

# Nucline™ UNIVERSAL LINE SPIRIT DH-V



Variable angle  
dual-head  
gamma camera

for high precision and high throughput  
SPECT and whole body imaging



**Mediso**  
Medical Imaging Systems

# Nucline™ SPIRIT DH-V

## Variable Angle Dual-Head Digital Gamma Camera for SPECT, Whole Body and Planar Imaging

### DETECTOR

- Two newly developed rectangular jumbo FOV high stability detectors assembled with high optical and mechanical quality
- NaI(Tl) scintillation crystal  
size: 585 x 470 mm  
thickness: 9.5 mm, 15.9 mm or 25 mm pixelated
  - photomultipliers:  
55 pcs of high quantum efficiency PMTs  
characterized by improved energy resolution, magnetic shielding and long-term stability
  - lead shielding thickness: 12 – 32 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

### GANTRY

- 180 and 101 or 90 degree variable angle head positions with high precision positioning
- small footprint robust mechanical design with improved safety factor
- industry standard CAN connected automation computer
- pre-programmed robotic gantry motions
- full automatic motion calibrations
- maintenance-free mechanical design

### COLLIMATORS

- LEGP, LEHR, LEUHR, MEGP, HEGP collimator pairs shipped with dual sided cart.

### IMAGING TABLE

- Universal imaging table for SPET and whole body examinations
- intelligent CAN connected industry standard interface to gantry
  - motorized vertical movements (250 mm)
  - motorized whole body motion
  - low attenuation (< 5%) 2.5 mm thin aluminium pallet
  - max. 180 kg patient weight
  - accessories: arm-holder for WB-, arm-head-holder for heart and head-holder for brain examinations; integrated source-holder

### 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

- Field of view: 530 mm x 390 mm  
Energy range: 40 – 600 keV  
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 3.6 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: > 220,000 cps (SPECT mode)  
>1.5 Mcps (coincidence mode)
- System Spatial Resolution:  
- with LEHR collimator: 7.3 mm (FWHM)  
- coincidence mode: 4.8 mm (15.9 mm crystal thickness)  
System sensitivity (with LEHR collimator): 160 cpm /  $\mu$ Ci

### OPTIONAL ACCESSORIES

- Dual infrared line autobody contour facility
- Attenuation correction attachment (with Gd-157 sources)
- Coincidence imaging upgrade package
- ECG triggering device for cardiac gated studies
- MODEM long-distance service kit ( hardware and software )
- Colour video imager or colour laser printer
- CODONIX dry film imager
- Tuning and test phantoms
- Refillable isotope pen for anatomical marking