

# 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 pixelat
- 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<sup>®</sup> 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

- extra large rectangular full digital high resolution detector

- highly integrated, one-board PET-based detector electronics

- <sup>18</sup>F/DG/PET imaging options (16mm or 25 mm pixelated crystal)

- intelligent gantry electronics with 180 and 90 or 101 degree head positions

- universal, easily movable patient pallet made of low attenuation (< 5%) 2.5 mm thin aluminium

- scanning dual-line infrared auto body contour for all collimators

### 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–SPET mode)
- Intrinsic Spatial Linearity  
differential CFOV: 0.18 mm absolute CFOV: 0.38 mm  
differential CFOV: 0.20 mm absolute CFOV: 0.40 mm
- Max. count rate with full correction:  
>220,000 cps (SPET 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 LEAP collimator):  
160 cpm/μCi

### 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