

**Pre-Owned GE Make HDxT 16 channel 1.5T**

<b>Configuration For HDxT 16 Ch 1.5T MRI System</b>
Signa HDxt 1.5T EchoSpeed 16 Channel Magnet
Signa HDxt 1.5T 16 Channel Fixed Site Hardware
Signa HDxt 1.5T 16 Channel MR System Electronics
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<b>SCANTOOLS PACK 1.5T</b> HDxT Neuro Functionality HDxT Angiography functionality HDxT Basic Cardiac Functionality HDxT Body Functionality BOLD Analysis HDxT MSK Functionality
HD PROPELLER
1.5T Calibration Phantom Kit
Non-magnetic Patient Gurney
10 KVA Step down Transformer 3/3 phase (Consul make)
MR Small Security Warning Sign (English)
New RF Shielding for 1.5T
New UPS & BATTERIES
Calibration Kit Phantom Holder Cart
Wide-Screen LCD Monitor
<b>GE AW MULTI-MODALITY WORKSTATION</b>

## **Product Information 1.5T HDxT 16 channel**

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### **Pre-Owned Refurbished Signa HDxt 1.5T EchoSpeed Phased Array 16 Channel System**

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#### **Signa HDxt 1.5T EchoSpeed 16 Channel Magnet - Fixed or Relocatable**

Signa HDxt 1.5T EchoSpeed 16 Channel Magnet - Fixed or Relocatable

With its uniquely contoured system enclosures, the compact 1.5T Signa superconducting magnet offers superb homogeneity; and it includes 18 GE-designed superconducting shim coils to further improve homogeneity, particularly for fat saturation with large or off-center fields of view. The magnet's active shielding minimizes the stray ambient magnetic field to increase safety and minimize interference with equipment operation.

The combination of a wide, 60-cm-diameter bore and patient table assembly that rests close to bore bottom creates ample room even for large patients. Innovative K4 cooling technology prevents helium boil-off while making refills an extremely rare occurrence.

The Gradient Module installed within the magnet bore consists of three gradient coils and the quadrature transmit/receive body RF coil. Each gradient coil is designed to change magnetic-field strength linearly with increasing distance from the center of the magnet by as much as 33 mT/m.

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#### **Signa HDxt 1.5T 16 Channel Fixed Site Hardware**

Signa HDxt 1.5T 16 Channel Fixed Site Hardware

This hardware collection equips your 1.5T Signa EchoSpeed Fixed Site MR system with 16 Channel receive capability.

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#### **Signa HDxt 1.5T 16 Channel MR System Electronics**

Signa HDxt 1.5T 16 Channel MR System Electronics

The Signa HDxt 1.5T 16 Channel EchoSpeed MR system provides a premium technology platform to deliver consistently and reliably high-definition MR images in even the most challenging cases. Exclusive GE applications provide unprecedented imaging speed, resolution, and contrast in neurovascular, cardiovascular, abdominal, orthopedic, and spectroscopic imaging. Driven by EchoSpeed performance gradients, each axis can attain a peak gradient amplitude of 33 mT/m and slew rate of 120 mT/m/ms. Coupled with GE's exclusive digital gradient-control topology, these gradients produce the most accurate and repeatable waveforms to ensure the highest possible image quality. That's especially true with Echoplanar and Fast Spin Echo imaging, as well as in demanding applications such as PROPELLER.

**Signa HDxt 16 Channel receive architecture is designed to accommodate a growing number of 16-channel RF coils, including GE's exclusive Head/Neck/Spine coil as well as any of the high-density phased-array coils, the industry's largest. Equipped with a blade Volume Reconstruction Engine (VRE), Signa HDxt 16-channel architecture delivers real-time image**

reconstruction capability, enhanced parallel imaging reconstruction, and rapid 3D volume reconstruction.

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### **Signa Detachable Patient Table**

#### Signa Detachable Patient Table

GE's detachable patient table features a mechanism for fast table docking and undocking. This feature has proven invaluable for patient safety and emergency response whenever patient resuscitation may be required.

And by allowing staff to prep patients outside of the scan room, it avoids wasted scan-room time between procedures, boosting both room utilization and departmental productivity.

- Table height continuously adjustable from 27" to 38"
- Table drive is automated power driven vertical and longitudinal
- Total cradle travel is 244 cm
- Scanning range is 193.9 cm with positioning repeatability of 0.05cm

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### **Wide-Screen LCD Monitor**

#### Wide-Screen LCD Monitor

This flat-panel Liquid Crystal Display (LCD) monitor delivers 1920 x 1200 dot resolution at a refresh rate of 60Hz and an excellent 500:1 contrast ratio using a digital DVI interface, all significant improvements over conventional designs.

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### **4 kW Gradient Chiller for Fixed or Relocatable**

#### 4 kW Gradient Chiller for Fixed or Relocatable

This chiller for cooling the magnetic-field gradients is mandatory for all 1.5T MR systems.

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### **Signa HDxt 1.5T EchoSpeed Phased Array 16 Channel Cables**

This is a required collection of high performance phased-array cables specifically engineered for the Fixed Site 1.5T Signa EchoSpeed MR system.

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### **Sumitomo Shield Cooler**

This is a 200V Sumitomo cryogen compressor.

## COILS :

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### **1.5T 8 Channel Neurovascular Array**

#### 1.5T 8 Channel Neurovascular Array

The 8 Channel Neurovascular Array enables combined head-and-neck imaging without the need for patient repositioning. The coil is optimized for ASSET parallel imaging in a wide range of soft-tissue neck, skull-base and brain studies. Its head portion generates high-SNR brain images with uniform coverage. For vascular imaging, the coil delivers coverage from the aortic arch to the circle of Willis. And it is excellent for a wide range of additional applications, including imaging of the cervical spine, as well as soft-tissue neck and carotid applications. The coil's removable top has multiple openings and an adjustable mirror to reduce claustrophobia and facilitate patient positioning.

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### **8 -channel Body Array Coil for HDxt systems**

This 8-channel coil is specially designed for an extensive z-axis coverage and high SNR imaging in abdomen and pelvis on a 16ch HDx MR system.

**It provides higher sensitivity than the integrated body coil to enable the highest possible signal-to-noise ratio.** Its ASSET compatibility enables advanced techniques such as LAVA, abdominal MRA and diffusion imaging.

**This coil also plays a vital role in STIR and T1-weighted imaging with the whole body protocols.**

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### **1.5T 8 Channel CTL Array**

#### 1.5T 8 Channel CTL Array

This 12 Element, multi-station CTL array delivers high SNR and spatial resolution for entire spine, soft-tissue neck, and carotid studies. This 8 Channel array is designed to conform to the spine's normal curvature and includes a patient comfort pad and restraint. Its extensive coverage - 75 cm in the S/I direction - accommodates imaging of the entire spine.

The coil's unique split-top design extends its clinical flexibility. Its removable top facilitates routine neck imaging, capturing both the cervical spine and anterior neck. Coil markers make accurate positioning at imaging isocenter surprisingly quick and easy.

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### **1.5T Quad Extremity Coil**

#### 1.5T Quad Extremity Coil

The Transmit/Receive design of the Quad Extremity Coil helps ensure optimal results in studies of the knee, ankle and foot. Its unique anterior extension increases the imaging volume for thorough evaluations in dorsi-flexed foot and ankle studies, covering FOVs up to 30 cm for the foot and ankle, and up to 20 cm for the knee.

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### **1.5T 5-inch General Purpose Coil**

#### 1.5T 5-inch General Purpose Coil

This coil is useful for a wide range of small-parts applications - including the orbits, IAC, ankle and wrist. And with the help of a dual-array adaptor, two of the coils can be used concurrently for simultaneous high-resolution imaging of TMJ, orbits or IAC.

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### **1.5T 3-inch General Purpose Coil**

#### 1.5T 3-inch General Purpose Coil

This coil is useful for imaging anatomy from the orbits and IAC to the ankle and wrist. And with the help of a dual array adaptor, two of the coils can be used concurrently for simultaneous high-resolution imaging of TMJ, orbits or IAC.

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### **1.5T General Purpose Flex Coil**

#### 1.5T General Purpose Flex Coil

This coil can be used to optimize imaging of irregular anatomy such as the neck, shoulder, elbow, brachial plexus, hip, thigh, knee, ankle, and foot, and to facilitate dynamic joint imaging. Its generous sensitive volume helps ensure uniform signal intensity, and therefore superior soft-tissue imaging throughout the area of interest.

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### **1.5 T Quad Brain Coil :**

#### Transmit / Receive Cage Architecture Brain Coil

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### **PROBE PRESS Single-Voxel Spectroscopy**

#### PROBE PRESS Single-Voxel Spectroscopy

PROBE PRESS enables single-voxel proton brain spectroscopy using the PRESS pulse sequence. PROBE PRESS acquires and displays volume localized, water suppressed <sup>1</sup>H spectra in a single-voxel mode for the non-invasive assessment of *in vivo* metabolites. Graphic prescription of the spectroscopic volume and automated reconstruction make this tool easy to use.

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### **PROBE 2D CSI**

#### PROBE 2D CSI

PROBE 2D CSI expands proton brain spectroscopy capability enabling simultaneous acquisition of multiple in-plane voxels. PROBE 2D CSI uses the PRESS pulse sequence to acquire and display volume-localized, water suppressed <sup>1</sup>H spectra in a multi-voxel mode for the non-invasive assessment of *in vivo* metabolites. Metabolite maps are automatically generated in FuncTool on the operator console.

## HDxt ScanTools

Spin Echo: The gold standard for generating T1, proton density and T2 images.

Fast Spin Echo (FSE), Fast Spin Echo-XL (FSE-XL): Uses echo-train technology to reduce total acquisition times. Very short echo-spacings minimize T2 blurring.

Fast Recovery Fast Spin Echo (FRFSE), Fast Recovery Fast Spin Echo-XL (FRFSE-XL): The new sequence of choice for high-quality, high-speed, and high-contrast T2-weighted imaging in neurological, body, orthopedic and pediatric applications. Prescribe FRFSE rather than FSE, and you'll be able to choose between shorter acquisition times or increased slice coverage.

Single Shot Fast Spin Echo (SSFSE): An ultra-fast scanning technique that permits dataset acquisition within a single RF excitation period. That means it can acquire slices in less than one second, making it an excellent complement to T2-weighted brain and abdominal imaging, as well as MR cholangiopancreatography (MRCP) studies.

Gradient Echo (GRE), Fast Gradient Echo (FGRE), Spoiled Gradient Echo (SPGR), Fast Spoiled Gradient Echo (FSPGR): This suite of Gradient Echo techniques uses short TRs and TEs to generate T2-weighted images in far less time than conventional Spin Echo or, in the case of ultra-fast FGRE3D, to quickly generate T1-weighted breath-hold images of the abdomen, pelvis, breast and cartilage. The ultra-short TRs and TEs that are generated with this sequence also ensure that you have the TR performance needed for top-quality vascular and contrast-enhanced MRA studies.

SPECIAL (Spectral Inversion at Lipids): This spectral spatial inversion pulse sequence allows you to perform fat saturation in conjunction with 3D GRE sequences.

iDrive Pro: This real-time interactive imaging tool makes it easier than ever to generate detailed diagnostic information on virtually any anatomy. With iDrive Pro, the operator can change scan parameters on the fly, while evaluating the results. Its especially useful for scanning organs subject to motion artifacts, such as the spine, heart, diaphragm or GI trace as well as when its necessary to time an event, such as the arrival of a contrast bolus.

ScanTools HDxt Parallel Imaging:

### **ASSET parallel imaging:**

Reducing scan times are often a critical patient comfort consideration. ASSET (Array Spatial Sensitivity Encoding Technique) can help. This parallel-imaging technique is designed to reduce scan time, increase in-plane spatial resolution, or acquire more slices. ASSET also minimizes RF deposition. It is compatible with all these imaging sequences: 2D Fast Gradient Echo (2DFGRE), 2D Fast Spoiled Gradient Echo (2DFSPGR), 3D Fast Gradient Echo (3DFGRE), 3D Fast Spoiled Gradient Echo (3DFSPGR), 3D Time of Flight Gradient Echo (3DTofGRE), 3D Time of Flight Fast Spoiled Gradient, Echo (3DFSPGR), 2D Fast Spin Echo (2DFSE), 2D Fast Spin Echo-XL (2DFSE-XL), 2D Fast Recovery Fast Spin Echo (2DFRFSE), 2D Fast Recovery Fast Spin Echo-XL (2DFRFSE-XL), 2D Fast Spin Echo Inversion Recovery (2DFSE-IR), 2D T1-Fluid Attenuated Inversion Recovery (T1-FLAIR), 3D Fluid Attenuated Inversion Recovery(3DFLAIr), Single Shot Fast Spin Echo (SSFSE), Echoplanar imaging (EPI), Diffusion-Weighted Echoplanar imaging (DW-EPI), Optional Diffusion Tensor Imaging (DTI), LAVA (HDxt Body Application), VIBRANT (optional HDxt Body Application), TRICKS (optional HDxt Vascular Application), BrainWave-RT (Optional HDxt fMRI Application)



#### Generalized Encoding Matrix (GEM) Reconstruction:

This 2D-acceleration technique allows acceleration in both phase-encoding and slice-select directions. The results include increased temporal resolution and improved spatial resolution and coverage for a given scan time.

#### **ScanTools HDxt Additional Neuro Functionality:**

**T1 FLAIR, T2 FLAIR:** These pulse sequences have been designed expressly for neuro applications. FLAIR allows you to suppress signal from CSF. In addition to this capability, T1 and T2 FLAIR add extraordinary contrast between white and gray matter to T1- and T2-weighted brain and spine imaging.

**Echoplanar Imaging, FLAIR Echoplanar Imaging:** These are essential tools for any high-throughput site employing advanced techniques. Echoplanar imaging is what enables the rapid imaging required for such studies as functional brain mapping. And both Echoplanar and FLAIR Echoplanar techniques make it easier to generate neuro studies from patients who cannot or will not stay still long enough for conventional techniques.

**Diffusion Echoplanar Imaging:** This Diffusion-Weighted Single Shot Echo-Planar Imaging (EPI) technique is especially useful for detecting acute and hyper-acute stroke. Its functionality includes Single Shot EPI and FLAIR EPI, Multi-NEX capability, isotropic Diffusion-Weighting imaging and on-line image processing.

**BRAVO (BRAIn VOlume) Imaging:** This IR-prepared 3D Gradient Echo imaging technique affords isotropic, whole-brain coverage with 1x1x1 mm resolution. Coupled with parallel imaging, this sequence produces superior gray-white matter contrast in just 2 to 3 minutes.

**2D MERGE (Multi-Echo Recombined Gradient Echo):** MERGE is a 2D imaging technique uniquely designed to image the C-spine. By acquiring and summing multiple gradient-echoes at various echo-times, MERGE improves gray-white matter contrast within the cord and provides excellent visualization of the neuroforaminal canals.

#### **ScanTools HDxt Additional Cardiac and Angiographic Functionality:**

**Double and Triple Inversion Recovery:** These Fast Spin Echo techniques enable black blood cardiac imaging through the application of an IR preparation pulse that nulls the signal from blood. Image quality can be further improved via a user-selectable blood-suppression factor. SNR can be leveraged by using this technique across a single R-R interval, thereby maximizing T1 contrast.

**ECG-gated FGRE and FSPGR FastCine:** These gradient pulse sequences enable functional imaging of the heart across the entire R-R interval, from systole through diastole.

**2D and 3D Time of Flight Imaging, 2D Gated Time of Flight Imaging, and Enhanced 3D TOF Imaging:** Ideal for MR angiography, Gradient Echo-based Time of Flight (TOF) imaging techniques rely primarily on flow-related enhancements to distinguish moving from stationary spins.

**2D Phase Contrast (2DPC), 3D Phase Contrast (3DPC):** These techniques demonstrate flow velocities and directional properties in vessels and other moving fluids such as cerebrospinal fluid.

**SmartPrep:** SmartPrep offers dramatic improvements in contrast-enhanced MR angiography. It uses a special tracking pulse sequence to constantly monitor the MR signal through a user-prescribed volume to detect the arrival of an injected contrast bolus and to trigger the acquisition, for optimum contrast enhancement.

**SmartStep:** SmartStep adds table-stepping capabilities to SmartPrep angiography, greatly facilitating peripheral vascular run-off studies.

**IVI:** The Interactive Vascular Imaging (IVI) user interface allows operators to quickly remove background from MRA images in order to generate angiographic and maximum intensity (MIP) projections in multiple scan planes. The resulting datasets can be automatically saved as separate series within a patients exam number, for quick recall in the future.

#### **ScanTools HDxt Additional Body Applications:**

**LAVA (Liver Acquisition with Volume Acceleration):** LAVA is a 3D Spoiled Gradient Echo technique designed specifically for liver imaging. It delivers unprecedented definition, coverage, and speed. High definition of anatomical structures is due in part to LAVA's excellent fat suppression, achieved through a version of the SPECIAL technique customized to the liver. LAVA's coverage and speed are the result of short TR, innovative use of partial k- space acquisition, and application of ASSET with acceleration factors of up to 3.0. The bottom-line clinical benefit: It enables the highest quality 3D MR imaging of the liver with very short breath-holds.

**Dual Echo Gradient Echo:** A vital tool for abdominal imaging, this variation on conventional Gradient Echo acquires two sets of images within a single breath-hold, capturing both in- and out-of-phase TEs. The result: perfect slice registration and more accurate evaluations of abdominal structures.

#### **ScanTools HDxt Additional Post-Processing Functionality:**

**Multi-Projection Volume Reconstruction (MPVR):** MPVR provides quick and easy generation of reformations through any 3D MR data sets.

**FuncTool Performance:** This package enables advanced MR-image post-processing using a wide range of sophisticated algorithms, including: eADC maps, correlation coefficients for mapping of motor strip and visual/auditory stimuli, NEI (Negative Enhancement Integral), MTE (mean time to enhance), Positive Enhancement Integral, Signal Enhancement Ratio, Maximum Slope Increase, Maximum Difference Function, Difference Function, BOLD fMRI Analysis\* and Diffusion Tensor Post-Processing\*\*.

**\*BOLD fMRI analysis** - correlation coefficient algorithm is used to analyze an image set. Neuronal activity of either motor or cognitive functions can be mapped by fMRI through changes in signal intensity arising from bulk magnetic susceptibility-induced relaxation changes resulting from variations in blood flow and oxygenation. A BOLD image acquisition is typically a single shot, multiphase, GRE-EPI with high number of phases. Within each series, you can acquire multiple phases and multiple slices. BOLD imaging is typically used for surgical planning to identify areas of eloquent brain. It is also used for cognitive studies, psychiatric evaluation and treatment monitoring. The pre-selected images from the series can be uploaded on the FuncTool to automatically compute parametric images. Mag factor, WW/WL, and threshold functions are available for post processing.

**\*\*Requires Diffusion Tensor option** - the Diffusion Tensor imaging package offers basic post processing on the operators console, including ADC, Diffusion-Weighted image and fractional anisotropy. The results can be displayed in a variety of user-defined formats, including time intensity curves, parametric color overlays and metabolite ratio maps.



3D CSI Post Processing\* (requires PROSE option key. Please note that PROSE is not yet commercially available for 3.0T systems, but that this portion of FuncTool Performance may be used for processing on 1.5T PROSE cases).

New to 16.0 HDxt ScanTools is LAVA-XV, COSMIC, 2D FIESTA, 2D FatSat FIESTA (1.5T only), 3D FatSat FIESTA, 3D FIESTA, FIESTA-C, Fluoro Triggered MRA, iDrive Pro Plus, Modality Worklist, and Performed Procedure Step.

LAVA-XV provides more extensive coverage without time penalty. By employing multi-dimensional parallel imaging and ARC reconstruction, LAVA-XV produces 3D image volumes extending from liver dome to pelvis in a single breath-hold. By over-sampling the center of k-space, this acquisition technique embeds the calibration data within the image data, ensuring a robust parallel-imaging reconstruction free of breathing artifacts. Its unique variable density sampling approach is what eliminates time penalties for the self-calibrated acquisition. The clinical result: Outstanding, high-resolution imaging, patient after patient.

**COSMIC** is a 3D imaging technique specifically tailored to C-spine studies. Its unique fluid-weighted contrast yields improved visualization of the cervical nerve roots and intervertebral disks.

FIESTA is a technique that uses an extremely short repetition time (TR) between RF pulses such that high-resolution images can be acquired rapidly. The primary applications are in imaging the internal auditory canal, heart, and coronary arteries.

Fluoro Triggered MRA allows the operator to manually trigger each acquisition, as soon as the desired level of vessel enhancement is seen, with a switchover of less than one second. The result is an interactive approach to contrast enhanced MRA.

iDrive Pro allows real-time interactive imaging, generating detailed diagnostic information on just about any anatomy, especially moving anatomy. iDrive Pro Plus allows the user to change scan parameters on the fly while scanning, processing up to 8 frames/sec using a 2D FGRE/FSPGR pulse, providing immediate results.

Modality Worklist enables the DICOM worklist server class for the Signa operators' console, making it easy to query your HIS/RIS by name, or scheduled date, and to download patient demographics directly to the scanner. The data is automatically loaded into the Modality Worklist for simple filtering, editing and prescription of protocols for exam preparation.

Performed Procedure Step (PPS) is an important automated connectivity capability, and a key step towards a film-less and paperless environment. Used in conjunction with the GE PACS broker, it automatically notifies the HIS/RIS and PACS systems of procedure status, closing the loop on the information gathered from patient arrival through billing.

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## **PROPELLER HD**

PROPELLER is a revolutionary data collection technique used in conjunction with the Fast Spin Echo pulse sequence. The name reflects the unique pattern that acquires radial blades of image data rotated in sequence until data acquisition is complete. The redundant data creates images with unusually high contrast-to-noise ratio as well as makes the sequence insensitive to motion artifacts on T2 and T2 FLAIR sequences and insensitive to susceptibility artifacts on DWI sequences.

The result is high quality T2 and T2 FLAIR images of the brain even when the patient fails to remain still, and high quality DWI images in the presence of dental work or surgical hardware. As a result, PROPELLER enables reliable, high quality brain imaging.