Nuclear Medical Diagnostics
All Organs

Rotatable Detector Head

Fits into small spaces

Stand

- vertical positioning, rotating or tilting of the detector possible
- allows the examination of patients either while they are sitting or lying
- motorized lift

floor space 100 cm x 100 cm
height 120 cm
lift 60 cm
rotation -90° bis +90°

Detector

case 12 mm aluminium
shielding 8 mm lead
dimensions (in cm) 35x45x45 (HxBxT)
weight 135 kg

Crystal

type NaI
thickness 6,5 mm (5/8")
optimal (up to 400 KeV) 9,5 mm (3/8")
form square
dimensions (cm x cm) 36 x 36
field of view (cm x cm) 30 x 30

Photomultiplier

number 36
form square
assembly square
diameter 60 mm

Collimators

standard LEGP
optionally available LEHR, HEGP, MEGP
special collimator for thyroid examinations

USB connection adapter

Control of the electronics
transfer of the results to the computer
via USB 2.0

Electronics Case

configured as tower case
dimensions (in cm): 40 x 20 x 50 (H x W x D)

power supply for low voltage (+- 5 volt)
power supply for high voltage (0-1500 V)
switchable by computer

Digital Camera Electronics

with high performance FPGA processor (integrated in detector case) consisting of:

36 digitally controlled preamplifiers for

- adjustable amplification with 24 bit
- adjustable offset with 12 bit
- LED-calibration for photomultipliers
- differential output to A/D-converter

Connection and distribution board

Connection of the signals
between preamplifier and processor board

FPGA processor board
with 32 A/D converters

40 MHz continuous sampling rate per channel
integration time 25-1000 nsec, adjustable by software
processing rate about 500,000 incidents/sec.
digital offset correction
pileup recognition
calculation of the digital summation signals for coordinates and energy

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## Technical Specifications

### Range of Energy
- **standard** 60-200 KeV
- **optional** 60-400 KeV

### Performance parameters (DIN IEC 789)
- **intrinsic spatial resolution** (for 6,5'' crystal)
  - FWHM <3,3 mm
  - FWTM <5,0 mm
- **uniformity**
  - integral <3,5%
  - differential <3,0%
- **linearity**
  - absolute <0,4 mm
  - differential <0,2 mm

### Count rate processing
- **max. count rate** 250,000 cps
- **intrinsic energy resolution** <10%

### Ambient Conditions
- **temperature** operating range 18° - 26°
- **relative humidity** operating range 20 - 80 % (non-condensing)
- **change of temperature** max. +3° /h
- **line voltage** 230 V, 50 Hz, 16 A
- **heat dissipation** 450 W
- **current** approx. 2 A

### Minimal Spatial Requirements
- **stand with detector** 120 cm x 100 cm
- **electronics** 60 cm x 45 cm
- **peripherals** 120 x 80 cm (recommended)

### Weight
- **Camera system** 350 kg

## Software
- **Operating software** LINUX
- **User software and manual** available in English, French and German

## Nuclear Medical Software Packages (NSP):
- **NSP-00** basic software for general purpose functions (organ-independent) including quality checks
- **NSP-01** thyroid scintigraphy
- **NSP-02** extension package organs:
  - bone, lung, kidney, parotis, lymph system, liver, stomach, esophagus, gastrointestinal tract
- **NSP-03** extension package heart (planar)

## Hardware
- **Current specifications**: see Processing System GMS-586

### Peripherals
- **TFT colour monitor** 19"
- **colour laser printer** optional
- **mouse, keyboard**
- **foot switch**

## Additional Equipment
- **OP-301 Upgrade I-131 (diagnostics, uptake)**
  - crystal 9,5 mm
  - collimator High Energy Thyroid (HETH) incl. cart

### DICOM
- **Store, Query/Receive, Print, Worklist, MPPS**

- **Uninterruptable Power Supply (UPS)**