



APOLLO

Patient dosimeter



APOLLO

The beauty of simplicity

EASY

Easy to install.
Easy to calibrate.
Easy to use.
Easy to read.

INTUITIVE

Intuitive to use with a separate display for each detector.

Intuitive to interpret the results with proper build-up and calibration in Gy.

SAFE

No high voltage and triple electrical insulation for patient safety.

Battery backup that keeps the dose readings when a mains power failure occurs.

VERSATILE

Detectors with a wide range of integral build-up for different energies.

Interface for data communication with external computer systems.



WHY?

In-vivo dosimetry is an essential part of modern radiotherapy.

It gives a verification of the entire therapy process, from treatment planning all the way to patient setup and dose delivery.

Systematic errors in dose calculation or drift in the dose monitor calibration as well as random errors in patient or machine setup and treatment machine failures during a treatment are immediately discovered and can be corrected in the following treatment sessions.

In-vivo dosimetry is equally useful for the standard treatment techniques as for the more advanced techniques such as TBI, IMRT and Tomotherapy.

To make it practical in the everyday clinical work, it has to be convenient to use and easy to read and interpret the results.

HOW?

The Apollo in-vivo dosimetry system is designed for ease of use and intuitive handling and it based on more than 30 years of experience with in-vivo dosimetry systems.

The detectors are easy to apply and remove, with just a piece of surgical tape across the wings at the base. With that they get a firm hold and good contact with the patients' skin.

A wide range of integral build-up thicknesses, from 5 to 30 mm, allows the user to select the optimal build-up for each beam quality, which minimizes the need for correction factors for field size and SSD and greatly simplifies the interpretation of the readings.

The hemispherical shape of the integral build-up minimizes the directional dependence as well as the perturbation.

The Apollo semiconductor detectors are very reproducible and have excellent long-term stability.

Each detector has its own electrometer and its own front panel display, which gives immediate real-time monitoring of all channels and makes the reading easy and intuitive.

The real-time readout is important as it gives the opportunity to detect any error immediately and to quickly find the cause for it before the patient setup has been changed.

The Apollo readout unit is very compact and has essentially just the dose displays on the front panel, and that makes it easy to find a suitable place for it, even in a small control room.

The ideal position for it is on a shelf at eye level and within easy reach.

The display characters are large and easy to read even at some distance.

For additional safety Apollo has an internal backup battery that keeps the reading of the actual given dose to the patient in case of a mains power failure during a treatment.

The Apollo readout unit has also a serial port for transfer of the measured data to an external computer for storage of patient records.



WHAT VERSION?

Apollo is available in two versions: Apollo 5 with five channels, intended for a single energy photon accelerator and Apollo 10 for accelerators with more than one beam quality.

For a single energy machine it is useful to have at least two detectors with full build-up with at least one of them calibrated for entrance dose, one for exit dose plus a couple of detectors with only 5 mm build-up for scatter dose measurements outside of the primary beam.

For a multiple energy machine it is useful to have at least two detectors with full build-up for each photon energy, calibrated for entrance and exit dose, plus several detectors with 5 mm build-up, calibrated for the different electron energies and for scatter radiation.

Technical specifications

Dimensions and weight:

Electrometers:

Display range:

Resolution:

Interface:

Power supply:

Backup batteries:

Current consumption:

Signal cable:



Apollo 5: 30×16×5 cm, 1.5 kg



Apollo 10: 30×16×7 cm, 1.8 kg

Five or ten independent electrometer channels, each one with digital display plus offset and calibration adjustments on the front panel.

0.00–19.99 Gy

0.01 Gy

Optoisolated RS 232 port with ASCII-communication.

Double insulated mains transformer.

Primary voltage: 230 or 115 VAC, 50–60 Hz.

Size: 12×7.5×7 cm Weight: 0.7 kg

Ni-MH rechargeable batteries, 2×7.2V, nominal capacity 170 mAh.

Apollo 5: < 15 mA

Apollo 10: < 20 mA

Standard length: 20 m, other lengths on request.

Detectors

Dimensions:

Encapsulation material:

Cable length:

Connector:

Nominal sensitivity:

Linearity error:

Temperature dependence:

Directional dependence:

Sensitivity drift:

Common properties:

25×11×6.5 mm

Polyacetal

Standard length 1.2 m, other lengths on request.

BNC

25–30 nC/Gy

< 1% of full scale

0.1–0.3%/degree

< 1% within ±60° for the recommended beam quality.

< 0.3%/kGy

Standard detector types:

Type:

Colour:

Build-up thickness:

Beam quality:



E5

P10

P20

P30

Blue

Green

Yellow

White

5 mm

10 mm

20 mm

30 mm

Electrons
and ⁶⁰Co

4–8 MV
Photons

8–16 MV
Photons

> 16 MV
Photons

Options

Ceiling terminal:

Connector box:

Ceiling mounted terminal with 5 or 10 BNC-connectors for connecting the detectors.

Box with 5 or 10 BNC-connectors for connecting the detectors.

Specifications are subject to change without notice.

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