Built to do More.

Brivo CT385 16-slice CT product data sheet

Built for your Confidence.
- BIG Performance, small footprint
- Smart CT Desk
- Energy Saving Mode

Simply Advance...
- Hilight Scintillator with Volara™ DT DAS
- 24-Row Helical + IQ Enhance
- ASiR™ (Adaptive Statistical Iterative Reconstruction)
- VISR
- VISR- Neuro 3D Filter
- VISR- Smooth 3D filter on Volume Viewer 5
- Ultra Kernel
- Organ Dose Modulation
- OptiDose technologies

Built for all you need to do.
- Volume Viewer 5, Volume Analysis
- Multi-Planar Reconstruction (MPR) Multi-Planar Volume Reconstruction (MPVR)
- 3D Surface, 3D MIP, and 3D Volume Rendering
- Virtual Endoscopy
- Autobone Xpress & Advanced Vessel Analysis
- Advantage CTC Pro3D EC
- CT Perfusion Multi-organ
- CT Perfusion
- Dentascan
- ImageWorks

Built for more Efficiency.
- SmartPrep
- Dynamic Transition
- Xtream Injector, Enhanced Xtream Injector
- Enhanced filming workflow
- Emergency Patient Mode
- Chest Kernel
- DT Viewer
- Auto exam description
- Xtream FX workflow

Built to serve you better...
- Direct MPR
- 10PMR
- Connect Pro, Direct Connect
- Digital Tilt (DT)
- Exam Split
- Graphic Retro
- Copy PMR & Series

Clinical Performance Examples
Helical Scanning
Axial Scanning
Interface, Workflow
System components

Built with Confidence.

Lowering dose while helping you deliver high image quality and more efficient imaging workflow.

BIG Performance, small footprint

The 16-slice Brivo CT385 is designed to deliver high level performance yet fit into the siting requirements of most single and dual slice CT systems, thus eliminating or greatly reducing any siting concerns or cost.

Minimum scan room requirement is 10.1m²

Actual final room size will be determined by siting.

Smart CT Desk

Innovative hardware and software create a convenient, ergonomic working environment. It offers sit/stand and horizontal/vertical monitor flexibility. It can also help reduce noise and heat with remote location of the console.

Energy Saving and CO_2 reduction

The Brivo CT385 is more than a high-performance system. Using the Energy Saving Mode during evenings and weekends, the Brivo CT385 can reduce the annual electricity consumption and cooling cost by an additional 41% per system compared to previous generation GE CT systems. Energy savings and reduced CO2 emissions may have a positive impact on the environment and radiology department's operations budget.

Simply Advanced...

HiLight Scintillator with Volara™ DT DAS

This new generation detector is created especially for Brivo CT385. This detector is tested for thermal strength and reliability. With new digital DAS technique, digital signal flows directly from detector to DAS chip, hence, reducing the noise introduced by conventional data acquisition systems.


24-Row Helical + IQ Enhance

24-row helical plus IQ Enhance is a special algorithm to reduce helical artifact in thin slice helical scanning. The Brivo CT385 scanner with this feature can accelerate its helical pitch more than 3 times (e.g. 0.562 to 1.75, at 20mm coverage) when acquiring images at the same helical artifact level compared with the same scanner with IQ Enhance disabled.

With IQ Enhance

Without IQ Enhance
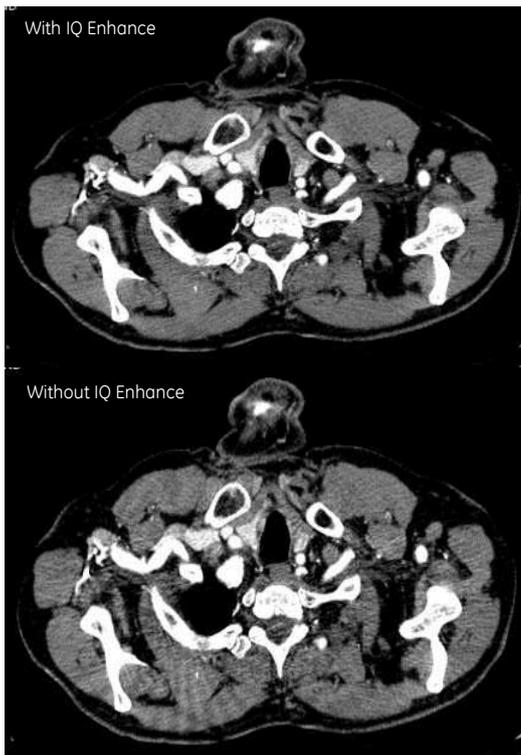
ASiR*[†]

Adaptive Statistical Iterative Reconstruction (ASiR) is GE's industry advanced technology. Leading the way with image reconstruction, the ASiR technique enables reduction in image noise and improvement in image quality, low contrast detectability and contrast resolution.
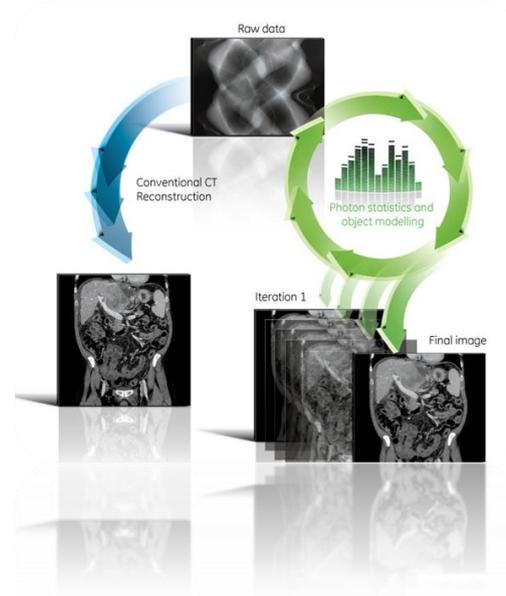
The Brivo CT385 scanner with the ASiR reconstruction algorithm offers same performance in terms of image standard deviation performance at up to 40% lower dose.

The Low Contrast Detectability with 60% ASiR and 75% dose is comparable with 100% dose and non-ASIR acquisition.

[†]Note: In clinical practice, the use of ASiR may reduce CT patient dose depending on the clinical task, patient size, anatomical location and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task.

ASiR*[†]

Note: ASIR is licensed for use with a GE x-ray tube. Use of a third party x-ray tube will require an additional license* for this feature.
*This is a no fee license. However, there may be a nominal cost incurred for license installation.

ASiR Enlarges Tube Power and Max mA.

Utilizing ASiR, images obtained can have equivalent IQ to an acquisition with 1.67 times the mA. In particular, the maximum tube power and current of Brivo CT385 will be equivalent to 40KW and 333mA (@120kV, 3.3MHu tube heat capacity equivalence with ASiR). ASiR allows achieving the same image quality at a lower mA with less tube heat output, which enables the tube for longer duration under helical scan.

VISR

Volumetric Image Space Reconstruction (VISR) provides a 3D filter that reduces noise without compromising resolution, for clear visualization of brain, tumor, and pediatric cases. With the VISR 3D filter, the scanner delivers up to 20% image quality improvement at the same dose, or the same image quality with up to 36% dose reduction ①

①In clinical practice, the use of VISR may reduce CT patient dose depending on the clinical task, patient size, anatomical location and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task

When ASiR is installed, 3D Neuro filter will be disabled.

Neuro 3D Filter

Neuro 3D Filter is a noise reduction filter optimized for thin slice data that is intended for post processing in Reformat to create Average and MIP images, Volume Rendering and 3D models for Neurological studies such as Circle of Willis, Carotids, Sinuses, Orbits, Mandible and helical Brain. It may be possible to reduce dose depending on the level of filtering applied. Up to 20% IQ improvement or Up to 36% Dose reduction for same IQ level (based on image noise SD).
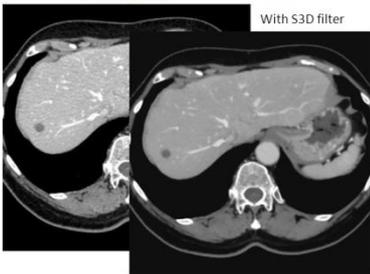
With N3D filter   Without N3D filter
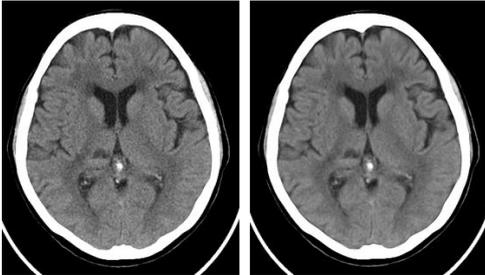
Smooth 3D filter on Volume Viewer 5[†]

Smooth 3D filter is a 3D anisotropic filter which smooths the whole volume. It can be applied on 2D or 3D viewport.

Without S3D filter   With S3D filter

*Ultra Kernel: AELA

Adaptive Enhance Level Adjustment (AELA) may improve visual spatial resolution while maintaining pixel noise standard deviation and artifact.

Organ Dose Modulation

ODM provides reduction of radiation dose via X-ray tube current modulation for superficial tissues, such as breasts. Without decreasing productivity due to use of conventional superficial dose reduction techniques, it can provide equivalent efficacy based on image noise. The dose reduction at superficial organs is up to 40%, while the noise increase is less than 10%.

Anterior

270   90

180

Posterior

Not for sales or distribution in the United States
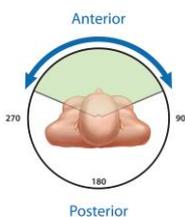
OptiDose technologies
"Color Coding for Kids" protocols

Providing pediatric scan protocols based on the Broselow-Luten™ Pediatric System, designed to facilitate pediatric emergency care and reduce medical errors.

3D Dose modulation

Before the scan, clinicians can select the desired Noise/IQ: CT then tailors automatically exposure parameters, patient to patient and real-time x-y-z during each scan.
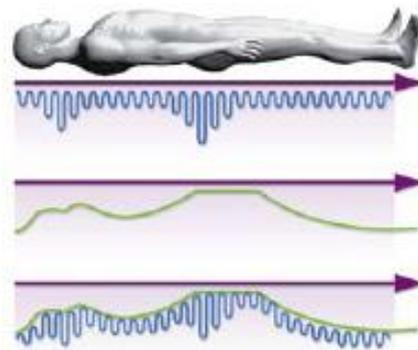
Short gantry geometry

In conjunction with Hyper generator and the Venus X-Ray Tube affords to get up to 200 mA and seamless throughput. The geometry efficiency of Brivo CT 385 is about 26.3% better than that of long geometry scanner, which means the Brivo CT385 24kW generator power is equivalent to 32.55kW generator power in a long geometry design.

Short Geometry   Conventional Geometry   X-Ray
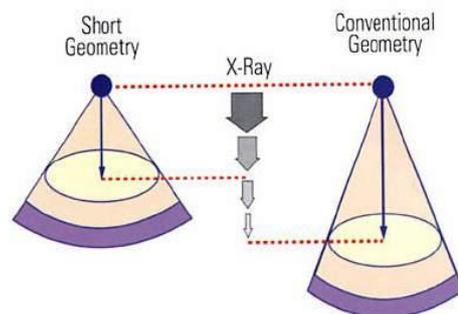
*RoW availability (except China) depends on each country regulatory approval status
*Not for sale or distribution in China

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Beam tracking techniques

Beam tracking enables real-time X-ray follow-up to reach high spatial resolution with no post-patient collimation and no dose penalty.

Dose Check

Dose Check offers the guidance on dose given in clinical practice and is based on the standard XR-25-2010 published by the Association of Electrical and Medical Imaging Equipment Manufacturers (NEMA).

Dose Check provides the following:

- Check against a Notification Value if the estimated dose for the scan is above typical dose value at your site.
- Checking against an Alert Value where the user needs specific authority to continue the scan at the current estimated dose without changing the scan parameters..
- Define Alert Values for Adult and Pediatric with age threshold.
- Audit logging and review.
- Protocol Change Control.

Dose Computation and Display

CTDIvol (CTDI volume), DLP (Dose Length Product), and Dose Efficiency are computed and displayed during a scan to show patient dose information.

Dose Reporting

A machine-readable DICOM-structured Dose Report is saved for each CT exam. This allows a hospital's radiation tracking system/RIS/HIS to retrieve the Dose information for a given CT study.

Dose Report capacity

With the help of Prospective display of CTDIvol, DLP and Dose Efficiency, Brivo CT385 helps clinicians reach ALARA dose, and keep track of it.

Built for all you need to do.
Apply the innovative and powerful suite of Volume Viewer Productivity enhancers…

Volume Viewer 5

Volume Analysis
Manage 3D and 2D imaging in real time using Volume Analysis. Review multiple acquisitions within the same display, associating 2D images with a variable slab-thickness capability (Average, MIP, MinIP, and Volume Rendering) according to each exam's requirements.

Multi-Planar Reconstruction (MPR)
Reformatting with Multi-Planar Reconstruction (MPR) lets you view datasets in the axial, sagittal, coronal, and oblique planes, to help you more confidently assess and diagnose the sinus, chest, abdomen, inter-vertebral discs, and fractures.

Multi-Planar Volume Reconstruction (MPVR)
Helps you accurately enhance contrast and improve visualization of structures. Apply MIP (Maximum Intensity Projection) for vascular anatomy; MinIP (Minimum Intensity Projection) for airways and bronchi; or Average for head or abdominal examinations. View the selected volume from any desired plane, and combine it with variable slice thickness to clearly analyze lesions in the pancreas, renal arteries, and spine.

3D Surface, 3D MIP, and 3D Volume Rendering
Enhance three-dimensional visualization of imaged tissue. It provides you with more information about the spatial relationships of different structures than standard 3D surface rendering, so you can interpret CT exams more confidently.

Virtual Endoscopy
Allow visualization of intra-luminal structures such as airways, sinus, or vascular structures. Images can be viewed dynamically using a virtual "fly-through" mode.

AutoBone Xpress
AutoBone XPress is an image analysis software package that is intended to facilitate segmentation of bony structures and calcifications for CT Angiography exams.

Advanced Vessel Analysis Xpress
AVA Xpress is intended to provide an optimized non-invasive application to analyze vascular anatomy and pathology and aid in determining treatment paths from a set of Computed Tomography (CT) Angiographic.

Advantage CTC Pro3D EC
AdvantageCTC is a post-processing application. Data of the colon acquired on a CT Scanner can be processed using Colon Advantage CTC software. Patients who have suspected colonic diseases are the targeted population for this software.
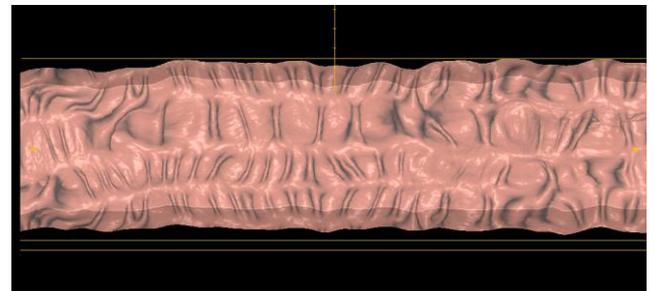
CT Perfusion Multi-organ
CT Multi-Organ Perfusion allows the user to process dynamic image data of organs and tumors, and generates information with regard to changes in image intensity over time.

CT Perfusion 4D – Multi Organ
CT Perfusion 4D – Multi-organs is an image analysis software package that allows the evaluation of dynamic CT data following an injection of a compact bolus of contrast material, and generating information regarding changes in image intensity over time.

CT Perfusion
CT Perfusion allows the user to process dynamic image data of the brain & generate information with regard to changes in image intensity over time.

CT Perfusion 4D – Neuro
CT Perfusion 4D – Neuro is an image analysis software package that allows the evaluation of dynamic CT data following an injection of a compact bolus of contrast material, and generating information regarding changes in image intensity over time.

Volume Viewer

Volume Viewer is an innovative and powerful suite of productivity enhancers (Volume Rendering, Volume Analysis and Navigator) also includes:

Dynamic Volume Review for Fast Screening

Curved Volume of Interest

Protocol Management and Loading

Review Layout Presets

Multiple VR Objects Merge

Pseudo Surface Shading Mode

Predefined Cut Planes

Volume Rendered Navigator views

VR Preset save/recall

3D Rendered Lumen View

Automatic Path Tracking

Path Bridging (in case of occlusions)

SmartCursor for Easy Navigation

Synchronized Reformatted Views

Cut visualization mode

Dentascan

DentaScan is a fast simple non-invasive software package, which provides a panoramic dental view enabling accurate measurements to be taken. DentaScan facilitates dental prosthetic implants and other dental surgical procedures by providing highly detailed information of the teeth and the surrounding bone structure.

ImageWorks

ImageWorks is a desktop environment designed to take advantage of the Brivo CT385 Scanner System computer and image processor. Standard features include archive, network and manual film control, as well as some advanced image processing such as multi-planar reformatting (MPR), multi-projection volume rendering (MPVR), and MR image display. It also has optional add-on packages for Volume Viewer, CT Perfusion and DentaScan. The ImageWorks desktop also provides a gateway for DICOM 3.0 image transactions.

Built for more Efficiency.

Developing high workflow throughput and quicker ROI.

SmartPrep

SmartPrep allows intermittent monitoring of IV contrast enhancement in an area of interest. The contrast flow is monitored by Low-Dose scans until the contrast enhancement reaches the preferred point and then auto trigger function will automatically initiate the scan prescription

Dynamic Transition

With SmartPrep procedure, Dynamic Transition allows the scan phase to start automatically when the HU of the transition ROI reaches the desired enhancement threshold.
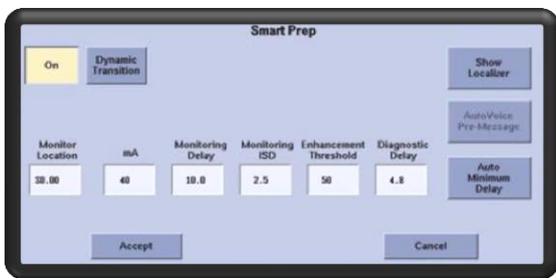
Xtream Injector, Enhanced Xtream Injector

Xtream Injector allows a synchronized start of the CT system and an approved Injector. Pressing the Start Scan button makes the scan and injector start simultaneously.
The injector is CiA425 compliant.

- Xtream Injector*, which is the same as Class1 in CiA425, allows only ON/OFF.
- Enhanced Xtream Injector*, which is the same as Class4 in CiA425, allows synchronized start of the system and setting injection parameters from the system

The system and injector are operated independently after the start scan button is pressed on the system.

Enhanced filming workflow

The new filming tool provides you a friendly and powerful user interface. It allows you to open multiple sessions at the same time for one or more patients; you could set up multiple films in parallel. In the enhanced filming tool, besides the fixed layout 1:1, 2:1, 4:1, 6:1, 8:1, 9:1, 12:1, 15:1, 8:1, 20:1, 24:1, 25:1, 30:1, 35:1 and 42:1, clinicians could also choose to create your own customized layout to match your specific needs. And it also allows editing of the annotations on the image.
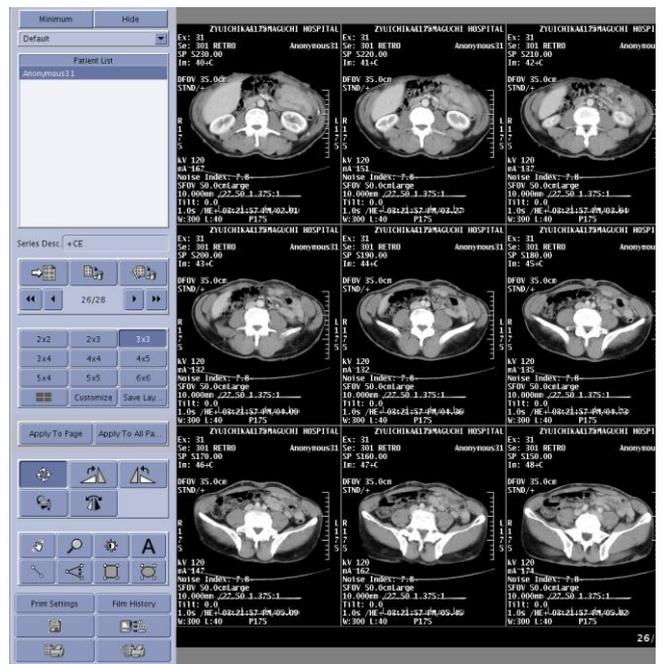
*Option

Emergency Patient Mode

Brivo CT385 has a dedicated User Interface (UIF) for emergency cases to start examination quickly. Patient Name and Patient ID are assigned automatically. Once a protocol is selected, scan setup interface displays.

Chest Kernel

Chest Kernel Allows the operator to recon once (instead of twice – lung kernel and Standard kernel separately), and can diagnose the Lung or Mediastinum area by adjusting the WW/WL. The new Chest Kernel provides up to 2-times productivity and 50% HDD space saving for Chest exams

DT Viewer

With DT Viewer, Zero-degree images will appear in the bottom left corner of your OC monitor. This allows clinicians to check on position and IQ of the images scanned almost real-time as the scanning is taking place.

DT Viewer will appear when there is a DT group in the current series.

Auto exam description

Brivo CT385 can automatically suggest an exam description based on the protocol chosen by you.
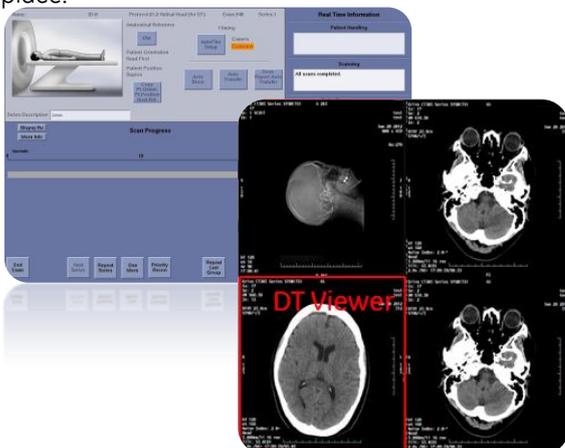
Xtream FX workflow

Higher Patient-flow Capacity: ASiR allows comparatively smaller dose and power used on tube, resulting in less waiting for tube cooling and make it possible to scan more patients per hour.

Up to 10fps transfer speed of images real-time during acquisition to up to 4 different destinations.

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Built to serve you better

Direct MPR

Direct MPR with Auto-Batch feature, affording automatic real-time direct reconstruction and transfer of fully corrected multi-planar images, also allows customer to move from routine 2D review to prospective 3D image review of axial, sagittal, coronal, and oblique planes while enabling automated protocol-driven batch reformats to be created and networked to their desired reading location.

10PMR

Prospective Multiple Reconstruction (PMR): Up to 10 sets of reconstructions can be pre-programmed as part of the scan protocol prior to acquisition. The operator can select different start/end location, slice thickness, interval, reconstruction algorithms and display fields of view for each reconstruction.

Connect Pro†

Connect Pro assists easy retrieval of patient critical information from HIS/RIS using DICOM connection (and then sends this information to Patient Schedule). ConnectPro requires a HIS/RIS system and PACS.

Digital Tilt (DT)

DT is a protocol-driven scan control work flow for tilt image acquisition; DT enables reduced number of screens and clicks under optimized scanning condition.

Exam Split

Exam Split provides customers with the capability to "spilt" a series of patient images into separate groups.

These new smaller image groups can then be networked to desired reading stations for multiple "read" and multiple billings on selected patient exams. Virtual mode provides ability to send window level values, flip and rotate images, and compatible with MPPS.

Direct Connect

Direct Connect allows remote Advantage Workstation (AW) access to the Xtream FX console's thin slice data, eliminating unnecessary network traffic and storage duplication. (AW4.3 and later) This feature requires Gigabit Network between the AW's and HP XW8200 or better hardware. Post processing can be done on exams residing on Direct Connected systems by launching applications without having to DICOM transfer the exam to the AW although there might be a slight delay in launching applications and viewing the exams on patient list.

Graphic Retro

Graphic Retro provides the capability to graphically prescribe your reconstructions using an existing image.

Auto Transfer

Auto Transfer by Series to distribute images where you need them when you need them.

Copy PMR & Series

Automatically copy the parameters of an existing series when "Copy series" is selected. The series parameters include: start location, end location, interval, DFOV, A-P center, and R-L center.

CD/DVD/USB

The CD/DVD/USB allows you to store DICOM images and a DICOM Viewer to a CD-R or DVD-R (4.7GB) or USB media that can be played back on a PC or laptop with a Windows™ 2000 or XP operating system. Images stored on a CD-R, DVD-R or USB can be restored to the AW system or Brivo CT385 system.

Data Export

Data Export allows you to store images on a CD-R1 or FTP or USB device as JPEG, PNG, AVI, MPEG, or MOV formats.
The JPEG, PNG, AVI, MPEG, or MOV files can be viewed from a PC3 or laptop Windows™ 2000 or XP operating system using Internet Explorer 5.5 or later.

AutoVoice

AutoVoice provides 3 preset and 17 user-defined messages automatically delivers patient breathing instructions with a programmable delay. Preset messages are supported in 9 different languages: English (Male/Female), Chinese French, German, Italian, Japanese, Korean, Spanish and Mexican Spanish.

Flip/Rotate

Flip/Rotate function provides image orientation flips and rotates prospectively for auto-filmed images, retrospectively through Exam Rx Display or the Image Works viewer. These image orientation operations do not produce images installed in the image database but create modified image films or screen saves.

WW/WL Preset for Scout

Window width/window level (WW/WL) Preset for scout supports presetting WW/WL values in protocol management tool or during scan prescription.

Clinical Performance Examples

With the Brivo CT385, users can routinely use a 1.0 second scan speed in conjunction with high pitch helical up to 1.75:1, affording, for the same image quality, to reduce breath-hold, perform better thin slice CT angiography exams, use thinner slices for most exams, and perform longer helical exams without tube cooling delays.

Routine Chest / Abdomen / Pelvis

Coverage	450 mm
Rotation	1.0 sec
Mode	20 mm coverage
Pitch	1.75:1
mA	200 (Auto mA)
mAs	200
Speed	35 mm/s
Scan Time	12.8 seconds

Peripheral Run-Off

Coverage	1,100 mm
Rotation	1.0 sec
Mode	20 mm coverage
Pitch	1.75:1
mA	200
mAs	200
Speed	35 mm/s
Scan Time	40 seconds

High Resolution Chest

Coverage	200 mm
Rotation	1.0 sec
Mode	10 mm coverage
Pitch	1.75:1
mA	200
mAs	200
Speed	17.5 mm/s
Scan Time	11.4 seconds

System Specifications

Helical

Continuous 360° scanning with table incrementation and no interscan delay.

Scans can be acquired with a wide variety of speeds.

Axial

Up to 16 contiguous axial planes acquired simultaneously with each 360° rotation, with the time between scans set by the user-selected interscan delay (ISD) or intergroup delay (IGD).

Scans may be easily clustered in groups to allow multiple scans in a single breath hold.

Minimum scan-to-scan cycle time of only 2.0 sec with table moves of ≤ 10 mm.

Scout™

Single radiographic plane for scan localization and graphical prescription of prospective reconstruction.

Extended range matches helical scannable range.

Preset WW/WL for scout.

Helical Scanning

Helical Scans

Slip ring technology has advanced axial scanning by enabling scans with simultaneous table movement.

Helical Multi-slice Prescription

Streamlined prescriptions and easy-to-use default protocols make the Brivo CT385 fast and efficient in patient set up.

Multi-slice acquisitions and short intergroup delays help to reduce potential mis-registration between scans by increasing the number of scans possible in a patient breath hold.

Helical protocols are almost identical to "classical" axial scan protocols. At the beginning of a study, the operator selects the type of exam with the anatomical programmer, and indicates the desired scan range - either manually, or from a Scout.

After completing the prescribed exam, the system remains ready to continue with additional helical scans or a set of axial scans.

The operator may reconstruct helical scans prospectively, and retrospectively, at any arbitrary table location in 0.1 mm increments.

Helical Multi-slice Modes

The complex nature of helical multi-slice scanning has been simplified by grouping all critical acquisition parameters within 8 basic scan modes, all optimized for image quality and speed. For sixteen-slice acquisition: and 24-row helical acquisition 0.5625:1; 0.9375:1; 1.375:1 and 1.75:1. These clinically derived multi-slice scan modes offer a wide range of selections that carefully balance acquisition speed, image thickness, and retrospective image reconstruction flexibility.

This simplified user interface guides the user in the choice of scan parameters. The user selects a pitch mode, a desired image slice thickness and table travel per rotation. The user interface also displays the resulting choice of retrospective image thicknesses available for each choice of acquisition parameters.

The 16-slice helical acquisition modes provide table speeds from 5.625 mm/rotation up to 35 mm per rotation, enabling scan speeds that are up to 12 times faster than 4-slice helical scanners.

Table Speed (mm/rotation)				
Slice Thickness (mm)	Pitch 0.5625:1	0.9375:1	1.375:1	1.75:1
0.625	5.625	9.375	13.75	17.5
1.25	5.625	9.375	13.75	17.5
	11.25	18.75	27.5	35
2.5	5.625	9.375	13.75	17.5
	11.25	18.75	27.5	35
3.75	5.625	9.375	13.75	17.5
	11.25	18.75	27.5	35
5	5.625	9.375	13.75	17.5
	11.25	18.75	27.5	35
7.5	11.25	18.75	27.5	35
10	11.25	18.75	27.5	35

Prospective Multiple Thickness Reconstruction

For all helical scan modes, the operator can choose to reconstruct images prospectively in any of the defined nominal image thicknesses.

In addition to the initial reconstructed slice thickness, the operator has the option to prospectively specify additional images to be reconstructed from a single raw data set. These images can be reconstructed at any of the defined nominal image thicknesses available for a given table speed and scan mode.

This effectively facilitates later, more detailed image analysis without additional patient scans and subsequent dose and image registration concerns.

Helical Scan Parameters

Scan Speed:
Full 360° rotational scans in 1.0 s, 1.5s, and 2.0s

Scan Technique:
KV : 80, 100, 120,140 KV

mA: 10 to 200/160 mA with 5mA increments with 120 kV, and Max 333mA/266mA equivalent with ASiR

Power: 40/30 kVA, 40/32kW equivalent with ASiR

Single Acquisition Max. Scan Time:
120 seconds

Digital Tilt: helical tilt acquisition is possible with a maximum of 30 degrees, in 0.1 degree increments.

Multiple Acquisition Maximum Scan Time: Multiple scans can be acquired in one series to produce up to 3000

contiguous helical images. Up to 2000 rotation helical coverage are possible in multiple series.

Minimum Inter-Group Delay (IGD):   1.0 sec between adjacent helical scans

Scan Fields of View:
25 cm for adult head

25, 43 cm for body

25 cm for pediatric head

Helical Scan Enhancements
Full simultaneity allows complete image display, processing and analysis, as well as image archival and filming concurrent with scanning and reconstruction -- even when acquiring helical images in a multi-slice mode.
Confirm Rx to X-rays on: < 15 sec for any state of tube and gantry; < 10 sec with the gantry rotating.

AutoScan: Fully automates longitudinal table movement and start of each scan.

AutoVoice™: 3 preset in 17 user-defined messages automatically deliver patient breathing instructions with a programmable delay; especially useful for multiple helical scanning and SmartPrep.
Preset messages are supported in 9 different languages: English (Male/Female), French, German, Italian, Japanese, Korean, Spanish, Chinese and Mexican Spanish.

Trauma Patient: Allows patient scans and image display/analysis without entering patient data before scanning.

Biopsy: Simplified prescription for single or multiple scans around an arbitrary table position aids biopsy studies.

Helical Image Reconstruction
Reconstruction Algorithms: Soft, Standard, Detail, Bone, Bone Plus, Lung, Edge and chest.

Reconstruction Matrix: 512

Display Matrix: 1024

Display FOV: Freely variable center/off-center, prospective/retrospective target selection.

CT Number Scale: -1024 to 3071 HU or extended -31743 to 31743

Helical Reconstruction Times:
Up to 6 frames per second reconstruction time

Iterative bone processing, which is always enabled for adult head scanning, reduces image artifacts in head scans stemming from X-ray beam hardening effects.

Minimum DFOV: 9.6 cm

Minimum Pixel Size: 0.19mm

Queued Recon: Requests will be processed continuously and simultaneously with other processes on the system including scanning. Prospective recon will be prioritized over retrospective recon.

Priority Recon Queuing: One touch selection marks most recent rotation for next available recon. Available during or after scanning.
Images annotated to indicate continuous scan acquisition with table incrementation:
HE (helical) + Pitch

Table speed

Prospective Multiple Reconstruction (PMR): Up to 10 sets of reconstructions can be pre-programmed as part of the scan protocol prior to acquisition. The operator can select different start/end location, slice thickness, interval, reconstruction algorithms and display fields of view for each reconstruction. Series descriptions can be entered for each set of reconstructions to facilitate hanging protocols on PACS display. This directly contributes to increased productivity.

Prospective Recon: Operator may initiate full recons at any table location in increments of 1/10 the image thickness; image thickness remains constant.

Retrospective Recon: Operator may initiate full recons at any table location in 0.05 mm increments; image thickness remains constant.

Retrospective Image Decomposition: The operator has the option to retrospectively decompose the original raw data set and reconstruct additional images at any of the defined nominal image thickness available for a given table speed and scan mode. . The operator also can prescribe retro recon graphically on appropriate prospective image by mouse. Visual adjustment parameters such as DFOV, AP/RL center improve retro recon productivity.

Helical Scan Protocols
All protocols assume 120 kVp scans under typical clinical conditions.

Helical Scan Image Quality

Volumetric Helical Scan Image Quality

With Brivo CT385 being a sub-millimeter isotropic CT scanner, it is now possible to specify coronal and sagittal image quality. Reformatted resolution is visually demonstrated on the Catphan High Contrast Resolution Insert Module CTP528.

Single Helical Scans:

Scan Time (sec)	Maximum mA
30	200
60	140
90	100
120	80

Multiple Helical Scans:

(continuous helical coverage with 5-second IGD):

Scan Time	IGD	No. Scans	Max mA
10 sec	5 sec	6	130
20 sec	5 sec	3	130

Continuous Helical Coverage

Multiple helical scans can be performed in succession with only 5-second delays between helical scans, providing up to 2000 contiguous rotations (with up to 1500 images in one series).

Superior

.31mm

.33mm

.36mm

.38mm

.42mm

Inferior
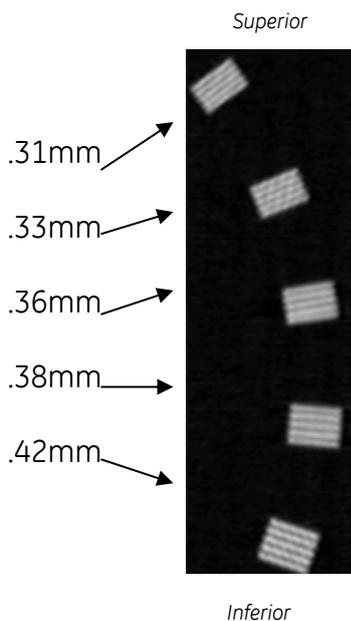
0.35 +/- 0.05mm voxel size is clearly seen in the reformatted plane.

High-Contrast Spatial Resolution

In-plane MTF is demonstrated on a 0.05mm tungsten wire

Hi-Res Algorithm (Edge) - typical

	X/Y – lp/cm
50%	8.5
10%	13.0
0%	15.4

Low-Contrast Detectability

On 8 inch (20 cm) CATPHAN phantom:

- 5mm @0.30% at 10.6mGy with ASiR (ASiR 60% enabled)

- 5mm @0.30% at 17.7mGy when ASiR is disabled

Noise

On either GE Quality Assurance phantom:

- 0.32+/-0.03% at 20.1mGy with ASiR (ASiR 40% enabled)

- 0.32+/-0.03% at 47.5mGy when ASiR is disabled

CTDI

On CTDI Head and Body Dose Reference Phantoms: (Calculated from Axial data and adjusted for 0.938:1 pitch and 260mAs)

CTDIvol expressed in mGy/100 mAs for IEC pitch 1: (normalized to a pitch of 1).
Head   18.85mGy/100mAs
Body   9.42mGy/100mAs

Axial Scanning

Axial Scans

Multi-slice acquisitions and short interscan delays help to reduce potential mis-registration between scans by increasing the number of scans possible in a patient breath hold.

Axial Multi-slice Prescription

Simplified scan prescriptions and easy-to-use default protocols make the Brivo CT385 CT Scanner System fast and efficient in patient set-up. Axial protocols are nearly identical to helical scan protocols.

Axial Multi-slice Modes

The Brivo CT385 CT Scanner System acquires axial scans in sets of 1, 2, 4, 8, or 16 continuous images in one 360° rotation.

For each rotation of the gantry, the Brivo CT385 collects 16 rows of scan data. There are five reconstruction modes available for creating images from the multi-slice scan data (1i, 2i, 4i, 8i, and 16i). By using 1i, 2i, 4i, and 8i reconstruction modes, scan data can be combined prior to image reconstruction to create slices with reduced partial-volume artifacts. This is particularly useful for posterior-fossa imaging.

1i Mode:
Produces 1 image per rotation

Nominal Thickness: 1.25, 5, 10 mm

2i Mode:
Produces 2 images per rotation

Nominal Thickness: 0.625, 2.5, 5, 7.5, 10 mm

(2.5mm Thickness in 2i Mode is available RETRO recon only)

4i Mode:
Produces 4 images per rotation

Nominal Thickness: 1.25,2.5, 3.75, 5 mm

(1.25mm thickness in 4i mode is available RETRO recon only)

8i Mode:
Produces 8 images per rotation

Nominal Thickness: 1.25, 2.5 mm

16i Mode:
Produces 16 images per rotation

Nominal Thickness: 0.625, 1.25 mm

Nominal Thickness: 0.625 mm

Axial Scan Parameters

Scan Time:
1.0, 1.5, 2.0, 3.0, 4.0sec full scans (360° acquisition)

Scan Technique:
- kV: 80,100, 120, 140 kV

- mA: 10 to 200/160 mA with 5mA increments with 120 kV, and Max 333mA/266mA equivalent with ASiR

- Power: 40/30 kVA, 40/32kW equivalent with ASiR

Longitudinal positioning in 0.01 mm per slice increment. Gantry display in 0.5 mm increments.

Interscan Delay (ISD):
Minimum ISD with table moves of 0-10mm: 1.0sec.

Minimum ISD with table moves of more than 10 mm and up to 20 mm: 1.3 sec

Intergroup Delay (IGD):
Minimum IGD is the same as minimum ISD, also user-selectable.

Scan-to-Scan Cycle:
Minimum scan-to-scan cycle of 2.0s (with interscan delay time) possible for 1.0 sec scan speed with minimum ISD's.

Scan Fields of View:
25 cm for adult head

25, 43 cm for body

25 cm for pediatric head

Scan with 0 table increment, contiguous image location, or skipped image location are possible. Overlapped axial scans are not possible.

Axial Image Reconstruction

Reconstruction Algorithms:
Soft, Standard, Detail, Bone, Bone Plus, Lung, Edge and chest.

Reconstruction Matrix: 512

Display Matrix: 1024

Display FOV: Freely variable center/off-center, prospective/retrospective target selection.

CT Number Scale: -1024 to 3071 HU or extended -31743 to 31743

Axial Image Reconstruction:
Up to 6 frames per second reconstruction time.

Iterative bone processing, which is always enabled for head scanning, reduces image artifacts in head scans stemming from X-ray beam hardening effects.

Prospective Multiple Reconstruction (PMR): Up to 10 sets of reconstructions can be pre-programmed as part of the scan protocol prior to acquisition. The operator can select different reconstruction algorithms and display fields of view for each reconstruction. Series descriptions can be entered for each set of reconstructions to facilitate hanging protocols on PACS display. This directly contributes to increased productivity.

The operator has the option to reconstruct the original raw data set at any of the defined nominal slice thicknesses.

Reconstructions can be prescribed down to 1/16 the original acquisition image thickness for images acquired in the 1i scan mode, down to 1/8 the original thickness for 2i mode, and down to 1/4 the original thickness for 4i mode.

Similarly, additional reconstruction supports partial-volume artifact reduction by reconstructing images with 4, 8, or 16 times the acquisition image thickness.

These reconstruction features effectively facilitate later, more detailed image analysis without additional patient scans and subsequent dose and image registration concerns.

The operator also can prescribe retro recon graphically on appropriate prospective image by mouse. Visual adjustment parameters such as DFOV, AP/RL center improve retro recon productivity.

The following table illustrates the retrospective reconstruction image thicknesses available for each acquisition thickness and mode:

Scan Mode	Slice Thickness	Recon Slice Thickness
20mm coverage	0.625 and 1.25	16i – 1.25mm 8i – 2.5mm 4i – 5mm 2i – 10mm
15mm coverage	0.625 and 1.25	4i – 3.75mm 2i - 7.5mm
10mm coverage	0.625	16i – 0.625mm 8i – 1.25mm 4i – 2.5mm 2i – 5mm 1i – 10mm
5mm coverage	1.25	8i – 0.625mm 4i – 1.25mm 2i – 2.5mm 1i – 5mm
1.25mm coverage	0.625	2i – 0.625 mm 1i – 1.25mm

Axial Scan Image Quality

High Contrast Spatial Resolution
On GE Performance phantom:
Hi-Res Algorithm
8.5 lp/cm @ 50% MTF

13.0 lp/cm @ 10% MTF

15.4 lp/cm @ 0% MTF

Low-Contrast Detectability
On 8 inch (20 cm) CATPHAN phantom:

- 5mm @0.30% at 8.8mGy with ASiR (ASiR 60% enabled)

- 5mm @0.30% at 17.7mGy when ASiR is disabled

Noise

On either GE Quality Assurance phantom:

- 0.32+/-0.03% at 19.4mGy with ASiR (ASiR 40% enabled)

- 0.32+/-0.03% at 45.9mGy when ASiR is disabled

CTDI

On CTDI Head and Body Dose Reference Phantoms:
CTDIvol expressed in mGy/100 mAs:
Head   17.68 mGy/100mAs
Body   8.83 mGy/100mAs

Scout Scans

Scout Scans provide outstanding detail for anatomical localization in conjunction with scan prescription.
Scan locations may be prescribed at the operator console either graphically (via mouse), or explicitly (keyboard entry) from a Scout scan.
Prescription of scans with multiple tube angles is also available on a single Scout.

Scout Scan Parameters

Aperture: 0.625 mm × 8 effective aperture
Table speed: 100 mm/sec.
Scan Technique:
Scout scan range: 1100mm (1350mm with extender)
kV: 80, 100,120, 140 kV
mA: 10 to 200mA /160mA 5mA increments with 120kV,

Power: 24KW/19.2 kW with 120kV,
Orientation: AP, RLAT, PA, LLAT (preset); or any angle from 0° - 359° with 1° increment (manually selected).
Axial scan prescription lines indicate scan location to nearest 1 mm table position.
Scouts longer than 1000 mm are auto minimized to fit the display.

Preset WW/WL for scout

Interface, Workflow

User-interface, patient scheduling, Industry standards, DICOM conformance etc…

User Interface

The Brivo CT385 Operator Console utilizes a computer workstation with the following user interface features:

Two 19-inch LCD monitors

- Scan/recon monitor for scan and recon control with no image display.

- Image monitor for image display, analysis, processing, and management.

- Each monitor provides a 1280 x 1024 high resolution, flicker-free display.

Scan control keyboard assembly with intercom speaker, microphone and volume controls

Three button mouse with mouse pad

BrightBox (trackball assembly)

Two wide work surfaces

All these devices are free-standing and can be easily moved to accommodate a large variety of working conditions and individual operator preferences.

Split table top allows unrestricted patient viewing while still supporting 2 monitors. Each work surface can be adjusted at installation to help accommodate a variety of siting requirements.

Multi-language UIF capability

Multi-language Auto voice capability with 9 user selectable languages.

Desktop Overview

The user interface utilizes the paradigm of managed work environments for a more intuitive clinical workflow.
Virtually all clinical operations are managed through three "virtual desktops" or applications managers: Exam Rx, ImageWorks and Learning Solutions. Operators can effortlessly move back and forth between these environments simply by clicking on an icon. Xtream technology enhances multi-tasking architecture and maintains simultaneously all processes so no work is lost or disrupted as desktops are switched.

Exam Rx

The Exam Rx desktop environment provides the clinical tools necessary for comfortable, efficient control of patient studies.
These tools include patient scheduling and data entry, exam protocol selection, protocol viewing and editing, scan data acquisition, image reconstruction, image display and routine analysis, AutoFilm or manual filming, AutoStore and AutoTransfer.

Computer Based Training

The Brivo CT385 provides an on-screen, on-line operator manual via a multi-media CD-ROM player integrated into the operator's console. Learning Solutions is also viewable on a stand-alone PC providing flexibility and productivity for on-demand learning of system operation.

Exam Rx

Patient Scheduling

Patient demographics and exam protocols can be pre-programmed in advance of patient arrival by selecting Schedule Patient from the scan/recon monitor. This productivity enhancement allows entry of all or some of a patient's demographic data, as well as pre-selection of the exam protocol.
This feature is available any time a patient exam is not currently underway.
This feature uses the same interface as New Patient selection for simplified, consistent programming.
Patient information can be easily recalled to set up an immediate exam via List/Select Scheduled Patient on the scan/recon monitor. Pre-programmed patient exams can also be recalled from the New Patient screen automatically by entering the patient ID number.

Patient Data Entry

Patient data can be entered as part of New Patient set-up, or can be recalled from the list of pre-scheduled patients.

Presets for Referring Physician, Radiologist and Operator can be saved on the system reducing data entry required by the user.

Trauma Patient ID allows patient scans and image display/analysis without entering patient data before scanning.

Exam Protocol Selection

One of the main contributions of the Brivo CT385 Scanner System to department productivity is its streamlined exam set-up.

- Exam parameter set-up has been streamlined through the use of protocols.
- Protocols can be easily selected in one of three convenient ways:
- A large, graphical Anatomical Programmer located on the New Patient screen.
- A default list of the "top 10" most commonly used protocols located near the anatomical programmer.
- A numerical entry.
- Two Anatomical Programmers - one for adults and one for pediatrics - provide quick and easy access to 6,840 user-programmable protocols (total). Each programmer has ten anatomical regions.
- Default protocols have been expanded through Protocol Pro - a "behind the scenes" protocol manager - that allows preselection of automated features like AutoVoice, AutoFilm, AutoStore and AutoTransfer on a per-series basis.
- Protocol Pro also provides preselection of different window/level settings for AutoFilm and can automatically display the 1024 Localizer each time a new series is requested.
- Default protocols also include preset scan time, kVp, mA, slice thickness, scan mode, table speed, image interval, gantry tilt, scan field-of-view, display field-of-view and center, recon types, and breathe timing parameters.
- Any scan parameter can be edited for each scan or all scans either before or during an exam. Scans can be easily added or removed from the prescription.
- Scan/recon control uses only 2 screens to set up first scan - New Patient and Protocol View/Edit.

Protocol View/Edit

- A single, full screen View/Edit table allows fast and easy examination and modification of exam parameters before scanning begins.
- Exam parameters can be changed for just one scan, or for all scans in a series.
- When used in conjunction with the 1024 Localizer, changes made in the View/Edit table that affect the

number of scans, image interval, starting/ending locations, tilt, or display FOV are automatically shown on the 1024 Localizer.

- Any changes made directly on the 1024 Localizer display using the mouse and the on-screen cursor controls are also reflected automatically in the View/Edit table.
- View/Edit Wizard intuitively adjusts dependent parameters automatically in response to operator-initiated changes and highlights them for quick review. It also alerts the operator to incompatible dependencies requiring operator intervention.
- Tab card groupings for Timing, Recon and Filming help organize the large number of parameters available within each protocol.

Scan Data Acquisition

- Full-screen DynaPlan Plus illustrates scan status graphically, with real-time feedback while the exam is underway. Scans, programmed delays (prep, breathing, inter-group), and even AutoVoice announcements are clearly shown before and during scanning.
- AutoScan: Fully automates longitudinal table movement and the start of each scan
- AutoVoice: 3 preset in 17 user-defined messages automatically deliver patient breathing instructions with a programmable delay; especially useful for multiple helical scanning and SmartPrep. Preset massages are supported in 9 different languages: English (Male/Female), French, German, Italian, Japanese, Chinese, Korean, Spanish, and Mexican Spanish.
- Full Simultaneity allows scan and recon to work concurrently with image display, processing and analysis (including computationally intensive features such as MPR, MPVR and 3D/MIP) while still running image archival, filming and networking processes.
- Remote Gantry tilt allows the operator to adjust scan angle from the control room and minimize trips between the scan room and operator's workstation.

Dose Computation & Display

- Volume CTDIw (CTDIvol), DLP (Dose Length Product), and Dose Efficiency computation and display during scan prescription provide patient dose information to the operator.
- Volume CTDIw (CTDIvol) is a dose index defined by IEC60601-2-44. This index is computed automatically by the Brivo CT385 CT System and reported on the Exam Rx screen. Volume CTDIw is a single number consisting of 2/3 of the CTDI100 peripheral dose plus 1/3 of the CTDI100 central dose that is adjusted by the helical or axial pitch factor.
- CTDI100 is a dose index based upon CTDI dose measurements over a 100 mm volume, as defined in IEC 60601-2-44.

- Dose Length Product (DLP) is given in mGycm and is computed and displayed for each group prior to the scan. Additionally, an accumulated DLP is displayed for the entire exam, as the exam prescription progresses. The final exam accumulated DLP provides a convenient measure for maintaining patient or procedure dose management statistics.

- Dose Efficiency is automatically computed and displayed on the Exam Rx screen. The dose efficiency is a measure of how much of the Z-axis X-ray beam is used by the system, as defined in IEC 60601-2-44.

- Dose Reporting saves the CTDIvol and DLP in the patient record as a DICOM secondary screen capture. Series and cumulative exam values are saved. Saved values can be networked, filmed and archived

AutoView Layouts

- Eight powerful AutoView layouts provide exceptional flexibility in tailoring the 1,024 image display to the user or the application at hand - without the complexity of free-form "windows."

- AutoView Layouts include:
    - 1024 AutoView image
    - 768 AutoView image (matches the image size shown on the HiSpeed Advantage 2.X Series OC monitor)
    - 512 AutoView image + 512 Localizer Scout with cut lines automatically showing the location of the AutoView image on the Scout
    - Two 512 AutoView images (same image but at different window/level settings) + 512 Localizer Scout with cut lines automatically showing the location of the AutoView images on the Scout
    - 512 AutoView image + 512 AutoFilm image
    - Last two 512 AutoView images
    - Last four 512 AutoView images
    - AutoLink which links the current series to a view port

- Basic image review features such as window/level, magnification and flip/rotate are available for AutoView images.

- Any window not used for AutoView is available for independent, simultaneous review of other exams.

- Special BrightBox, a three-button trackball device, provides independent control of image next, prior, manual paging and trackball window/level for any review images in focus. This helps make two person operations practical.

- Regardless of the AutoView Layout used, AutoFilm viewing is available anytime via an on-image selection - without disrupting other image processes in progress. Background filming allows full use of the image display monitor for AutoView and image review/processing without interruption during AutoFilm.

Image Review Layouts

- Five flexible Image Review Layouts are provided for those applications where greater than 512 image display may be desired and AutoView is not required.

- Image Review Layouts include:

Note: uses short notation for screen options
    - 1024 single image display
    - 768 single image display
    - Two 512 image display, horizontal format
    - Two 512 image display, vertical format
    - Four 512 image display

- Each image display window can be further subdivided into four more images, increasing the total number of images that can be displayed at once to 16.

- BrightBox image control is also available for Image Review Layouts.

Image Access

- Point and click interface along with a pictorial directory (browser) allows for easy selection by exam, series or image

Routine Image Display

- Image display features provided within Exam Rx:
    - Zoom/Roam
    - Explicit Magnify
    - Flip/Rotate
    - ProView
    - Display Normal
    - List/Select
    - Ellipse ROI
    - Measure Distance
    - Grid On/Off
    - Cross Reference
    - User Annotation
    - Exam/Series Page
    - Hide Graphics
    - Erase
    - Screen Save
    - Gray Scale Enhancement

- ProView visualization algorithms are available to enhance anatomical structures without additional reconstruction time:
    - Four Selections for enhancement of high contrast objects where fine detail is required without aliasing (such as lungs)
    - Three Selections for modifying perceived levels of noise and low contrast discrimination

- Seven ways are provided to adjust window/ level of images in focus in order to meet a variety of clinical work environments and user preferences:

- Five user-programmable keys on the scan control keyboard (F6 - F11), plus one key for returning to prior setting (F5)
- On-image through middle mouse button
- BrightBox trackball

Routine Measurements

- Image measurement features provided within Exam Rx:
  - Box ROI
  - Ellipse ROI
  - Trace ROI
  - Measure Distance
  - Measure Angle
  - Grid On/Off
  - Hide Graphics
  - Erase
  - Screen Save
  - MIROI (Multiple Image ROI)
  - Report Pixels

Display Preferences

- Display settings available to tailor the overall display (settings apply to all images in all exams):
  - Annotation Levels
  - Inverse Video
  - Next/Prior Each View Port
  - Next/Prior Series Binding
  - Continuous Report Cursor

Auto Image Management

The Exam Rx work environment conveniently provides for selection of AutoFilm, AutoStore (to remote, such as PACS), and AutoTransfer (across a network). Auto Transfer capability can be specified by Image, Series or Exam.
An AutoFilm Composer provides a simple programming interface for automated filming set-up.
Batch Filming is accomplished through a single keystroke which automatically prints an entire series at a time.

Manual Image Filming

- On-screen filming is available for any digital camera using a 3M-952 protocol.
- Images may be individually filmed manually via "drag and drop" to the on-screen Film Composer.
- Print Series allows the automatic printing of an entire series with one keystroke.
- Page filming allows the creation of an entire film with one keystroke.
- Multiple-image formatting allows filming of multiple images in a single film frame. As for that format over 30, the function does not support at the auto film format.

- Film formats supported are 1:1, 2:1, 4:1, 6:1, 8:1, 9:1, 12:1, 15:1, 16:1, 20:1, 24:1 ,25:1, 30:1, 35:1, 42:1 and 35-mm slide (depends on capability on imager side
- Important note: The Brivo CT385 CT Scanner comes standard with a DICOM Print Interface configurable for multiple DICOM Print destinations. Connections with cameras that do not support DICOM Print may require a filming interface (purchased separately).

To save further filming cost, the Operator Console can directly print to a postscript printer such as the GE Color Printer available as an option.

ImageWorks

ImageWorks software is designed to take advantage of the Brivo CT385 CT Scanner's computer and image processor. This desktop environment includes image management and networking.
Because some of the image analysis and display features of ImageWorks replicate those in Exam Rx, the next section describes only features that are incremental or significantly different.

Image Analysis

- Multi-Projection Volume Reconstruction (MPVR): Quick and easy way to generate volumetric images for CT angiography without thresholding data or removing unwanted anatomy. An entire volume is used to generate images in any plane, creating real-time frames of reference at the same time.
- Clinical utility is extended via two additional modes.
  - MIPS - enhances contrast and improves visualization of calcifications.
  - Average - generates 2D radiographic images.
- Multi-planar Reformation (MPR): Provides real-time assessment of anatomy in off-axis planes. Sagittal, coronal, oblique and curved planar reformations available.
- Batch reformatting can also be defined and executed for later viewing if desired.
- Image Addition and Subtraction: Includes image addition of more than two images at a time.

Image Display

- Magnifying Glass allows quick 2X mag window that can be moved over an image.
- Image Scroll moves an image within its own window.
- Groupings allow application of window/level values, magnification/minification, and image scroll or flip and rotate to a user-defined image set.
- Save State stores user-selected image orientation and window/level with each data set.
- Window/Level values may be:

- Preset to provide six on-screen instant window/level settings.
- Set independently for up to 16 images on the screen.
- User-modified in discrete or variable steps.
- Adjusted real-time on-image by holding down the middle mouse button and moving the mouse.

- Cine mode provides paging in up to 4 view ports of up to 128 previously stored CT or MR images at full selected display frame rate. For more than 128 images, display frame rate may be reduced.
- Cine mode also provides temporal, spatial or manual playback loops.
- Text Page

Image Annotation

- Image annotation and cursor are shadowed to permit ease in reading.
- Large Font configuration doubles the size of the Patient Name, Patient ID and Accession Number for image display and filming.

Image Management

Images may be stored and retrieved via Optical Drive media using DICOM 3.0 format. This allows interchange with other imaging systems supporting DICOM 3.0 format. Not all vendors' implementation of DICOM 3.0 are identical, so please check with the manufacturer for compatibility.

Off-line retrieval of all image files. Images may be viewed as soon as they are restored from the media.

Image Networking

Exams can be selected and moved between the CT Scanner System and any imaging system supporting the DICOM 3.0 protocol for network send, receive and pull/query (also depends on capability on imaging system side).

Image transfer time using DICOM 3.0 protocols is approximately 0.1 second per 512 images on 100baseT network.

Network History Log with sort and search capabilities for image transfer confirmation.

Industry Standards

- The Brivo CT385 Scanner System complies with a wide variety of industry standards to facilitate more rapid adoption of features and performance improvements as the computing and medical imaging industry evolves.

DICOM Conformance Standards

- DICOM 3.0 Storage Service Class
  - Service Class User (SCU) for image send

  - Service Class Provider (SCP) for image receive
- DICOM 3.0 Query/Retrieve Service Class
- DICOM 3.0 Storage Commitment Class Push
- DICOM 3.0 Modality Worklist (including Performed Procedure Step) (through ConnectPro option)
- DICOM 3.0 Print
- DICOM Gray Scale Presentation state for image presentation
- DICOM Structured Dose Report

HIPPA

- Password protected User login and Authentication
- Image anatomization tool

Product Network Filters restricts access to scanner system by IP address, services type (IE ftp, telnet) and DICOM port number. User configurable.

Filming Protocol

- 3M-952 Standard

System components
Standards, dimensions, requirements

Gantry

Advanced slip ring design continuously rotates generator, tube, detector and data acquisition system around the patient.

- Aperture: 65 cm

- Tilt: ± 30° (digital)

- Maximum SFOV: 43cm

- Rotational Speeds: 360° in 1.0, 1.5, 2.0,3.0, 4.0sec.

- Partial scan: Utmost 0.7 second for partial scan time (235 degree cine acquisition)

- Focal spot to detector distance: 949+-1mm

- Remote Digital Tilt from Operator's Console.

- Integrated breathing lights and countdown timer.
- Scan plane toward front of gantry for improved positioning access. A more streamlined gantry shroud, bilateral table/gantry controls and gantry display maximize maneuverability while working next to the gantry.

- Laser Alignment Lights:
- Define external & internal scan planes to ± 1 mm accuracy

Visual readout is easy to read from the table side or from the operator console.

Table

- Single table, cantilever design with wide height range

- Vertical Range: 441mm to 900mm

- Vertical Scannable Range: 700mm to 900mm

- Horizontal Range: Up to 1520mm

- Horizontal Scannable Range: Up to 1100mm horizontal scannable range. (Up to 1350mm with Cradle Extender Option available)

- Table Load Capacity:

  180 kg(396Ib) with +/- 0.25mm of longitudinal position

- Controls on gantry for elevation and cradle incremental. Foot pedals on both sides of table for elevation. Cradle position controlled from OC for prescribed scans.

X-Ray Tube

Venus Tube Unit. Design optimized for exams requiring a large number of scans with less tube cooling.

- Heat Storage Capacity:
    - Anode: 1500 kJ (2MHu)
    - Tube Unit 2518 kJ (3.4MHu)

- Heat Dissipation
    - Anode: Maximum 6200W (500 kHu/mn)
    - Anode: 1 Min. Avg. 4000W(325 kHU/mn)
    - Tube Unit Continuous 3450W (300 kHU/mn)

ASiR allows system to achieve the same image quality at a lower mA with less tube heat output, which enables the tube for longer duration helical scan.

With ASiR, Brivo CT385 will be equivalent to 40KW and 333mA and 3.3MHu anode heat storage capacity

Focal Spot:

- 0.8(W) x 0.6(L) Nominal Focal Spot Size
(IEC 60336:2005)
- Loading factors 120kv 125mA

- Fan Angle 56.8° minimum

High Voltage Generation

- High-frequency on-board generator. Continuous operation during scans.

- mA: 10 to 200/160mA, 5mA increments with 120 kV, and Max 333/266mA equivalent with ASiR

- Power: 24/19.2 kW with 120 kV, 40/32kW equivalent with ASiR

- kV: 80, 100,120, 140kv

- mA: 10 to 200 / 160mA, 5mA increments with 120 kV Maximum mA for each KV selection

kV	Max mA(40/30kVA)
80	200/200
100	200/190
120	200/160
140	160/130

HiLight Scintillator with Volara* DT DAS

- 18,816 individual elements: 16 rows of 0.625 mm thickness and 8 rows of 1.25 mm thickness, each row contains 752 active patient elements and 32 reference elements.
- Quarter-Quarter offset doubles the effective detector number.
  - imaging detection channels per detector row
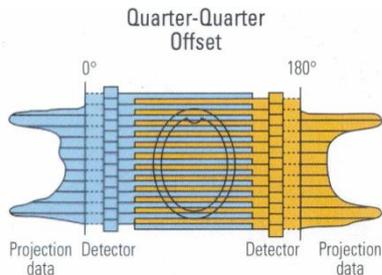
Data Acquisition System

- Result of 4 years of development, the Global Data Acquisition System integrated circuit (IC) is a 64-channel charge-to-digital converter (C/D). Each channel accepts detector photo-current as input, integrates the current for a CT-view period, and outputs a 30-bit mixed-radix representation (channel fold counts) XWwith constant charge resolution and wide dynamic range.

Scan/Control Unit

Located in base of Operator Console.

Host Computer

- CPU: Dual Intel Xeon E5 Series Quad-Core Processor 1.80GHz or higher
- RAM: 16GB or more DDR3 ECC, 1600MHz or higher

Image Processor

- AMD FirePro professional graphics card
- 4GB GDDR5 Memory, 256-bit interface
- 128-bit color precision
- PCI Express 2.0 Compliant
- Max DisplayPort 1.2 Resolution: 4096x2160
- Max DisplayPort 1.1 Resolution: 2560x1600

Image Reconstruction Engine

- Pipelined parallel processing allows 12 views to be back-projected simultaneously
  - 22fps with GPU acceleration option*
- Image Generator consisting of:
- AMD FirePro professional graphical card
- 4GB GDDR5 memory, 256-bit interface

*Not for sale or distribution in China

Not for sales or distribution in the United States

- 2.4 TFLOPs single precision and 152 GFLOPs double precision floating point performance

Total of 4*300GB hard disk drives system:

- System disk drives
- High Performance Drive
- 300 GB, 2.5 inch hard disk driver
- 10,000 RPM
- SAS interface
- Assigned to system and application software only
- Scan data 2*300GB hard disk drivers
- Disk RAID, consist of 2*300 GB, 3.5 inch hard disk drives
- High Performance Drive
- 10,000 RPM
- SAS interface
- Assigned to scan raw data only
- Store scan raw data up to 9,600 scan rotations at 16 slice mode or up to 1,500 scan data files.
- Imaging data disk drive:
- High Performance Drive
- 300GB, 3.5 inch hard disk driver
- 10,000 RPM
- SAS interface
- Assign to image file only
- 400,000 uncompressed 512x512 images.

Software Architecture

- Software architecture based on industry standards and client-server design.

Peripherals

- DVD-R/CD-R (DICOM Interchange):
- 4.7 GB capacity (DVD)
- Up to 7,168 image storage (DVD)
- 20x DVD, 48x CD Max
- Supports CD-R, DVD-R
- DVD Ram:
- Transfer rate 2.7MB/second
- Assigned to scan data file and protocol file storage/retrieval
- Color monitors:
- 19 inch diagonal width
- 1280 x 1024 dot resolution
- Non-interlaced, flicker-free presentation
- 76 kHz Horizontal deflection frequency
- 72 Hz Vertical deflection frequency
- Sync on green
- Scan control keyboard (English language) assembly with intercom speaker, microphone and volume controls

- 3-Button Mouse
- 3-Button Trackball†

Image Networking

- Standard auto-configuring 100BaseT/10BaseT Ethernet (UTP connection).
- Supports gigabit 27Ethernet capability.
- Direct network connection; multi-suite 27Ethernet card not required for gateway out of suite
- Protocols supported:
  - DICOM 3.0 network send (one IP address at a time) and receive, pull/query, and storage commitment push;
  - InSite point-to-point;
  - TCP/IP (for system administration)
  - A DICOM Print Interface is standard on the system

Compatible Options

- English UIF &Keyboard
- French UIF & Keyboard
- German UIF& Keyboard
- Asian Keyboard
- Danish UIF & Keyboard
- Dutch UIF & Keyboard
- Italian UIF & Keyboard
- Norwegian UIF & Keyboard
- Spanish UIF & Keyboard
- Swedish UIF & Keyboard
- Portuguese, Brazil UIF & Keyboard
- Euro Misc. Keyboard
- Chinese UIF &Keyboard
- Finnish UIF
- Japanese UIF
- Short Cable set
- Long Cable set
- BrightBox trackball
- ConnectPro† HIS/RIS Interface with Performed Procedure Step (PPS)
- Volume Viewer† (including Virtual Endoscopy, 3D, Volume Rendering)
- Advantage CTC Pro†
- DentaScan†
- CT Perfusion† only Package for Operator Console
- CT Perfusion4† Multi-Organ for Operator Console
- AutoBone Xpress† for CT Operator Console
- Advanced Vessel Analysis†

- Xtream injector†
- Enhanced Xtream injector†
- Recon Enhancement Software Package†
- 200mA Power Max
- Exam Split FX†
- UPS†
- Bar code Reader†

† This item is optional

Temperature and Humidity

Exam and Control Rooms: 64°-78°F (18°-26°C) at 30%-60% relative humidity (non-condensing).
Equipment Room: If a separate equipment room is used to house the PDU, the allowable temperature range is 64°-78°F (18°-26°C) at 30%-60% relative humidity (non-condensing).
Temperature Rate of Change: 3°C/hour max.
Relative Humidity Rate of Change: 5% RH/hour max.

Power Requirements

The only facility input to the system is 200/220/240/380/400/420/440/460/480 V nominal, 3 phase Delta or Wye, 50/60 Hz, 40kVA service, 20 KVA average power; main disconnect to be located within 5 feet (1.5 m) of the PDU. The facility must also provide a protective disconnect device with low voltage, low energy local and multi-point remote capability, in the line feeders to the PDU.
Complete, detailed specifications of all power requirements are available upon request. For most installations, the Brivo CT385 CT Scanner System does not require any power conditioning equipment to be used in conjunction with the PDU. Regulators are not recommended for use with this system. For those sites with known large power line transients, a suppresser filter for the system computer and peripherals may be useful. In general, suppresser filters are not recommended.

Cooling Requirements

The cooling requirements do not include cooling for the room lighting, personnel or non-CT equipment present. Cooling requirements are listed by subsystem to allow planning for each room of the CT suite.
Cooling requirements are given for minimum, recommended and growth allowance scenarios.

- The minimum cooling figures assume patient throughput of 3 patients per hour and 75 scan rotations per patient.
- The recommended cooling requirements assume patient throughput limited by the tube cooling algorithm.

- The suite cooling can be sized for future developments by using the growth allowance figures. This cooling will accommodate more patients per hour and/or potential future system enhancements.

Subsystem	Minimum Allowance Watts
Gantry	4430
Table	120
PDU	700
Operator Console	840

System Components CT

Component	Size (mm)			Weight(kg)
	W	H	D	
Gantry	1783	1741	921	980
Computer console	470	656	736	80
Table & Cradle	568	914	2137.5	340
PDU	700	1062	550	300
Total Weight				1700

o ELEC, up limit

o Excluding monitor arm

License

ASIR is licensed for use with a GE x-ray tube. Use of a third party x-ray tube will require an additional license* for this feature.

*This is a no fee license. However, there may be a nominal cost incurred for license installation

Warranty

The published Company warranty in effect on the date of shipment shall apply. The Company reserves the right to make changes.
All specifications are subject to change.

Regulatory Compliance

This product is designed to comply with applicable standards under the Radiation Control for Health and Safety Act of 1968.
Laser alignment devices contained within this product are appropriately labeled according to the requirements of the Center for Devices and Radiological Health.

CAUTION
LASER RADIATION
DO NOT STARE INTO BEAM
635, 670 nm LASER DIODE
1.0 MILLIWATT MAXIMUM OUTPUT
CLASS II LASER PRODUCT

This product is a CE-compliant device which satisfies regulations regarding Electro-Magnetic Compatibility (EMC) and Electro-Magnetic Interference (EMI), pursuant to IEC-60601-1-2.

Not for sales or distribution in the United States

About GE Healthcare

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services helps our customers to deliver better care to more people around the world at a lower cost. In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

Our "healthymagination" vision for the future invites the world to join us on our journey as we continuously develop innovations focused on reducing costs, increasing access, and improving quality around the world. Headquartered in the United Kingdom, GE Healthcare is a unit of General Electric Company (NYSE: GE). Worldwide, GE Healthcare employees are committed to serving healthcare professionals and their patients in more than 100 countries. For more information about GE Healthcare, visit our website at www.gehealthcare.com.

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imagination at work