Time-of-Flight technology within your reach

Philips TruFlight Select PET/CT specifications

As the leader in Time-of-Flight (ToF) technology, Philips introduces another first. State-of-the-art ToF PET technology is now standard across the family of PET/CT systems. Never before has ToF been so accessible. ToF is an inherent feature in every Philips PET/CT system. The TruFlight Select PET/CT provides customers with enhanced image quality and speed. Diagnostic CT capabilities allow the system to be used not only for PET/CT scans, but also for standalone CT scans, thereby serving a dual purpose. Philips has optimized its systems technologically, clinically, and operationally to fit within your individual needs.

Key advantages

- Cost-saving benefits from low system costs and the ability to utilize short lived isotopes
- Time-of-Flight provides exceptional image quality
- Enhanced speed, productivity and throughput with the Extended Brilliance Workspace for Nuclear Medicine

PHILIPS

sense and simplicity

TruFlight Select PET specifications

System overview	
PET platform	Astonish TF
CT platform	Brilliance
Patient port	70 cm PET and CT
Gantry cooling	Air-cooled
Attenuation correction	CT
Patient handling system	
Maximum patient weight	195 kg (430 lb)
Vertical travel	35.5 cm
Patient scan range	190 cm
Horizontal speed	150 mm/s (max)
Minimum table height	67 cm
PET detector design	
Detector design	PIXELAR with continuous light guide
Transaxial FOV	Up to 67.6 cm
Axial FOV	18 cm
Coincidence window size	3.8 ns[1]
Lower level discriminator	460 keV

Exclusive OpenView gantry

- Designed to enhance the patient experience, especially for claustrophobic and pediatric patients, and provide patient access for clinicians.

PET acquisition and reconstruction

- Static, dynamic, and gated acquisition
- List mode acquisition for all protocols
- List mode Time-of-Flight reconstruction
- Fully 3D Line of Response (LOR) processing
- High Definition PET reconstruction
- Concurrent acquisition and reconstruction
- CT attenuation correction, including algorithms for contrast artifact reduction

Optional

- 4D Time-of-Flight Respiratory Gating (optional for all configurations) includes prospective and retrospective CT and TOF PET gating

NEMA performance specifications[2]	
System sensitivity	4500 cps/MBq (center), 4550 cps/MBq (10 cm)
Transverse spatial resolution @ 1 cm	4.7 mm
Transverse spatial resolution @ 10 cm	5.2 mm
Axial spatial resolution @ 1 cm	4.7 mm
Axial spatial resolution @ 10 cm	5.2 mm
Peak noise equivalent count rate 1R (NECR)	65 kcps @ 20 kBq/ml
Clinical noise equivalent count rate (NECR)[3]	40 kcps @ 5.3 kBq/ml
Max trues	170 kcps
Scatter fraction	30%
System energy resolution	11.7%
Time-of-Flight performance[2]	
Timing resolution	495 ps
Sampling rate	25 ps
Sensitivity gain[4]	2-5x, depending on patient size
System sensitivity	>9200 cps/MBq (center), >9380 cps/MBq (10 cm)
Peak NECR	>130 kcps @ 20 kBq/ml
Clinical NECR[3]	>80 kcps @ 5.3 kBq/ml
Time-of-Flight localization accuracy	7.43 cm

PET software processing

- Comprehensive PET/CT review tools
- Automated 3D contouring

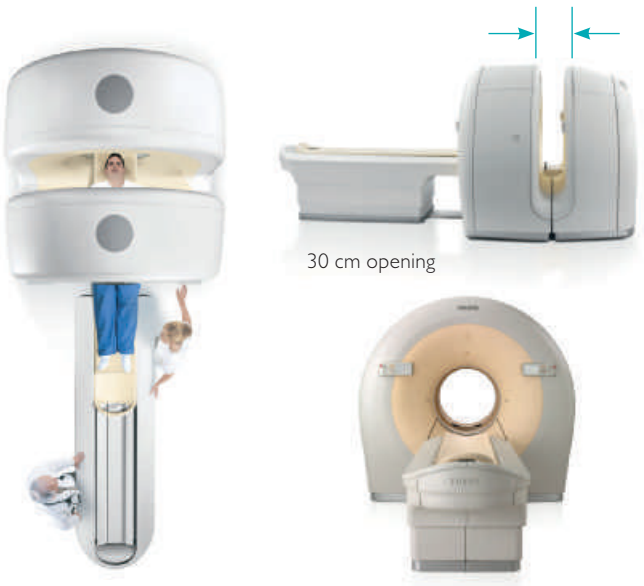
Optional

- Automated registration with CT, MR and SPECT
- Cardiac perfusion and viability analysis (optional for all configurations)
- Quantitative brain analysis (optional for all configurations)

1 With 57.6 cm field of view
2 Preliminary PET Performance specifications subject to change represent typical values measured following the methodology of NEMA standard publication NU 2-2007, unless otherwise noted.
3 NEC at a 10 mCi clinical imaging dose for FDG whole body studies in an average patient (73 kg/160 lb).
4 Effective sensitivity gain defined as a ratio between patient size and Time-of-Flight localization accuracy.

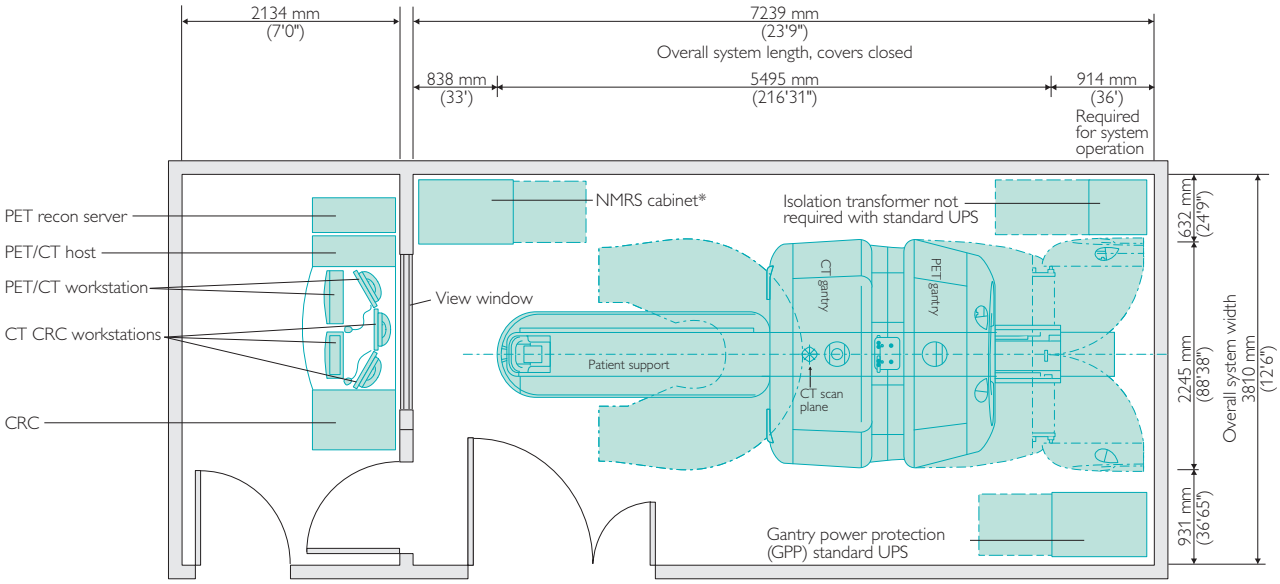
TruFlight Select CT specifications

Generator	
The Brilliance generator uses modern, low-voltage slip ring technology to provide a constant high voltage to the CT X-ray tube assembly.	
Output capacity	60 kW
kV	90, 120, 140 kVp
mA	20-500 mA; 1 mA inc
MRC X-ray tube	
The exceptional heat management demands of multislice imaging calls for an exceptional tube. With its patented spiral groove bearing design, Philips MRC tube dissipates heat as rapidly as it is collected, with an effective heat storage capacity superior to a conventional ball bearing design. This second generation of MRC tube technology is built on a proven record of performance and reliability.	
Effective heat storage capacity	26 MHU
Anode storage capacity	8.0 MHU
Anode maximum cooling rate	1,608 kHU/min
Focal spot (IEC)	Large: 1.0 x 1.0 mm Small: 0.5 x 1.0 mm
Anode diameter	200 mm
Anode rotation speed	105 Hz (6300 rpm)
Target angle	7°
Focus-detector distance	1,040 mm
Focus-isocenter distance	570 mm



Detector	16-Slice
Philips patented detector design is fundamental to the objective of acquiring high quality images while lowering patient dose.	
Material	Solid-state GOS
Number of elements	16,128 (32,256 effective with DFS)
Dynamic range	1,000,000 to 1
Slip ring	Optical – 1.1 Gbps transfer rate
Data sampling rate	Up to 4,640 views/ revolution/element
Slice collimation	2 x 0.6 mm, 16 x 0.75 mm, 16 x 1.5 mm, 8 x 3.0 mm, 4 x 4.5 mm
Slice thickness – spiral mode	0.65 – 7.5 mm variable
Slice thickness – axial mode	0.6 – 12 mm
Coverage	24 mm
Scan field of view – diagnostic	250, 500 mm
Scan field of view – CTAC	600 mm and 700 mm
Image quality	
Spatial resolution	Ultra High mode: 24.0 Lp/cm @ cut-off High mode: 16.0 Lp/cm @ cut-off Standard mode: 13.0 Lp/cm @ cut-off
Noise	0.27% as measured on the Philips system phantom (21.6 cm water equivalent)
Low contrast resolution	4.0 mm @ 0.3% as measured on the 20 cm CATPHAN phantom
Absorption range	-1024 to +3072 Hounsfield units
Temporal resolution	As low as 53 ms using 0.4 second rotation and adaptive multicycle reconstruction
Scan times	0.4 (optional), 0.5, 0.75, 1, 1.5 seconds for full 360° scans; 0.28 (optional), 0.33 seconds for partial angle 240° scans
Reconstruction speed	Up to 20 images per second
$CTDI_{vol}$ dose levels	
Using IEC standard phantom	
Head	12.85 mGy/100 mAs
Body	6.54 mGy/100 mAs

TruFlight Select PET/CT gantry and site planning



Environmental requirements for general equipment locations

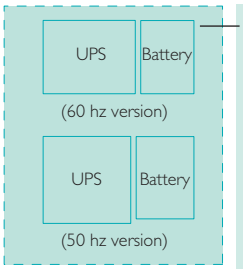
Throughout the PET/CT suite, the HVAC system must maintain the temperature between 15°C (59°F) to 24°C (75°F). Humidity must be between 35% and 70%, non-condensing. These requirements are 24 hours per day, 7 days per week.

Power requirements	
Main type	Three phase
Room supply voltage	200 - 500 VAC
System voltage, PET/CT (after LM transformer or UPS)	480 VAC +/- 10%
Frequency	50 or 60 Hz, nominal
Power quality	Refer to IEC 61000-4-4 and IEC 61000-4-5
Distribution transformer	100 kVA (minimum)
Minimum room size	
Exam room	7239 x 3810 mm (23´9˝ x 12´6˝)
Control room	2134 x 3810 mm (7´0˝ x 12´6˝)

Recommended scanner room openings

1829 mm (6'0") opening off of a 1829 mm (6'0") corridor or 1524 mm (5'0") opening off of a 2438 mm (8'0") corridor

*Note: NMRS cabinet and GPP may be remotely located within 22860 mm (75 cable feet) of the workstation assemblies and the gantry



Optional UPS system

Full system UPS (optional) exact UPS and battery location shall be determined by customer.

Minimum area: 2134 mm (7'0") x 1524 mm (5'0")
UPS HVAC: 1758 w (6000 btus)

Scanner characteristics	
Gantry dimensions (couch home), H x W x D	213 x 225 x 549 cm (83.9 x 88.6 x 216 inches)
Weight	4,141 kg (9,130 lb)
Power requirements, PET/CT	100 kVA (maximum)
Heat load (all components)	36,450 BTU/hr
PET/CT system	27,950 BTU/hr
Reconstruction cabinet	5,000 BTU/hr
Control room computers	3,500 BTU/hr

Detailed site planning requirements are documented in the Planning Reference Data (PRD) guide and available upon request.

Please visit www.philips.com/truflightselect

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