



AEC CHAMBERS – PATIENT SAFETY

General

The AEC chamber is an accessory for X-ray systems (projection radiography). The AEC chamber provides a signal proportional to the image receptor dose, enabling X-ray imaging with optimal diagnostic image quality with minimal patient radiation exposure. The AEC chamber is designed for continuous operation in professional health care facilities (clinics, hospitals, medical practices).

Configuration



The AEC chambers are air-filled parallel-plate ionization chambers with typically one or three independent sensor fields. Several different outer dimensions are available. Each VacuTec AEC chamber is equipped with a preamplifier and electronics, which converts the low ionization current into EMC stable digital signals. Additionally it supplies the voltage for the chamber operation and allows selection of the sensor fields.

Selection of AEC chambers with digital interface

REF	No. of Measuring fields	Connector	Size (mm)
140 00 13	3	Sub-D 9 pin	374 × 354
141 00 18	3	Sub-D 9 pin	374 × 374
141 00 20	3	Sub-D 9 pin	320 × 320
142 00 13	1	Sub-D 9 pin	374 × 374
143 00 06	3	Sub-D 9 pin	374 × 450
145 00 44	3	Sub-D 9 pin	450 × 450
145 00 45	3	RJ45	450 × 450
151 00 18	3	Sub-D 9 pin	450 × 450
151 00 21	3	Sub-D 9 pin	450 × 470
151 00 22	3	RJ45	450 × 470
145 00 97	3	Sub-D 9 pin*	450 × 450

* position of amplifier at the bottom of the AEC chamber

Optionally the digital output signal can be transformed into an analogue voltage by using an additional ramp module.

Selection of ramp modules

(for Sub-D type AEC chambers)

REF	Description
902 00 42	for 1 and 3 field AEC chambers
902 00 11	for 1 and 3 field AEC chambers, with cable extension

Specification

Energy range / tube voltage	40 ... 150 kV
Dose rate range	0.5 ... 1000 $\mu\text{Gy/s}$
Exposure dose range	1 ... 100 μGy
Digital resolution (selectable)	0.025 μGy
Exposure time range	1 ms ... 10 s
Sensitivity tolerance between sensor fields	< 5%
Attenuation factor	< 1.04
Aluminum equivalent	< 0.75 mm Al
Supply voltage AEC chamber	+12 ... +16 V DC
Power consumption	max. 2 W
Digital output	Differential signal (RS 422), pulse width 2 μs

When using ramp module

Supply voltage	$\pm(12 \dots 16)$ V DC
Ramp output	0 ... 10 V

Flowchart AEC

