PHILIPS

Computed Tomography

Incisive CT

Intellect at every step

Incisive CT Plus specifications

Contents

1. Introduction

Philips Incisive CT Plus helps you meet some of your organization's most pressing challenges. Incisive CT Plus offers intellect at every step, from acquisition through results, and across all fronts: financial, clinical and operational. Like never before, operator and design efficiencies come together for wise decisions from start to finish.

By offering smart approaches from the start, Incisive CT Plus:

Elevates your business	**Delivers** intelligence that adapts to you	**Brings** predictability to an unpredictable world
Reduce operational costs and meet financial objectives. • Tube for Life guarantee* to lower total cost of ownership • Stay up-to-date with Technology Maximizer • Expansive in-room upgradeability	Use AI to speed workflow and aid diagnostic confidence. • Do more from the scanner with OnPlan patient-side gantry controls • Precise Suite improves the experience from the start of the scan through reconstruction and review, and includes – Precise Image – Precise Position – Precise Cardiac – Precise Intervention • IntelliSpace Portal offers a rich portfolio of applications for advanced visualization	Reduce downtime and improve efficiency and care. • Remote services with proactive monitoring including vMRC Smart Card to keep you up and running • PerformanceBridge for continuous improvement solutions • DoseWise Portal provides a holistic approach to dose management

Feature	Specification
Effective power with iDose[4]	94 kW, 105 kW**
Slices	128
Coverage	40 mm
Maximum scannable range	1,860 mm (2,000 mm)†
Bore size	720 mm
Reconstruction speed	Up to 80 IPS
Anode effective heat capacity	≥25 MHU_{eff}; direct cooling

Note: Effective power is calculated by using generator power (72 kW, 80 kW**) and using iDose[4] at the same time. This gives Incisive CT Plus effectively more power.

* Life of product (or CT system) is defined by Philips as 10 years. Tube for Life guarantee availability varies by country. Please contact your local Philips sales representative for details.
** Optional. Not available in China.
† Optional.

Precise Suite is considered work-in-progress and is not CE-marked and not available for sale.

2. Gantry

Feature	Specification
Aperture	720 mm
Rotation times	0.35*, 0.4, 0.5, 0.75, 1.0, 1.5 seconds for full 360° scans
Focus-isocenter distance	570 mm
Focus-detector distance	1040 mm
Intercom system	Two-way connection between the gantry and console area
Gantry tilt (standard table)	Scannable tilt range: -24° to 30° with 0.5° increments

* Optional

3. Patient table

Feature	Standard table	Bariatric table
Maximum scannable range	1,860 mm	2,000 mm
Pitch	0.15 – 1.5	0.15 – 1.5
Z-position accuracy	+/- 1.0 mm	+/- 0.25 mm
Longitudinal speed	1–300 mm/s	1–300 mm/s
Lowest table height	530 mm	430 mm
Maximum load capacity	205 kg (452 lb)	307 kg (675 lb)

4. Accessories

Accessories, standard table
Standard
Table pad
Foot extension
Foot extension cushion
Head holder
Head rest cushion
Flat head holder cushion
Patient straps and slideway unit
Knee pad
Neck cushion
Optional
Coronal head rest
Coronal head cushion
Flat head rest
Table side handle
Arms support
Foot pedal
Arms-over-head rest
IV pole holder
Paper roller

Accessories, bariatric table
Standard
Table pad
Head holder
Head rest cushion
Patient straps
Knee pad
Foot pedal
Optional
Arms support
Radiology flat top
Foot pedal
Arms-over-head rest
IV pole holder
Paper roller

5. Imaging chain

5.1 Generator

Feature	Specification
Effective power with iDose[4]	94 kW, 105 kW*
Power rating	72 kW, 80 kW*
kVp setting	70, 80, 100, 120, 140
mA range (step size)	5 – 667 (1 mA step)

Note: Effective power is calculated by using generator power (72 kW, 80 kW*) and using iDose[4] at the same time. This gives Incisive CT Plus effectively more power.
*Optional (not available in China)

5.2 X-ray tube

Feature	Specification
Focal spot sizes, quoted to IEC 336/93 standard	Small: 0.5 x 1.0 Large: 1.0 x 1.0
Anode effective heat capacity	≥25 MHU_{eff}; direct cooling
Anode heat capacity	8.0 MHU
Continuous anode input power (IEC 60613:2010)	≥5.5 kW
Anode diameter	200 mm
Anode rotation speed	105 Hz (6,300 rpm)
Target angle	7°
Maximum helical exposure time	120 s

5.3 NanoPanel Elite detector

Feature	Specification
Slices	128
Coverage	40 mm
Material	Solid-state GOS with 43,008 elements
Slip ring	Optical – 5 Gbps transfer rate
Data sampling rate	Up to 2,320 views/revolution/element
Collimations available	64 x 0.625 mm 2 x 0.625 mm 32 x 0.625 mm 32 x 1.25 mm 12 x 1.25 mm 16 x 0.625 mm 12 x 0.625 mm 4 x 0.625 mm
Slice thickness (helical mode)	0.67 mm – 5 mm
Slice thickness (axial mode)	0.625 mm – 10 mm
Scan angles	240˚, 360˚
Scan field of view	500 mm

6. Image quality

6.1 Spatial resolution

Spatial resolution	Specification
High mode	16.0 ± 10% lp/cm @ 0% MTF
	13.5 ± 10% lp/cm @ 2% MTF
	> 11.0 lp/cm @ 10% MTF
	> 6.0 lp/cm @ 50% MTF
Standard mode	13.0 ± 10% lp/cm @ 0% MTF
	11.5 ± 10% lp/cm @ 2% MTF
	9.5 ± 10% lp/cm @ 10% MTF
	5.0 ± 10% lp/cm @ 50% MTF

6.2 Low-contrast resolution

Feature	Specification
Low-contrast resolution (with iDose[4])	4 mm @ 0.3%; ≤ 15.5 mGy $CTDI_{vol}$ (body)
Low-contrast resolution (with Precise Image*)	5 mm @ 0.3%; ≤ 5.5 mGy $CTDI_{vol}$ (body)

Note: 20 cm Catphan phantom; 10 mm slice thickness

6.3 Other

Feature	Specification
Absorption range	-1,024 to +3,071 Hounsfield Units
Noise (with iDose[4])	≤ 0.18% at 120 kV, 230 mAs, 10 mm image thickness

* Optional

7. Reconstruction

7.1 Reconstruction speed

Feature	Specification
Reconstruction speed	Up to 80 IPS

7.2 Precise Image (optional)

Precise Image is a recon mode that uses a convolutional neural network to generate noise reduction images. It provides better low contrast detectability and lower noise using reduced dose compared with standard FBP recon mode. .

7.3 iDose[4]

iDose[4] improves image quality* through artifact prevention and increased spatial resolution at low dose.

7.4 O-MAR

O-MAR reduces artifacts caused by large orthopedic implants.

7.5 Cone Beam Reconstruction Algorithm – COBRA

Philips patented Cone Beam Reconstruction Algorithm (COBRA) enables true three-dimensional data acquisition and reconstruction in both axial and helical spiral scanning.

7.6 ClearRay reconstruction

A revolutionary solution pre-computes and stores beam hardening in a database later referenced to create a correction that is personalized to each individual patient. As a fully three-dimensional technique, contrast scale stability is preserved across different patient sizes, image uniformity is improved, and organ boundaries are better visualized.

7.7 Adaptive filtering

Adaptive filters reduce pattern noise (streaks) in non-homogenous bodies, improving overall image quality.

7.8 Adaptive multi-cycle reconstruction (optional)

Image data can be prospectively gated or retrospectively tagged. Adaptive multi-cycle reconstruction automatically delivers the best temporal resolution possible for the current scan (as high as 44 ms).

7.9 Reconstruction field of view

50 to 500 mm

7.10 Image matrix

512 x 512 • 768 x 768 • 1,024 x 1,024

7.11 Off-line reconstruction

Off-line (batch) background image reconstruction of user-defined groups of raw data files with automatic image storage.

Precise Suite is considered work-in-progress and is not CE-marked and not available for sale.

* Improved image quality is defined by improvements in spatial resolution and/or noise reduction as measured in phantom studies.

8. DoseWise

Philips DoseWise is a holistic approach to dose management that is active in every level of product design. It encompasses a set of techniques, programs and practices based on the ALARA (As Low As Reasonably Achievable) principle and supports outstanding image quality at low dose.

8.1 DoseRight Index

DoseRight Index (DRI) is a single number used to specify the image quality required for the diagnostic task at hand. DRI includes organ-specific DRI for the liver and the head and neck to provide appropriate dose and image quality within a single acquisition.

8.2 CT Dose Check

Supports an operator notification in each exam card that will be shown if an acquisition is planned that exceeds a specified $CTDI_{vol}$ or DLP. In addition, an alert is available such that, if an acquisition is planned and the total exam will exceed a specified $CTDI_{vol}$ or DLP, the operator will be required to enter his or her name and (if configured) a password to proceed, or the operator can adjust the scan parameters. Compliant with NEMA XR-25 and XR-29.

8.3 DICOM structured reporting/ IHE REM profile

DICOM radiation dose structured report that can be transferred to external systems such as HIS/RIS, PACS, or dose registries.

8.4 3D-DOM

3D-DOM combines angular and longitudinal information to modulate dose in three dimensions. Personalizes dose for each patient by automatically suggesting tube current settings according to the estimated patient diameter in the scan region. Angular dose modulation varies the tube current during helical scans according to changes in patient shape (eccentricity) and tissue attenuation as the tube rotates. For each rotation, projections are processed to determine the maximum and minimum patient diameter. The tube current for the next rotation is then modulated between these limits.

8.5 Dedicated pediatric protocols

Age- and weight-based pediatric protocols produce diagnostic images at a minimum dose according to patient age for head scans, and patient weight for body scans.

8.6 Dose display and reports

Philips CT scanners include intuitive reporting and recording of estimated dose indices, dose reduction, and dose efficiency. Dose estimates are displayed on the operator's console for all scan protocols prior to and throughout the examination. Volume computed tomography dose index ($CTDI_{vol}$) and dose-length product (DLP) are automatically updated as the operator plans the scan. Also, a dose report may be included as a DICOM dose structured report and/or DICOM secondary capture with the reconstructed data set.

8.7 Dose performance data

$CTDI_{vol}$	Measurement
Head	14.07 mGy/100 mAs
Body	8.11 mGy/100 mAs

Measured on head and body CTDI phantoms (IEC 60601-2-44 ed. 3) at 120 kVp.

9. Clinical enhancements

9.1 Direct results

End-to-end workflow with clinical intelligence for direct and comprehensive clinical results, optimal image quality and consistency.

9.2 Precise Spine

An important practice of Direct Results, with preset protocols defining expected batch results of lumbar and cervical disc for optimal workflow efficiency and clinical consistency.

9.3 Precise Brain

An important practice of Direct Results, with preset protocols defining expected batch results of brain for optimal workflow efficiency and clinical consistency.

9.4 Parallel workflow

Dual-monitor console is designed for simultaneous operations of scanning on left-side monitor and post-processing, such as filming, reporting, reviewing, and analysis on right-side monitor for uninterrupted workflow.

9.5 Split study

Allows automatic split of the exam series into separate exams based on the procedure descriptions.

9.6 Precise Planning

Precise Planning can automatically adjust the scan range of subsequent axial or helical scan series based on the surview image – a convenient assistant for you to set scan range. Precise Planning supports head, lung, L-spine disc, C-spine (for helical protocol), liver, pelvis, femur head and heart, lung screening, chest/abdomen combination scan, and CAP (chest, abdomen, pelvis) scan mode.

9.7 Bolus tracking

An automated injection planning technique to monitor actual contrast enhancement and initiate scanning at a predetermined level.

9.8 Spiral Auto Start (SAS)

Spiral Auto Start allows the injector to communicate with the scanner. This allows the technologist to monitor the contrast injection and to start the scan (with a predetermined delay) while in the scan room.

9.9 Clinical applications

- CT Reporting
- MPR
- MinIP
- Volume Rendering
- Filming
- MIP
- AIP
- Virtual Endoscopy

9.10 Brain Perfusion (optional)

Allows the physician to differentiate areas of increased blood volume and decreased blood flow and presents information that may help to distinguish between still-viable and non-viable infarcted tissue. Using serial CT scans obtained with intravenous injection of contrast, Brain Perfusion derives perfusion information from the time-density curves based on the uptake of injected contrast material and subsequent tissue enhancement. The application generates quantitative color maps of cerebral blood flow (CBF), cerebral blood volume (CBV), mean transit time (MTT) and time-to-peak (TTP).

9.11 Neuro Essentials (optional)

Provides up to 80 mm of organ coverage for perfusion studies. An axial scan is taken in one location, the couch translates to another location within a few seconds, and another axial scan is taken. These multiple data sets are registered automatically to provide the extended coverage.

- Advanced Brain Perfusion
- Jog Scan

9.12 Dental Planning (optional)

Generates panoramic views and cross-sectional cuts of mandible and maxilla from high-resolution axial slices.

9.13 Lung Nodule Assessment (optional)

Provides nodule analysis and follow-up studies for doubling time to give reference details for benign and malignant definition of lung cancer, as well as early diagnosis and treatment.

9.14 CT Colonoscopy (optional)

Virtual Colonoscopy can provide automatic colon segmentation, virtual endoscopy, transparent view, cross-sectional and unfold view. Navigation Stage in viewer allows full freedom for clinicians to fly through the colon virtually and mark the polyps for measurements and clinical analysis.

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9. Clinical enhancements (continued)

9.15 Vessel Analysis (optional)

This set of tools for general vascular analysis allows the user to easily remove bone and extract and segment the vessels to quickly perform typical measurements such as intraluminal diameter, cross-sectional lumen area and length of vessel's segments, and angle of the vessels. The package allows the user to display the data set using volume rendering, Average, or MIP with cross-section images that can be used to delineate aneurysm, presence of mural calcification and lining mural thrombus, branch vessel (celiac, mesenteric, renal) and the iliofemoral arterial runoff circulation.

9.16 Cardiology solutions (optional)

Cardiac Essentials
Includes both Cardiac Calcium Scoring Acquisition and post-processing application. Prospectively triggers axial scans for accurate and reproducible calcium scoring studies, and is used to quantify the buildup of calcium plaque on the walls of the patient's coronary arteries and other relevant locations. The potential calcifications are highlighted by the application during launch. As you mark calcifications, the application accumulates the calcium data and calculates the patient's calcium score based on a scoring protocol. A compare function allows you to evaluate scoring results from two studies of the same patient – the original and a follow-up.

Cardiac Plus package
Designed to allow basic cardiovascular imaging of the heart. Includes Retrospective Tagging, Calcium Scoring Acquisition, Cardiac Calcium Scoring Analysis, Cardiac Coronary Artery Analysis and Cardiac Function Analysis.

Step & Shoot Complete
Enables low-dose, prospectively ECG-triggered, axial thoracic imaging. Allows gated, isotropic imaging of the entire thorax (up to 50 cm trans-axial field of view), including the coronary arteries. Ideal for patients with heart rates below 70 bpm.

Precise Cardiac
A single series of motion-corrected cardiac images created by compensating coronary artery motion in a pre-defined range around a reference phase by using overlapped short-scan data volumes.

9.17 Interventional solutions (optional)

Interventional Essentials Cart
Continuous CT (CCT) applications utilize cart-mounted monitor(s) synchronized with parallel console workflow. CCT biopsy with single, continuous and fluoro mode enables the clinician to perform scans from the gantry room using a foot pedal and view images on the cart-mounted,in-room monitor(s) to guide planning and monitoring.

Interventional Essentials Ceiling
Includes CCT applications utilizing ceiling-mounted monitor(s) synchronized with parallel console workflow. CCT biopsy with single, continuous and fluoro mode enables the clinician to perform scans from the gantry room using a foot pedal and view the images on the ceiling-mounted, in-room monitor(s) to guide planning and monitoring.

Precise Intervention
Precise Intervention provides virtual needle path and guidance by automatically calculating needle depth, tip-to-target distance, angle and deviation from plan.

9.18 Precise Position (optional)

Supports automatic patient positioning for enhanced user workflow and inter-operator consistency. Automatically displays the recommended vertical position and start and end positions, in addition to the selection of patient orientation on both the gantry panel and console. Via the smart load button, the system places the couch at the recommended vertical height and start position.

9.19 Dual Energy (optional)

Includes a dual-energy scan that allows the acquisition and reconstruction of sequential dual-energy scans. The Spectral Analysis application may allow separation and analysis of materials such as calcium and uric acid when used with dual-energy scan data.

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10. Networking and storage

10.1 Networking

Supports 10/100/1000 Mbps (10/100/1000 BaseT) networks. For optimal performance, Philips recommends a minimum 100 Mbps network (1 Gbps preferred) and for the CT network to be segmented from the rest of the hospital network.

10.2 DICOM

DICOM 3.0-compliant image format. Images can be auto-stored to selected archive media.

Includes the following DICOM functionality:

- Service-class user and profile (CT, secondary capture)
- DICOM Print
- DICOM Modality Worklist
- Query/Retrieve User
- Modality Performed Procedure Step User
- Removable Media
- Structured Reports

10.3 DICOM connectivity

Full implementation of the DICOM 3.0 communications protocol allows connectivity to DICOM 3.0-compliant scanners, workstations, and printers; supports IHE requirements for DICOM connectivity.

10.4 DICOM DVD/CD writer

Stores DICOM images and associated image viewing software on DVD/CD media. Images on these DVD/CDs can be viewed and manipulated on PCs meeting the minimum specifications. Suited for individual result storage and referring physician support.

10.5 Filming

Basic monochrome and color DICOM print capability are supported.

10.6 Image storage

Type	Hard drive
Capacity	1.3 TB
Approximate images*	≥ 2,600,000
Patients**	≥ 2,600

* 512x512 matrix; non-compressed; about 0.5 MB per image

** Based on 1,000 images per study

11. Site planning

11.1 Power requirements

- 200/208/240/380/400/415/440/460/480 VAC
- 50/60 Hz
- 115 kVA supply
- Three-phase distribution source
- Isolation transformer (optional)

11.2 Remote Software Distribution

Remote Software Distribution allows remote software download to the system from the PRS portal and allows the software installation to be performed by service.

11.3 Console Uninterrupted Power Supply (UPS) (optional)

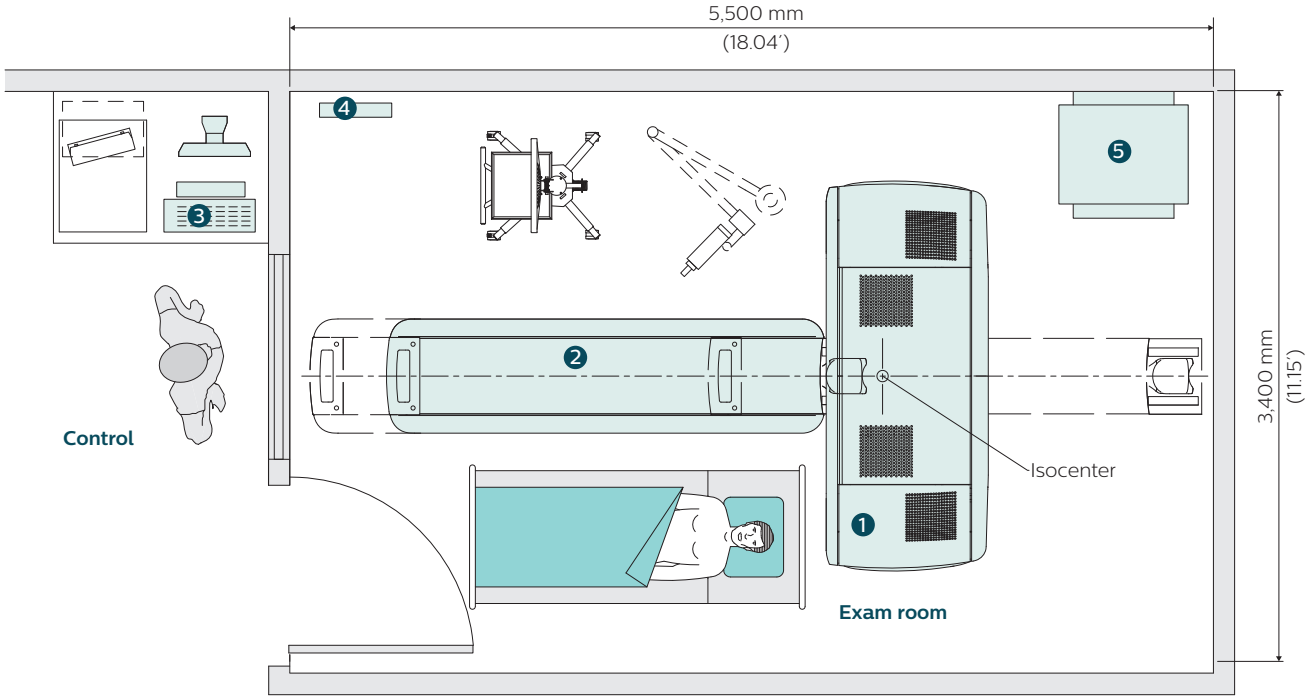
Provides up to 30 minutes of backup power for host system.

11.4 Environmental requirements

Temperature	
Gantry room	18 to 24°C (64 to 75°F)
Control room	10 to 30°C (50 to 86°F)
Operating maximum gradient	5 °C/hour
Storage temperature	-15° to 45°C (5 to 113°F)
Storage maximum gradient	10°C/hour
Transportation	-20°C to +50°C
Humidity	
Gantry and control room	40% to 70%, non-condensing
Storage	20% to 80%, non-condensing
Transportation	20% to 80%, non-condensing
Air pressure	
Operating	70 to 106 kPa
Storage	50 to 106 kPa
Transportation	50 to 106 kPa

11. Site planning (continued)

11.5 System requirements – minimum room layout (with standard table)



11.6 Dimensions and weights, per unit

Type	Length	Width	Height	Weight
1 Gantry scanner	2,333 mm	973 mm	1,956 mm	1,995 kg
2 Standard table	2,928 mm	700 mm	906 mm	360 kg
Bariatric table	3,075 mm	516 mm	1,080 mm	760 kg
3 Scan control box	334 mm	117 mm	42 mm	1 kg
4 Console UPS (optional)	408 mm	430 mm	85 mm	16.8 kg
5 Isolation transformer (optional)	770 mm	592 mm	826 mm	382 kg

The Incisive CT is a computed tomography X-ray system intended to produce images of the head and body by computer reconstruction of X-ray transmission data taken at different angles and planes. These devices may include signal analysis and display equipment, patient and equipment supports, components and accessories. The CT Incisive Plus is indicated for head, whole body, cardiac and vascular X-ray computed tomography applications in patients of all ages. These scanners are intended to be used for diagnostic imaging and for low dose CT lung cancer screening for the early detection of lung nodules that may represent cancer.* The screening must be performed within the established inclusion criteria of programs and protocols that have been approved and published by either a governmental body or professional medical society.

* Please refer to clinical literature, including the results of the National Lung Screening Trial (N Engl J Med 2011;365:395-409) and subsequent literature for further information.

The images and descriptions contained herein provide technical specifications and optional features which may not be included with the standard system configuration. Contact your local Philips representative for complete specific system details.

Some or all of the products, features, and accessories shown or described herein may not be available in your market. Please contact your local Philips representative for availability.

The Incisive CT Plus is a configuration of Incisive CT.
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www.philips.com/Incisive-CT

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