NeuViz ACE UP

Product Datasheet

Neusoft Medical Systems

NeuViz ACE UP

Built on the intelligent workflow with simple and easy tablet operation, NeuViz ACE UP provides medical staff and patients with a flexible and comfortable examining environment. For precise performance in your work, AI-based cutting-edge accurate results help you quickly diagnose in clinical routine. Strong capabilities can be fully integrated into the diagnosis workflow to support all your patients' needs. You can stretch yourself to get the most out of your budget with industry-leading design, of which high-end technology will ensure low cost and reward you with constant business growth.

Hardware

Gantry

Aperture	700 mm
Focus to Isocenter Distance	535 mm
Focus to Detector Distance	1003.4 mm
Scan FOV	506 mm; 330 mm; 250 mm
Rotation Time (360°)	0.71 s, 0.8 s, 1.0 s, 1.5 s, 2.0 s
Partial Scan Time(240°)	0.47 s, 0.53 s, 0.66 s, 0.99 s, 1.32 s
Tilt	Digital tilt ±50°
Information Display System	LCD located on the top edge of the gantry for displaying system time, tube heat capacity, and patient information, including patient name, gender, patient ID and patient age. The displayed information includes Stand-by, Positioning, ECG, heart rate, Scanner Ready, etc.
Operation Panel	2 sets on the right and left sides of the front gantry
Laser Light	2 internal laser light localizers and 4 external laser light localizers with accuracy within ±1mm
Cooling Method	Air cooling
Slip Ring	Low voltage slip ring technology

Patient Table

Max. Table Load	211 kg; 300 kg*
Horizontal Travel Range	1770 mm
Horizontal Travel Speed	1–310mm/s
Vertical Travel Range	555–1015mm
Max. Vertical Travel Speed	211 kg: 50 mm/s; 300 kg: 15 mm/s*
Couch Step Movement Accuracy	±0.25 mm
Table Material	Carbon Fiber

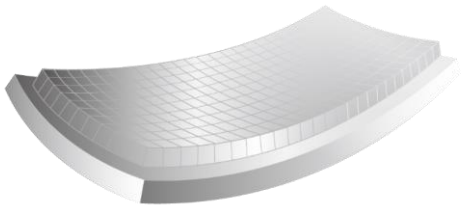
It enables increased raw data density and improved resolution, delivering consistent image quality. The high cooling rate minimizes the waiting time to accommodate larger patient volume.

X-ray Tube

Anode Heat Storage Capacity	3.5 MHU; Equivalent to 23.3 MHU with ClearInfinity
Max. Cooling Rate	8.75 kW (742 KHU/min)
Focal Spot Size	0.7 × 0.8 mm (Small) 1.2 × 1.4 mm (Large)
Cooling Method	The oil-air cooling system is employed, in which the oil inside the tube is circulated to the heat exchanger, and then dissipated through the fan.

Generator

Max. Power	32 kW Equivalent to 213 kW with ClearInfinity
Type	High frequency
Tube Current Range	10–320 mA; Equivalent to 10–2133 mA with ClearInfinity
Tube Voltage	60 kV, 70 kV, 80 kV, 100 kV, 120 kV, 140 kV



New designed A-STAR detector combines with its powerful stabilization capabilities, with extremely low electronic noise and high absorption improves the utilization of X-Ray and ensures high image quality even during low dose scanning.

Data Acquisition System

Max. Number of Slices/Rotation	64 slices acquired 230 slices reconstruction
Detector Rows	32
Detector Coverage	24 mm
Detector Material	Solid-state, GOS Ceramic
Detector Elements	864 × 32
Total Channels per Slice	1728
Number of Projections	6960

*Helical

System Performance

Surview

Max. Scan Length	1710 mm
Views	A.P., Lateral, Dual
Acquisition mode	2 × 0.5 mm
Real-time Surview	Yes

Axial Scan

Acquisition Mode	64 × 0.75 mm, 32 × 0.75 mm, 16 × 0.75 mm, 8 × 0.75 mm, 4 × 0.75 mm, 2 × 0.5 mm
Reconstruction Slice Thickness	0.5 mm, 0.75 mm, 1.5 mm, 3.0 mm, 6.0 mm, 12.0 mm
Max. Scan Length	1780 mm

Spiral Scan

Acquisition Mode	64 × 0.75 mm, 32 × 0.75 mm, 16 × 0.75 mm, 8 × 0.75 mm, 4 × 0.5 mm
Reconstruction Slice Thickness	0.5 mm, 0.75 mm, 1.0 mm, 1.25 mm, 1.5 mm, 2.0 mm, 3.0 mm, 4.0 mm, 5.0 mm, 10.0 mm
Max. Scan Time	≥ 305 s (uninterrupted)
Max. Scan Length	1750 mm
Slice Increment	0.1–20 mm
Pitch Range	0.1–2.1 (continuous)

Image Reconstruction

Max. Speed	FBP: ≥ 30 images/s ClearView: ≥ 20 images/s ClearInfinity: ≥ 15 images/s
Recon FOV	25–506 mm 700 mm (Extension) *
Recon Matrix	512 × 512, 768 × 768, 1024 × 1024
CT Value	-32768–32767
Display Matrix	1024 × 1024

Image Quality

High Contrast Resolution	The central dose of the head is not more than 40mGy, and the central dose of the body is not more than 20mGy.
	X-Y axis 22 lp/cm @ 0%MTF
	Z axis 14 lp/cm @ 0%MTF
Low Contrast Resolution	**Subjective measure** 2 mm @ 0.3%, the body CTDIvol dose ≤ 25mGy
	Objective assessment (FBP) 2 mm @ 0.3%, the body CTDIvol dose ≤ 18mGy
	Objective assessment (ClearView) 2 mm @ 0.3%, the body CTDIvol dose ≤ 9mGy
	Objective assessment (ClearInfinity) 2 mm @ 0.3%, the body CTDIvol dose ≤ 3mGy
Image Noise	≤ 0.27% (central dose of head ≤ 40mGy)
Uniformity of CT Value	Water CT number is ±4HU (the head CTDIvol ≤ 40mGy)
Accuracy of CT Value	Air: -990–-1010 HU Water: -4–4 HU

Workplace Overview

Console Workplace System

Console workplace provides a smart and reliable workflow for data acquisition, image reconstruction, and routine processing at CT scanner console.	
CPU	≥ 14 C Performance C: 6 C, 3.5–5.1 GHz Energy efficiency C: 8 C, 2.6–3.9 GHz
RAM Storage	64 GB
Image Storage	≥ 1 TB
Monitor	24 inches
	1920 × 1200 resolution
Dual Monitors	Optional

AVW Workplace System**

AVW workplace provides a unique advantage of an efficient multi-modality diagnostic workflow at a single workplace. It allows management of the clinical diagnostic workflow anywhere within a clinical setting.	
CPU	≥ 6 C, 3.0–4.6 GHz
RAM Storage	≥ 16 GB
Data Disk	≥ 1 TB
Monitor	24 inches
	1920 × 1200 resolution
Dual Monitors	Optional

Full Range Clinical Applications

Standard Applications

2D

2D application provides different layout options to display one more series. 2D supports zooming the image, drawing ROI and other basic operations.

Measurement Tools

ROI drawing	Rectangle, polygon, circle and irregular circle
Statistical Evaluation	· Standard deviation · Area/volume · Histogram · Min./max./mean value
Annotation	Text, arrow

3D

Includes following visualization functions: Volume Rendering, MIP, MinIP, SSD, AIP;
Supporting Image Cutting, Manual Segmentation, Tissue Management, Volume Calculation, Batch;
Volume Compare;
Saving and reading processing results

MPR

Multi-Planar Reformat (MPR):
Coronal, Sagittal, Axial Image Display;
Oblique MPR;
Defining CPR Image;
Batch;
CT Image Fusion: Providing fusion visualization of 2 CT images; Providing measurement tools

DICOM Viewer

DICOM Viewer is a standalone application burned on disc to help users view CT DICOM images in different layouts. Users can make operations and ROI measurements on images.
•Support multi-series layout and multi-image layout
•Annotating and measuring
•Zoom, pan, adjust window/level, enhance, smooth, etc.
•Rotate the images by any angle
•View DICOM information
•Cine Images

Multi-language Switch

When operating and using on Console and Workstation, the language of the interface and necessary software can be switched to the following languages:

· Chinese · English

Auto Voice

A standard set of commands for patient communication before, during and after scanning is available in the following languages:

· Arabic	· Chinese	· English
· Danish	· Dutch	· French
· Georgian	· German	· Hebrew
· Italian	· Japanese	· Norwegian
· Russian	· Spanish	· Swedish
· Turkish	· Portuguese	

Image Transfer/Networking

Interface for transfer of medical images and information using the DICOM standard.
Facilitates communication with devices from different manufacturers.
DICOM Storage (Send/Receive)
DICOM Query/Retrieve
DICOM Basic print
DICOM Get Worklist (HIS/RIS)
DICOM MPPS
DICOM Storage Commitment
DICOM Viewer on CD

Report

Create report
Edit report
Confirm report
Save report
Manage report
Export report
Manage case template
Template management: create, delete and edit
Support structured reports

Film

Film Edit
Print Preview
Images Management
Basic gray and color DICOM Print Function
Normal Printing
Send Images to Report
Send Images to other Data Sources
Show surview lines
Allow users to set and store camera parameters

Dual Monitor*

Console dual monitor support, and here is the advice. When scanning on the left monitor, the user can register on the right monitor, access the image information of the patients, and do the DICOM printing and sending (based on the current technical accumulation, a better resource reuse pattern to the vice monitor can be designed).

Low Dose Solutions

It encompasses a set of techniques, programs and practices based on the ALADA (As Low As Diagnostically Acceptable) principle to support perfect image quality at low dose.

AutokV

Automatic kV setting optimizes CNR and minimizes radiation dose based on different organs and contrast scan.

240 Degree Exposure

Dose to patient and attending physician during CCT is reduced.

OrganSafe

In Axial Scan, organ safe function can selectively reduce the radiation dose of sensitive organs such as eyes, thyroid, thymus, breast, small intestine, gonads, etc. This function can reduce radiation doses of the chest or eyes and other sensitive organs without affecting the image quality.

3D Dose Modulation

Tube current is modulated based on the anatomy in the scan field.

Auto FOV**

Select the surview image containing the part to be scanned, and automatically mark the FOV range based on AI technology, and the FOV range can be adjusted manually. Supported scan parts include head and lungs.

Pediatric Protocols

Specific for pediatric anatomy

Dose Check

Dose alarm prevents over-radiation of patients.

Dose Report

Dose report of the current is automatically generated, which can be printed or saved.

Advanced Clinical Applications

Bolus Tracking

Through the periodic low-dose scan, the CT value of certain ROI after countdown from contrast agent injecting is tracked, and the clinical scan is triggered when the monitored CT value goes into the preset CT value region. This can prevent patients from absorbing redundant ray especially in the initial period of contrast agent injection.

Spiral Auto Start (SAS)

For Bolus tracking and Timed scan, timing process of Tracker series or 1st series of Timed scan can be triggered by the injector. After the end of PID(Post Injection Delay), the scan will begin.

CCT Scan**

CCT Single: Pedal is pressed once to trigger one revolution half scan, and 1/3/5 images are generated.

CCT Continuous: While pedal is pressed, continuous half scans run, and one images is generated for every revolution.

CCT Fluoro: While pedal is pressed, continuous scans run, and images are reconstructed and displayed in cine mode.

ClearView

ClearView iterative reconstruction provides nine different recon levels, respectively corresponding to different levels of image noise.

Compared with FBP under the same image quality, the head dose can be reduced by up to 50%, and the body dose can be reduced by up to 60%;

Compared with FBP at the same dose, the head low-contrast resolution can be improved by no less than 25%, and the body low-contrast resolution can be improved by no less than 45%;

Compared with FBP under the same dose condition, the image noise can be reduced by no less than 68%.

ClearInfinity

ClearInfinity is a CT image reconstruction technology based on deep learning, which uses deep learning Convolutional Neural Networks (CNN: Convolutional Neural Networks) to achieve image noise reduction and image quality optimization.

Compared with FBP under the same image quality, the head dose can be reduced by up to 60%, and the body dose can be reduced by up to 85%;

Compared with FBP at the same dose, the head low-contrast resolution can be improved by no less than 60%, and the body low-contrast resolution can be improved by no less than 135%;

Compared with FBP under the same dose condition, the image noise can be reduced by no less than 90%;

Compared with FBP under the same noise conditions, the spatial resolution can be improved by no less than 88%.

Vessel Analysis

Bone Removal function;
Vessel Extraction and Labeling;
Editing vessel centerline;
Vessel Measurement Tool;
Saving and reading processing results.

Virtual Endoscopy

Providing fly-through for colon, trachea, and vessel;
Define fly-through path;
Manual navigation mode;
Saving navigation results.

Cardiac Scan**

Prospective ECG scan and multi-phase reconstruction;
Cardiac scan of single cycle is supported

Cardiac Calcium Scoring*

Measuring Calcium Score and displaying Pseudo Color;
Displaying Vessel Name, Plaque Number, Pixel Number, Volume, Area Score, Continuous weight factor Score and Mass Score;
Can add vessel, delete vessel, rename and modify Vessel color;
Saving and reading processing results.

NeuAI Positioning

The system collects and displays the natural image information of the human body and automatically calculates the scanning position by combining the human body image according to the scanning protocol and using artificial intelligence technology. At the same time, the technician can manually adjust the scanning position on the human body image; automatically adjust the bed height according to the scanning protocol; Support patient position, attitude and collision detection.

4D Perfusion***

Through the perfusion of tissues and organs on the cellular level, 4D perfusion software package reveals diseases, including pathological and physiological changes in cirrhosis and tumors. It provides a multi-dimensional display of patient data through intelligent analysis method, which helps the formulation of pre-surgical and postsurgical treatment plans.

4D Scan**

4D scan, to support shuttle scan with bi-direction table movement, and 4D imaging can be achieved.

Real-time MPR

Real-time MPR function supports coronal and sagittal plane reconstruction while scanning and doing axial reconstruction.

MAR+

MAR+ is the most advanced metal artifact reduction algorithm recon post processing technology. It removes the artifacts caused by metal or high CT value.

Prism Imaging**

It is designed to offer spectral imaging by KV switching which can add tissue characterization to morphology based on different materials

Prism Viewer*

Prism Viewer allows users to view images of 101 energy levels with a variety of parameters and visual tools to assist in accurate lesion detection.

Bone Density***

Bone density is an important indicator of bone mass, which could reflect the degree of osteoporosis and be an important basis for predicting the risk of fracture. Bone Density Analysis application allows measurement of bone mineral density, providing a powerful tool for the diagnosis of clinical osteoporosis and determination of fracture healing.

Lung Nodules ROI***

Automatic extraction of lung nodules shows the 3D shape, volume, and edges of the nodules. The magnified visualization of the 3D structures of the nodules clearly displays the neighboring nodules, as well as the relationship between the nodules, the blood vessels and the pleura. The follow-up function allows closer observation of the nodule changes to help determine the nature of the nodule.

Fat Analysis*

Be used to analyze the fat of abdomen, including calculating the area of Subcutaneous Fat, Abdomen Fat, Waist circumference, etc.
Segment the fat of Subcutaneous and Abdomen function;
Saving and reading processing results.

Virtual Colonoscopy*

Auto-segmentation Colon;
Extraction Colon centerline;
Editing segmentation result and centerline;
Fly-through;
Saving and reading processing results.

Lung Density Evaluation*

Extraction of both lung, and displaying 3D image of the left and right lungs and the trachea;
Can calculate the volume of emphysema, left lung, right lung and trachea;
Can calculate the percentage of emphysema volume;
Saving and reading processing results.

iCentering

Using the surview image data, artificial intelligence technology is used to calculate the patient's distance from the center of the scan and adjust it.

A-Touch operation system**

Display basic examination descriptions such as patient information and positioning;

Display the list of scanning parts, and select the relevant protocol (the protocol content is consistent with the console);

Display the positioning image collected by the camera in real time, and display the automatic positioning key points/lines (the key points/lines can be adjusted) (AI positioning option);

Bootable scan, One-button position (NeuAI Positioning).

Liver Analysis +***

The Liver Analysis+ software package assists doctors in analyzing liver and its lesion blood supply system. The main function includes liver segmentation, liver section, extraction of liver lesions, extraction of hepatic artery, hepatic vein, portal vein, multiphase image fusion, and the saving and transmitting of processing results.

Bone Measurement***

The Bone Measurement Software provides femur head segmentation and various bone data measurement functions, allowing you to observe bone growth. It can also send the measurement results to reports.

ThreeDPrint***

The ThreeDPrint software package is used to import the segmentation results data from an application to the ThreeDPrint application. It uses algorithms to convert the segmentation results data into grid data and then displays it on the interface. The user can perform various operations on the grid data, which allows editing and optimization to obtain a high-quality grid data model. This grid data model is then saved in a file format the 3D printer can recognize and finally be printed out in 3D.

Brain Perfusion*

Playing images;
Displaying time Maximum Intensity Projection (tMIP) image;

Defining reference vessel and displaying the TDC (Time Density Curve);
Calculating and displaying Cerebral Blood Flow (CBF), Cerebral Blood Volume (CBV), Mean transit time (MTT), and Time to Peak (TTP) images;
Defining Region of Interesting (ROI);
Saving and reading processing results.

BrainStroke***

The BrainStroke software package provides Brain Hemorrhage measurement, cerebral perfusion analysis and perfusion maps based on the threshold set. It helps physicians develop pre-operation and post-operation treatment plans and allows them to analyze patients' lesion sites better, providing an important reference for the formulation of clinical treatment plans.

Lung Nodules Analysis*

Visualization Lung parenchyma;
Can manually segment nodules and view lesions information;
Follow up support ;
Saving and reading processing results.

Nerve System DSA*

Can subtract CTA data between contrast and non-contrast;
Can remove bone;
Can display subtract results and generate new data series.

Dental Analysis*

Displaying Axial Image and 3D Image;
Define and edit curve;
Creating panoramic image and sectional images;
Creating true-size film images;
Saving and reading processing results.

Tumor Evaluation*

Providing Manual definition lesions;
Displaying tumor measurement results, including RECIST Diameter, WHO Area, Lesion Volume, etc.;
Follow up and compare support;
Saving and reading processing results.

Body Perfusion*

Liver Protocol, Display the following images:
tMIP: time Maximum Intensity Projection Average image
CBF: Cerebral Blood Flow
TTP: Time to Peak
HAP: Hepatic Artery Perfusion
HPP: Hepatic Portal Perfusion
HPI Hepatic Portal Perfusion Index
HAI: Hepatic Artery Perfusion Index
TLP: Total Liver Perfusion
Tumor Protocol, Display the following images:
tMIP: time Maximum Intensity Projection
Average image
BF: Blood Flow
BV: Blood Volume
MTT: Mean Transit Time
PS: Permeability Surface
Saving and reading processing results.

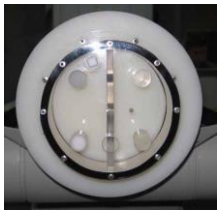
Super Fusion***

The Super Fusion software fuses the images of a patient taken with different devices. This gives physicians a comprehensive overview of all imaging results and helps in diagnosis.

* Optional feature for Host workplace and AVW workplace
** Optional feature for Host workplace only
*** Optional feature for AVW workplace only

Accessories

Standard accessories

			
NMS Head Holder Assembly	Head Holder Cushion	Arm-Head Cushion	Knee Joint Cushion
			
Couch Extension Cushion	Couch Extension	Belt	QA Phantom

Optional accessories

			
Cervical Vertebra Cushion	Coronal Cushion	Coronal Head Holder	Cradle Handle
			
Arm Support	Head Side Cushion	Flat Head Holder	Infant Cradle

System Running Requirements

Environment

Temperature of Scan Room	18–24°C
Temperature of Operation Room	18–28°C
Humidity of Scan Room	30–60% (no condensation)
Humidity of Operation Room	20–80% (no condensation)
Temperature of Transportation and Storage	-20–+55°C
Humidity of Transportation and Storage	10–90% (no condensation)
Running Noise	Less than 70 dB, A-weighted

Power Supply Requirements

Rated Power	50 kVA	**Input Voltage**	380/400 VAC
Voltage Variation	±10%	**3-phase Unbalance**	≤ 5%
Frequency	50/60 Hz ± 1 Hz	**Ground Resistance**	4 Ω (independent grounding system) 1 Ω (complex grounding system)

Note: All parameters mentioned above subject to change without notice.