

## Calibration instructions for exposure index

### 1 Equipment needed

- Additional filter of either 21 mm aluminum or 0,5 mm copper and 2 mm aluminum
- Dose measuring device

### 2 Requirements



- The image receptor is calibrated in accordance with the manual.
- The dose measuring device is calibrated.

### 3 Preparation

- Put the additional filter (see above)
- No grid
- Place the detector on the bucky resp. imaging table
- Set the focus-film-distance to the detector on 150 cm
- Collimate the full detector surface

### 4 Course of action



- on systems with multiple detectors the calibration of the exposure index must be performed individually for each detector
  - to do so, select the respective detector (table, wall or. free settings) for image acquisition
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- Start digipaX, select suitable patient for acquisition and activate X-ray image acquisition card.
  - Activate the toolbox „Exposure index” and then activate in the context menu of the toolbox the tools for calibration (option „Exposure index calibration”).
  - Push the button „Run the calibration” and possibly select the detector to be used
  - Now, an image series must be created with 70 kV and different mAs values (2.5, 4, 6.4, 10, 16 mAs) for each image.
  - Place sensor of the measuring device under centre on the detector so that the central 10% of the detector surface remain free.
  - Produce some radiographs with the above parameters. To do this, click at first on the acquisition button in the software (in the box for the next job), so that an image will acquire.
  - Ensure for each radiograph that the sensor is not placed within the displayed rectangle for calculation.
  - Enter for each radiograph mAs, the measured dose of the sensor  $\mu\text{Gy}$  (convert it using the formula given below if the image receptor is installed permanently), the displayed median value and the displayed standard deviation into the table (right in the toolbox).
  - Push the button „Complete calibration”.
  - Save the images without any other processing.
  - Deactivate the option “Exposure index calibration” in the context menu of the toolbox.

## 5 Conversion for permanently installed detectors

If the detector is installed permanently and cannot be put on the bucky or imaging table you need to use the following formula to convert the measured dose:

$$D_T = (FFD_M / FFD_D)^2 \times D_M$$

$D_T$  : exposure target value

$FFD_M$  : focus-film-distance dose measuring device

$FFD_D$  : focus-film-distance detector

$D_M$  : displayed value on the dose measuring device

## 6 Tips for recalibration



If major exposure deviations occur repeatedly despite proper settings of X-ray parameters, mask and target value, the exposure index or even the entire X-ray system needs recalibration. Please contact with your technician in this matter.