

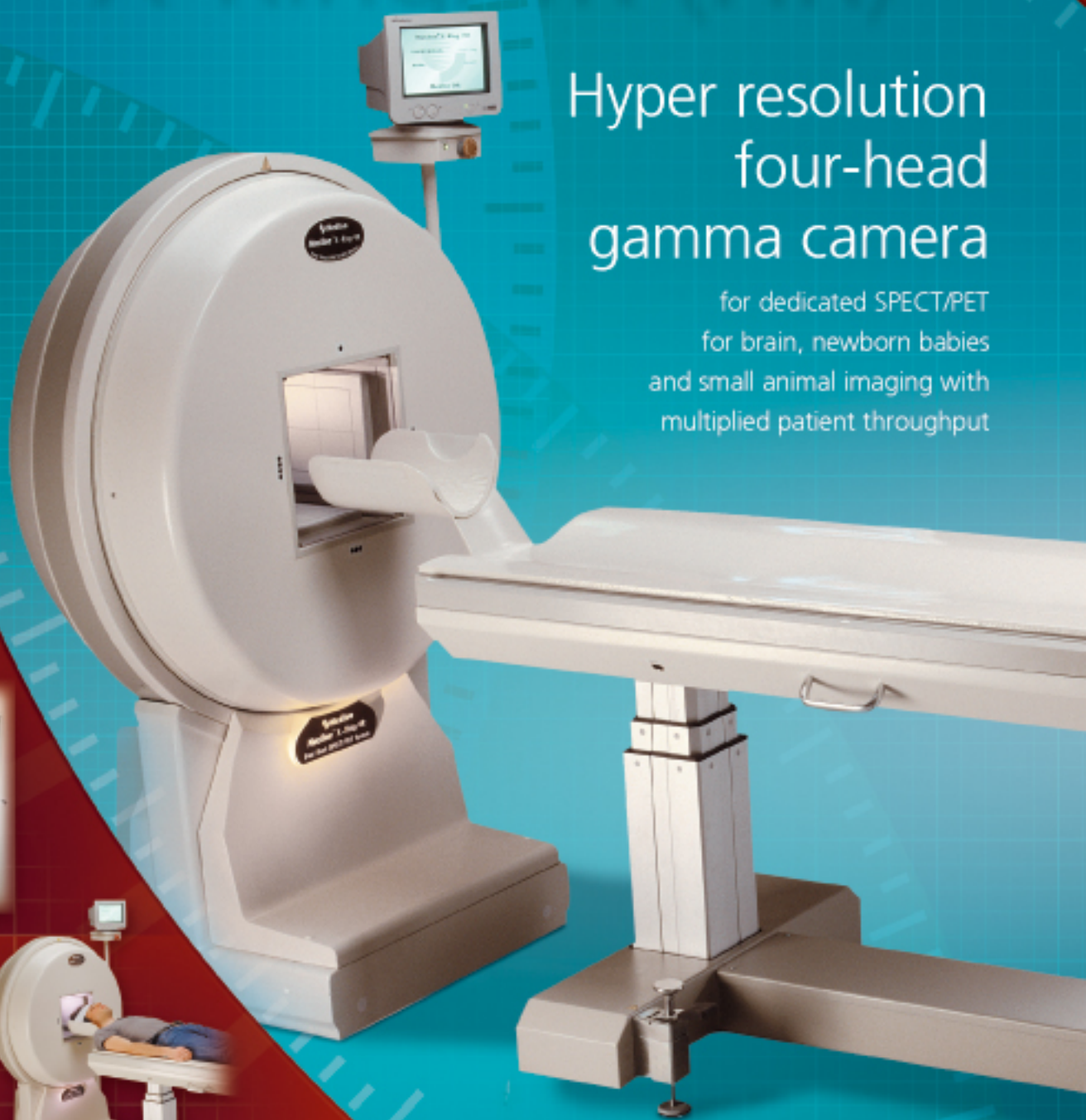
# Nucline™

DEDICATED LINE

## X-Ring/4R (HR)

Hyper resolution  
four-head  
gamma camera

for dedicated SPECT/PET  
for brain, newborn babies  
and small animal imaging with  
multiplied patient throughput



**Mediso**

Medical Imaging Systems

# Nucline™ X-Ring/4R (HR)

## 4-Head SPECT/PET Imaging System Dedicated for Brain, Pediatric, Small Animal, etc. Studies

### DETECTOR

Four newly developed rectangular high stability detectors assembled with high optical and mechanical quality

- NaI(Tl) scintillation crystal  
size: 260 x 246 mm  
thickness: 6.4 mm, 15.9 mm or 25 mm pixelated
- photomultipliers:
  - 33 pcs of high quantum efficiency PMTs/detector (60 pcs /detector in HR model)
  - characterized by improved energy resolution, magnetic shielding and long-term stability
- lead shielding thickness: 16 – 36 mm

### DETECTOR ELECTRONICS

A compact, highly integrated, one board easily serviceable construction without tuning potentiometers

- computer controlled PMT autotuning processor for fast PMT gain stabilisation and adjustment
- computer controlled ODC (Optical Distortion Correction) electronics
- high precision summation electronics
- active high voltage bleeder with integrated HV module

### ACQUISITION CONSOLE

Ergonomic acquisition WS console stand on wheels - Full-digital electronics assembled from the latest "high-tech" elements including fast PCI bus acquisition interface

- Intel Pentium 4, 2.26 GHz computer with 64 bit memory handling
  - 512 Mbytes (333 MHz) fast program memory
  - 512 kbytes cache memory
  - 80 Gbytes hard disk drive
  - 17" high resolution TFT colour monitor
  - 1.44 Mbytes floppy drive
  - CD-RW drive
- 40 MHz X,Y,Z A/D conversion
- 4 independent energy channels
- multi-channel analyser up to 1024 channels (40 - 600 keV)
- 4096 x 4096 pixel image digitising
- digital corrections:
  - direct addressing TS® simulation linearity correction with FOV increasing technology
  - energy correction
  - uniformity correction without count rate loss
  - automatic real time uniformity cross-correction for the different collimators
  - three-phase pile up recovery and resolution enhancing technology for high count rates

### CLINICAL PROCESSING WORKSTATION

Dedicated nuclear medicine workstation with **Interview™** software package running on Windows XP

- 64 bit 2.26 GHz Intel Pentium 4
- 512 Mbytes ( 333 MHz ) RAM
- 512 kbytes cache memory
- 64 Mbytes 64 bit graphic card
- 80 Gbytes hard disk drive
- 1.44 Mbytes floppy disk drive
- CD-ROM drive
- 21" 1600 x 1200 high resolution colour monitor
- fast Ethernet network interface

### STAND

- New easy-to-install four-detector gantry
- Intel Pentium III based intelligent gantry electronics
- 15" colour high resolution TFT display
- high stability, fixed position SPECT gantry
- pre-programmed robotic gantry motions for positioning
- 90°, 180° and 360° SPECT movements

### COLLIMATORS

- LEAP (Low Energy All Purpose) collimator set
- LEHR (Low Energy High Resolution) collimator set
- LEUHR (Low Energy Ultra High Resolution) collimator set
- MEGP (Medium Energy General Purpose) collimator set
- HEGP (High Energy General Purpose) collimator set

### IMAGING TABLE

- Integrated imaging table for SPECT and whole body examinations
- motorized vertical movements (250 mm)
- motorized whole body gantry motion (optional)
- low attenuation (< 5%) 2.5 mm thin aluminium pallet
- special head holder
- max. 180 kg patient weight

### DOCUMENTATION

- Automated bi-level macro-controlled printing and reporting through MS-Office XP. High quality inkjet colour and b/w hardcopy
- on normal paper
- on premium photo paper
- on dull X-ray-like film
- 2400 dpi print quality with HP PhotoRET III technology
- special printing software for faithful printing

### NEMA SPECIFICATIONS (HR detector) (cristal thickness 6.4 mm)

- Field of view: 230 mm x 215 mm
- Energy range: 40-200 keV (40-600keV – with coincidence package)
- Intrinsic energy resolution for <sup>99m</sup>Tc: 9.7%
- Intrinsic Flood Field Uniformity
  - differential CFOV: 1.9%      integral CFOV: 2.4%
  - differential UFOV: 2.4%      integral UFOV: 2.9%
- Intrinsic Spatial Resolution: CFOV 2.3 mm (FWHM—SPECT mode)
- Intrinsic Spatial Linearity
  - differential CFOV: 0.18 mm      absolute CFOV: 0.38 mm
  - differential UFOV: 0.20 mm      absolute UFOV: 0.40 mm
- Max. count rate with full correction: > 200,000 cps (SPECT mode)  
> 1.5 Mcps (coincidence mode)

- System Spatial Resolution:
  - with LEUHR collimator: 5.6 mm (FWHM)
  - coincidence mode: 4.2 mm
- System sensitivity (with LEUHR collimator): 100 cpm / μCi

### OPTIONAL ACCESSORIES

- Coincidence imaging package
- MODEM long-distance service kit ( hardware and software )
- Colour video imager or colour laser printer
- CODONICS dry film imager
- Tuning and test phantoms
- Super high resolution SPECT phantom