

HERMES

Quality Assurance System



HERMES

The beauty of simplicity

EASY

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

INTUITIVE

Intuitive to use with a display for each detector and the same layout of the displays and the detectors in the phantom block.

VERSATILE

Use it for all beam qualities, photons and electrons at all available energies, by combining build-up plates and energy filters.

Use it also for advanced checks like beam consistency with head rotation and different gantry angles.

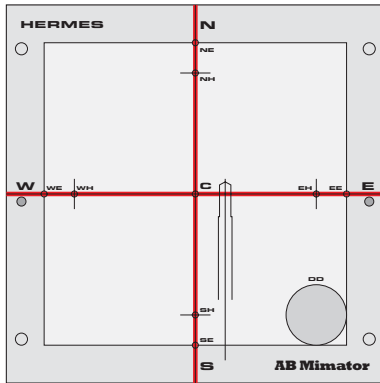
COMPREHENSIVE

Checks the most important accelerator parameters:

- Dose monitor calibration constancy
- Beam energy constancy
- Symmetry and homogeneity
- Light field/radiation field coincidence
- Lasers, field size readout and ODI



Accelerator QA easy as 1-2-3 with the Hermes system:



Set up a 20×20 cm field at 100 cm SSD and align the light field with the square field edge lines.

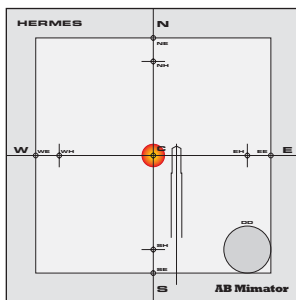
Check that the cross-hair and center cross lines agree.

Check that the laser lines also agree with the center cross lines and the cross-hair shadow.

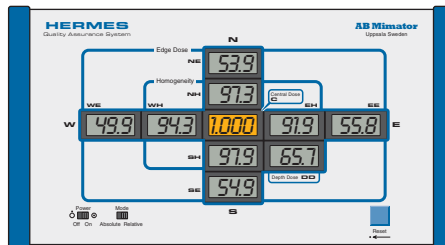
Check that the ODI shows 100 cm and that the phantom surface aligns with the horizontal laser line.

Check that the field size indicators show 20×20 cm.

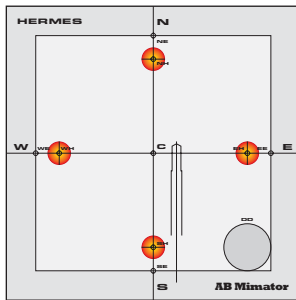
If all the tests are OK, put on the appropriate build-up and energy filters and irradiate the phantom block with 100 monitor units.



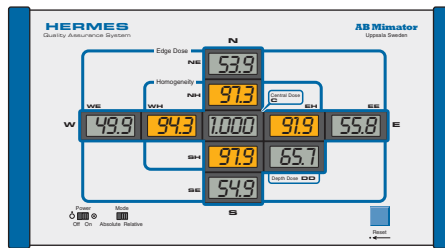
Dose monitor calibration constancy



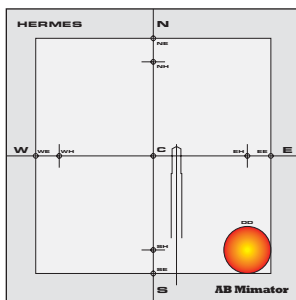
The dose monitor calibration constancy is verified by comparing the reading of the central axis detector with the reference value from the initial calibration.



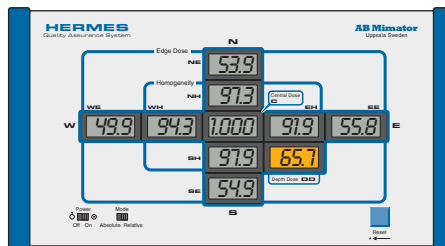
Homogeneity and symmetry



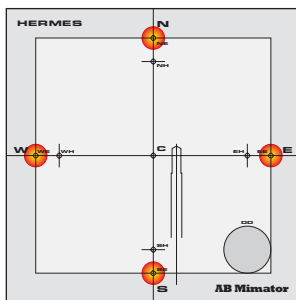
The beam homogeneity and symmetry is checked by reading the percentage values of the four homogeneity detectors (NH, EH, SH and WH) and comparing them with the acceptance limits.



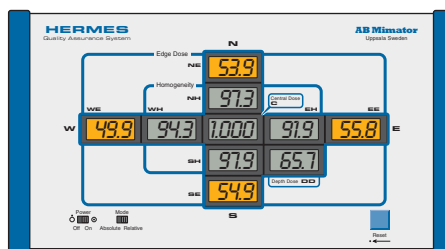
Energy constancy check



The energy constancy is verified by comparing the relative percentage value of the DD-detector with the reference value from the calibration.



Light field alignment



The correspondence between the light field and radiation field is checked by reading the percentage of the four edge detectors (NE, EE, SE and WE) and comparing them with the acceptance limits.

The Hermes 5 does all these checks also, except the energy constancy and light field alignment.

Technical specifications

Electrometer unit

Dimensions and weight:

Electrometers:

Displays:

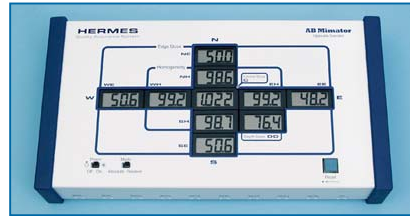
Display range:

Interface:

Power supply:

Backup batteries:

Current consumption:



30×16×5 cm, 1.7 kg

Ten (five in Hermes 5) independent electrometers for integrated dose measurements with offset and calibration trimmers accessible from the front.

Ten (five in Hermes 5) LCD displays with 3½ digits.
Display of absolute dose or percentage of center dose.

0–1.999 Gy with 1 mGy resolution.

RS232 port for control and data readout.

Double insulated mains transformer unit.
Primary voltage 115 or 230 VAC, 50–60 Hz.
Dimensions: 12×7.5×7 cm Weight: 0.7 kg

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

Hermes < 20 mA, Hermes 5 < 15 mA

Phantom block

Dimensions and weight:

Material:

Markings:

Detectors:

Build-up plates:

Energy filters:



25×25×5.5 cm, 3.9 kg

Polystyrene (ABS)

Cross-hair and field edge lines as well as detector locations

Nine semiconductor detectors (five in Hermes 5) under a 5 mm build-up plate. In Hermes there is also a separate energy detector with space for different energy filters.

Three polystyrene build-up plates, 25×25 cm. 5, 10 and 15 mm thick.



Three stainless steel filters 5, 10 and 15 mm thick for photons and three polyethylene filters 5, 10 and 15 mm thick for electrons (not in Hermes 5).



Signal cable

Standard length: 20 m, other lengths on request.

Specifications are subject to change without notice.

The design of Hermes is protected by US patent: 4,988,866

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