 ms – 10 s
Resolution:	1 ms
Uncertainty:	0.5 %
Bandwidth:	0.5 kHz

PULSES
Number of pulses:	3–999 (Max 375 ms dead time between pulses.)
Uncertainty:	1 pulse

ACTIVE COMPENSATION
1.5 – 10 mm Al total filtration for 45 – 100 kV.

Note! If any parameter is out of range, no measurement results will be shown.

PARAMETERS

DEFINITIONS

Exposure time is measured from start trig until the signal drops below 25% of max (HF/DC), or from the first pulse that has a peak above 25% of max until the last time the signal drops below 25% of max (AC).

All recorded samples are used to calculate **dose** and **HVL**.

Dose rate is (dose)/(exposure time).

kVp is calculated from 5 ms after trig until the signal drops below 75% of peak (HF/DC), or from pulses with a peak signal level above 75% of maximum (AC).

LED INDICATION
Unfors ThinX Intra has three LED:s. Normal state is an idle blink every fourth second.

• **Green**	Idle blink: The instrument is ready to use.
	Intense blink: An exposure has been recorded..
• **Yellow**	Replace the battery. 100 exposures left.
• **Red**	Idle blink: Replace the battery. No further measurements are allowed.
	Intense blink: An error has occurred. See details on display.

DISPLAY MESSAGES

Exposure error message	Action
Low signal	Increase dose, dose rate or kV.
High signal	Decrease dose, dose rate or kV.
Radiation during calculation	Wait longer between exposures or make the time between pulses shorter than 375 ms.
Total filtration > specification	Decrease the amount of filtration.
Time < 10 ms	Increase exposure time.
Time > 10 s	Decrease exposure time.
Dose < 20 µGy (2.3 mR)	Increase dose.
Dose > 999 mGy (114 R)	Decrease dose.
Dose rate < 0.1 mGy/s (0.7 R/min)	Increase the dose rate.
Dose rate > 100 mGy/s (685 R/min)	Decrease the dose rate.
Number of pulses < 3 for kVp	Increase the number of pulses to make an AC kVp calculation.
kVp < 45 kVp	Increase kVp.
kVp > 100 kVp	Decrease kVp.
Number of pulses > 999	Decrease the number of pulses.

Information message	Action
Battery low. 100 exposures left.	Replace the battery.
Battery low. Replace battery.	Replace the battery immediately. No further measurements allowed.
Instrument error	Please write down the error code and contact support (contact information on back side of this manual).