

XR MRI, VAMC BROCKTON, MA

PO# 523-B43009,

Qty

Item Description

MAGNETOM Aera - System

MAGNETOM Aera - 1.5T Tim+Dot system - The integration of the next generation Tim - "Tim 4G" and the Siemens unique Dot Engines (Day optimizing throughput Engine). Short and open appearance (145 cm system length with 70 cm Open Bore Design). Tim 4G's redesigned RF system and all-new coil architecture. - Siemens unique DirectRF(tm) technology enable Tim's new all digital-in/ digital-out design - All-new coil architecture including Dual-Density Signal Transfer Technology - Whole-body superconductive Zero Helium Boil-Off 1.5T magnet - TrueForm Magnet and Gradient Design - Actively Shielded water-cooled Siemens gradient system - Head/Neck 20 DirectConnect, Spine 32 DirectConnect, Body 18, Flex Large/Small 4 Dot offers patient personalization, user guidance and process automation that result in consistent examination results. - Brain Dot Engine is designed to simplify general brain examinations through personalized, guided and automated workflows. - Dot Display and Dot Control Centers - efficient patient preparation. Additional features include: -Tim Application Suite including Neuro, Angio, Cardiac, Body, Onco, Breast, Ortho, Pediatric and Scientific Suite - syngo MR software including 1D/2D PACE, syngo BLADE, iPAT², Phoenix, Inline Technologies. - High performance host computer and measurement and reconstruction system The system (magnet, electronics and control room) can be installed in 30sqm space. For system cooling either the Eco Chiller options or the Separator is required.

Tim [204x48] XQ Gradients #Ae

Tim [204x48] XQ-gradients performance level Tim 4G with its newly designed RF system and innovative coil architecture enables high resolution imaging and increased throughput. Up to 204 simultaneously connected coil elements in combination with the standard 48 independent RF channels, allow for more flexible parallel imaging. Maximum SNR through the new Tim 4G matrix coil technology. This option includes also Advanced High Order Shim. XQ - gradients The XQ- gradients are designed combining high performance and linearity to support clinical whole body imaging at 1.5T. The force compensated gradient system minimizes vibration levels and acoustic noise. The XQ gradients combine 45 mT/m peak amplitude with a slew rate of 200 T/m/s.

PC Keyboard US english #Tim

Standard PC keyboard with 101 keys.

Pure White Design #T+D

The MAGNETOM Aera / MAGNETOM Skyra design is available in different light and appealing variants which perfectly integrates into the different environments. The color of the main face plate cover of the Pure White Design Variant with the integrated Dot Control Centers and the unique Dot Display is brilliant white surrounded by a brilliant silver trim. The asymmetrical deco area on the left side is colored white matte and also with a brilliant surrounding silver trim. The table cover is presented also in the same color and material selection.

Qty

Item Description

Tim Dockable Table #Ae

The Tim Dockable Table is designed for maximum patient comfort and smooth patient preparation. Tim Dockable Table can support up to 250 kg (550 lbs) patients without restricting the vertical or horizontal movement. The one step docking mechanism and the innovative multi-directional navigation wheel ensure easy maneuvering and handling. Critically ill or immobile patients can now be prepared outside the examination room for maximum patient care, flexibility and speed.

syngo.via MR Scanner Bundle

MR system bundled with syngo.via

syngo.via Advanced User#1

One Advanced User License of the syngo.via client server solution for multi-modality image reading. It provides 2D, 3D, 4D image reading capabilities at almost every workplace for various modalities (e.g. CT, MR, PET/CT, CR, XA image types). The syngo.via client runs on standard Windows computers in the network and integrates into radiologist's reading workplace (RIS; PACS) for efficient image reading based on a wide range of imaging applications (advanced visualization applications) for different clinical cases. Those applications are available as additional options for syngo.via. The syngo.via licensing model is flexible and tailored to the number of concurrent users (users working at the same time). The service support for syngo.via requires the provision of an administrator with dedicated tasks and a minimum broadband Internet connection bandwidth.

2

syngo.via Advanced User#1+

License for an additional user of the syngo.via client server solution for multi-modality image reading.

syngo.MR General Engine #1

The syngo.MR General Engine extends syngo.via by adding software for professional and routine MR radiology usage. It includes workflows for dedicated MR examinations that load and structure examination results automatically into meaningful layouts including user support to make sure that no data is missed. syngo.MR General Engine contains several MR Radiology workflows, cardiovascular workflows and MR Evaluation features.

2

syngo.MR General Engine #1+

License for one additional user for syngo.MR General Engine. The syngo.MR General Engine extends syngo.via by adding software for professional and routine MR radiology usage. It includes workflows for dedicated MR examinations that load and structure examination results automatically into meaningful layouts including user support to make sure that no data is missed. syngo.MR General Engine contains several MR Radiology workflows, cardiovascular workflows and MR Evaluation features.

syngo DTI Evaluation #MM

Application card for advanced post-processing and visualization of Diffusion Tensor Imaging (DTI) data. DTI Evaluation enables calculation of different diffusion parameter images and common ROI-based evaluation of parameter images and anatomical images, as well as color-coded display and fused 3D visualization in the anatomical context.

syngo DTI Tractography #MM

syngo(r) DTI Tractography allows the visualization of multiple white matter tracts of the human brain based on diffusion tensor imaging data. DTI Tractography is optimized to support the presurgical planning and to allow for neuro physiological research with respect to connectivity and white matter pathology. The option syngo DTI Evaluation is a prerequisite for DTI Tractography. - Advanced 3D visualization of white matter tracts in the context of 2D or 3D anatomical datasets and DTI datasets (also fMRI results if the option "BOLD 3D Evaluation" is present) - Interactive QuickTracking displays the tract originating from the mouse pointer position while moving over the DTI data set. - Texture Diffusion, a highly versatile in-plane visualization of white matter tracts, allows to display and read DTI Tractography results on PACS reading stations and in the OR. - Seed points for tracking with single ROI and with multiple ROIs to assess connectivity. - Tract and seeding ROI statistics (mean/max FA value, min/mean/max ADC value, ...).

Qty

Item Description

syngo.MR Cardiac Flow #1

syngo.MR Cardiac Flow processes velocity-encoded MR images to evaluate blood flow dynamics e.g. in the heart and the great vessels. The application generates quantitative results for physicians in the diagnostic process. The MR cardiac interactive reporting template is included.

2

syngo.MR Cardiac Flow #1+

License for one additional user for syngo.MR Cardiac Flow. syngo.MR Cardiac Flow processes velocity-encoded MR images to evaluate blood flow dynamics e.g. in the heart and the great vessels. The application generates quantitative results for physicians in the diagnostic process. The MR cardiac interactive reporting template is included.

Server HW Config XL

syngo.via server hardware configuration XL

Software License Ext. Server HW XL

Mandatory license extension for embedded applications on Hardware systems with more than one CPU. Second CPU license.

HP Care Pack. 3y 24x7 HW Support

HP Care Pack Services upgrade or extend the standard warranty with enhanced, customized on-site and remote support for hardware for 3 years.

syngo MMWP Client #1

This is a syngo MultiModality Workplace advanced post-processing workstation, comprising Windows XP PC with syngo(r) base user software, syngo 3D, syngo Expert-i and monitor. The syngo MMWP Client workplace is already prepared for advanced 3D post-processing regarding hardware performance and graphics card. The software functionality can be extended to suit specific user clinical needs by adding optional cross-modality and modality-specific application modules.

Modality Integration MR

Modality integration of the syngo MMWP Client with primary use MR

syngo Keyboard USA English

English (US) syngo(r) keyboard

Server HW XL+XL-10TB Add-On Mobile

Enabler for future mobile applications.

PACS-Driven Implementation Pkg.

This PACS-Driven Implementation Package includes installation and integration services for syngo.via in a radiologic workflow mainly supported by the PACS functionality. This package includes professional services, such as: - Installation of the syngo.via server software on the server hardware - Installation of the syngo.via client software on one clinical workplace for one user - Connection to up to 5 DICOM nodes - Image call-up of syngo.via from the PACS' user interface - Integration of syngo.via into the IT infrastructure using Active Directory, if applicable - Configuration of basic syngo.via workflows and rules - Integration of one syngo.via client workplace with one syngo MultiModality Workplace. - Basic installation service for the syngo.via at the customer's site. - Integration into the Local Area Network of the customer and to Siemens Remote Service over internet connection.

MMWP Client HW Implementation Service

Implementation services for one syngo MultiModality Workplace include the tasks for installation, configuration and integration of one syngo MMWP 2010A (VE40A).

Server HW Installation Service

Basic installation service for the syngo.via server hardware with the operating system at the customer's site. Integration into the Local Area Network of the customer and to Siemens Remote Service over internet connection.

VIA Govt Trng in PACS Imp

Per agreement, credit for initial training in basic implementation 14412663

Qty

Item Description

VIA Govt Server HW Install

Per agreement, credit for syngo.via hardware installation by 3rd party integrator 14412656

5

Apps Training and Basic Config 1day

Apps Training and Basic Config 1day On-Site Application Training - targeted to give the user a solid base for understanding and applying syngo.via workflows and to operate the system within the clinical routine. The training is focused on three key users which have to be selected.

syngo.via for Clinical Administrators

Virtual syngo.via IT Admin Training

VIA Srvr Excel L XL Prom:

This promotion enables customers with purchase of a Siemens syngo.via system which includes Server hardware, syngo.via base license and corresponding user licenses a price reduction in the amount of for the syngo.via Element, syngo.via WS, Server HW Config L, or Server HW Config XL. To qualify, Customer's binding purchase order must be received by Siemens on or before June 30, 2014 and syngo.via system delivery if not purchased with a Siemens scanner, must occur no later than June 30, 2015. NOTE: This Promo only applies to syngo.via sw versions 11, 20, 20B

Composing syngo #Tim

This application provides dedicated evaluation software for creation of full-format images from overlapping MR volume data sets and MIPs (starting from syngo MR B13) acquired at multiple stages.

Flow Quantification #Tim

Special sequences for quantitative assessment of flow.

1

Argus Flow

1

Large Joint Dot Engine #T+D

Large Joint Dot Engine optimizes image quality of knee, hip and shoulder scans by proposing the most appropriate protocols according to the examination strategy chosen for the specific patient. It ensures reproducible image quality and streamlines large joint examinations to a great extent. The Large Joint Dot Engine features AutoAlign and AutoCoverage for knee, hip and shoulder, syngo WARP with VAT (View Angle Tilting), and Inline MPR.

RESOLVE #T+D

RESOLVE is a diffusion-weighted, readout segmented EPI sequence optimized towards high resolution imaging with reduced distortions. The sequence uses a very short echospacing compared to single-shot EPI, substantially reducing susceptibility effects. A 2D-navigator correction is applied to avoid artefactsartifacts due to motion-induced phase errors. This combination allows diffusion weighted imaging of the breast, prostate, brain and spinewhole body with a high level of detail and spatial precision.

Tim Whole Body Suite #T+D

Tim Whole Body Suite puts it all together. This suite enables table movement for imaging of up to 205 cm (6' 9") FoV without compromise. In combination with Tim's newly designed ultra highdensity array higher spatial and temporal resolution can be achieved along with unmatched flexibility of any coverage up to Whole Body. For faster exams and greater diagnostic confidence.

Shoulder 16 Coil Kit #Ae

The new Tim 4G coil technology with Dual Density Signal Transfer and SlideConnect Technology combines key imaging benefits: excellent image quality, high patient comfort, and unmatched flexibility. The Shoulder 16 Coil Kit for examinations of the left or right shoulder consists of a base plate and two different sized iPAT compatible 16 channel coils (Shoulder Large 16 and Shoulder Small 16). These will be attached and can be relocated on the base plate. The 16-element coils with 16 integrated pre-amplifiers ensure maximum signal-to-noise ratio. Shoulder Large 16 and Shoulder Small 16 will be connected via a SlideConnect plug for fast and easy coil set-up and patient preparation.

Qty

Item Description

Hand/Wrist 16 #Ae

The new Tim 4G coil technology with Dual Density Signal Transfer and SlideConnect Technology combines key imaging benefits: excellent image quality, high patient comfort, and unmatched flexibility. Hand/Wrist 16 for examinations of the left or right hand and wrist region consists of a base plate and an iPAT compatible 16-channel coil and allows high resolution imaging of the wrist and the hand within one examination. Hand/Wrist 16 will be connected via a SlideConnect plug for fast and easy patient preparation.

Foot/Ankle 16 #Ae

The new Tim 4G coil technology with Dual Density Signal Transfer and DirectConnect Technology combines key imaging benefits: excellent image quality, high patient comfort, and unmatched flexibility. Foot/Ankle 16 for examinations of the left or right foot and ankle region consists of a base plate and an iPAT compatible 16-channel coil and allows high resolution imaging of the foot and ankle within one examination. Foot/Ankle 16 is a cable-less coil and will be connected via DirectConnect for fast and easy patient preparation.

Tx/Rx 15-channel Knee Coil DDST #Ae

New 15-channel transmitter/receiver coil for joint examinations in the area of the lower extremities. Main features : - 15-element design (3x5 coil elements) with 15 integrated preamplifiers, - iPAT-compatible - SlideConnect Technology

Patient Supervision TV #T+D

The supervision solution is customizable and designed to address different site specific requirements. Up to 4 cameras can be connected for patient supervision in the examination or waiting room. This package contains a special video camera for monitoring the patient during an MR examination, conveniently mounted on the wall of the examination room. The information is displayed at an LCD monitor in the control room. Note: For Spectra, up to 2 cameras can be connected for patient supervision in the examination room.

UPS Cable #Tim

Power cable for connecting the UPS Powerware PW 9130-3000i (14413662) to the ACC of MAGNETOM Tim and MAGNETOM Tim+Dot systems for backing up the computer. Standard cable length: 9 m.

UPS Powerware PW9130G-3000T-XLEU

UPS system Eaton PW9130G-3000T-XLEU for MAGNETOM Tim, MAGNETOM Tim+Dot and MAGNETOM Symphony systems for safeguarding computers. Power output: 3.0 kVA / 2.7 kW Bridge time: 5 min full load / 14 min half load Input voltage: 230 VAC

UPS Battery module

UPS battery module Eaton PW 9130N-3000T-EBM for all MAGNETOM Tim, MAGNETOM Tim+Dot and MAGNETOM Symphony systems for safeguarding computers. Extension for: PW9130i-3000T Battery type: Closed, maintenance-free Extension of the bridge time to: 24 minutes with a module Dimensions (H x W x D): Battery module: 346 x 214 x 412 mm incl. bracket set Weight: approx. 50 kg

Additional Set of Manuals

Additional set of manuals for the above selected MR system.

MR_GOV_RIG_INSTL

T+D Preinstall kit for dockable table

Standard Cryogenics

MR Project Management

A Siemens Project Manager (PM) will be the single point of contact for the implementation of your Siemens equipment. The assigned PM will work with the customer's facilities management, architect or building contractor to assist you in ensuring that your site is ready for installation. Your PM will provide initial and final drawings and will coordinate the scheduling of the equipment, installation, and rigging, as well as the initiation of on-site clinical education.

1

1

Qty

Item Description

Initial onsite training 32 hrs

Up to (32) hours of on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Training will cover agenda items on the ASRT approved checklist. Uptime Clinical Education phone support is provided during the warranty period for specified posted hours. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.

Follow-up training 24 hrs

Up to (24) hours of follow-up on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Uptime Clinical Education phone support is provided during the warranty period for specified posted hours. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.

2

Additional onsite training 32 hours

Up to (32) hours of on-site clinical education training, scheduled consecutively (Monday - Friday) during standard business hours for a maximum of (4) imaging professionals. Training will cover agenda items on the ASRT approved checklist if applicable. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.

2

GOVT ONLY - MR Training Class

Tuition for (1) government attendee to attend a classroom course of choice at one of the Siemens training centers. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.

4

NW Univ 3Dy Advanced Neuro Workshop

MR ADVNEUR_NW This course 3 day physician or technologist advanced neuroimaging workshop held at Northwestern University, Department of Radiology, Feinberg School of Medicine, focuses on imaging physics, functional MRI (acquisition, stimulus presentation, experiment design, data analysis, and interpretation), perfusion imaging (ASL and DSC), diffusion imaging (analysis and tractography), and MR spectroscopy. Topics will be presented through lectures and hands-on sessions, followed by hands-on data analysis sessions. Emphasis will be placed on the clinical application for all of the methods discussed. Attendees will be given copies of the experiments and protocols used during the course to take back to their institution. *NOTE: Expenses for travel and lodging are not included. Tuition is for one attendee only, additional attendees may purchase separately. **NOTE: Siemens and/or other vendors' workstations may be used. ***NOTE: Third party training offerings are subject to change and availability at time of scheduling. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.

4

MR Cardiac Phase 1 - OSU

MR_CARD_OSP1 This 4-day Cardiac Phase 1 Introductory Program is for (1) imaging professional and is provided by Ohio State University. This program consists of hands-on scanning sessions, technical discussions, and demonstrations. NOTE: Expenses for travel and lodging are not included. Offering and scheduling availability is subject to change. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.

Qty**Item Description**

4

MR Cardiac Phase 2 - OSU

MR_CARD_OSP2 This Cardiac Phase 2 Program is for (1) imaging professional and is provided by Ohio State University. The program incorporates didactic instruction with practical, hands-on scanning. Cardiovascular imaging basics will be presented, including CMR imaging physics and protocols. Clinical application will be emphasized through lectures ranging from normal anatomy through various states of cardiovascular pathology. NOTE: Expenses for travel and lodging are not included. Offering and scheduling availability is subject to change. This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.

Offset for Initial onsite train 32 hrs**Armrest #MR****KKT ECOCHILLER 133L**

The KKT ECO 133 -L chiller is a dedicated 20°C cooling system for MAGNETOM Aera and MAGNETOM Skyra which automatically adapts to the different cooling requirements (e.g. system in operation, standby, ...) to reduce the energy consumption for cooling. The cooling system must be used in combination with the IFP (Interface Panel), if there is no on-site chilled water supply at all. The IFP is included in the scope of supply.

Kraus Start-up and Warranty**Integrated Electrical Cabinet**

NOT approved for OSHPD facilities. The Integrated Electrical Cabinet (IEC) is a device that automatically resets the circuit breakers that have been tripped by temporary voltage fluctuations such as power snags or power surges. Voltage fluctuations are generally caused by lightning or during the start-up of a back-up power supply unit. The IEC minimizes helium losses for MR systems due to the helium compressor/cold head not being operational. The IEC - MR250A, which contains all Siemens brand components, is a power distribution solution for MAGNETOM Skyra, Verio, Trio A TIM System, Avanto, Aera, Espree, and Biograph mMR. The IEC includes the required circuit breaker for the MR system (170A) and the circuit breakers for both the chiller (70A) and RF cabin lighting (25A). It also includes a 250A main disconnect circuit breaker, as well as four Siemens Emergency Stop (EPO) buttons. These mushroom pushbuttons are equipped with: a protective shroud, a positive latching function, and a mechanical switching position indicator. The IEC is intended to be operated in 480V 50-60 Hz grids. Siemens Project Manager will coordinate the delivery of the IEC. The electrical installation of the IEC - MR250A cabinet and the EPO buttons is the responsibility of the customer and has to be performed by a qualified electrician.

Spectris Solaris EP Injector iCBC

Includes Spectris Solaris EP injector and Integrated Continuous Battery Charger (iCBC). - Optimized color touch screen with few keystrokes. - Six user-programmable phases for added flexibility. - Independent Keep Vein Open (KVO) allows more time to focus on patient. - Large 115 mL saline syringe allows for longer KVO and multiple flushes. - Design of low pressure tubing eliminates dead space in the "T" connection that can waste contrast. - The clear barrel design with molded FluidDots help detect the presence of air in a syringe. - Pressure Limit Setting control software enables user to select from one to six preset maximum pressure limits, ranging from 100-300 psi, and to view current pressure during injection next to the pre-selected maximum value on the Solaris display. Installation, applications and one year warranty provided by Medrad. Not for mobile use, refer to Siemens part number M3SSMR300EPM for the Solaris injector used in a mobile environment. This product has been tested and verified for compatibility with the following Siemens' products: MAGNETOM Trio, Espree, Essenza, Verio, Avanto, Symphony, Aera, Skyra and Biograph mMR. Compatibility with other products cannot be guaranteed and use with any other products may void service contracts and/or system warranties.

One complimentary biomedical tuition is included with the purchase of this system. This training must be completed before the end of the warranty period.

Offset Part 14407354 Additional Set of Manuals

Offset Part MR_FOLLOWUP_32 Follow-up training 32 hrs

MR1 MRESSEN — Service Essentials for MR —10 days at

Airfare for Complimentary Biomed for one engineer from BOS - RDU at

Lodging for Complimentary Biomed for one engineer

Airfare for Service Essentials for one engineer from BOS - RDU

Lodging for Service Essentials for one engineer for 12 nights at

Qty	Item Description
i	9390 160kVA Power Conditioner Includes: PW9390 160kVA Electronics Cabinet configured as Power Conditioner @ .9 pf, Power Conditioner includes: Single Feed Option, Hi-Res Delta Kit, and fr Side Car housing 3-Circuit Breaker, 480V, 35kAIC Integrated Maintenance Bypass. Start-Up (5x8) and One (1) Year On-Site Parts and Labor coverage (7x24), Plus One (1) Year of remote monitoring. Installation including rigging, electrical, and any HVAC required is not included and is the responsibility of the customer or its contractor.
1	MRI 18in wheelchair w/flip-up arms
1	FERRALERT HALO II Ferromagnetic Portal Detector Model H22 - Adjustable width 42 - 52 inches Model H21 - Adjustable width 31 - 41 inches Model H20 - Adjustable width 25 - 35 inches (Consult Factory for Application) * Allowing technologist to quickly identify the ferromagnetic threat * No invasive pat-down required * Limits alarm fatigue - Patented technology suppresses false positive alarms * Has Intelligent Visual Advanced Warning Installation & Training by Kopp Development Inc. - Are Mandatory One year warranty through Kopp Development.

Qty

Item Description

Veris MR Patient Monitor - Base Plus

Medrad's MR Veris Vital Signs Monitor - Base Plus Package. Includes: MR monitor, pulse oximetry (SpO2), non-invasive blood pressure (NIBP), and ECG. A remote (slave) monitor is available as an additional option (Siemens part number M23010482). Data sheet and detailed list of included parts available upon request. One year warranty and installation provided by Medrad. This product has been tested and verified for compatibility with the following Siemens' products: MAGNETOM Symphony, Avanto, Espree, Trio, Essenza, Skyra, Aera and Biograph mMR. Compatibility with other products cannot be assured and may void service contracts and/or system warranties.

Veris Remote display w/printer

Remote display (with printer and wireless network interface) ONLY. Used with the Medrad Veris MR vital signs monitor. This is an additional option for the Veris monitor. Remote display can be sold with the following Veris packages: cardiac, anesthesia and anesthesia with temp. One year warranty and installation (during initial install of the Veris system) provided by Medrad. Installation after initial delivery will be at an additional cost. This product has been tested and verified for compatibility with the following Siemens' products: MAGNETOM Trio, Espree, Avanto, Symphony, Essenza, Aera, Skyra and Biograph mMR. Compatibility with other products cannot be assured and may void service contracts and/or system warranties.

Angio Dot Engine

The timing of contrast injection and scan is widely considered the most challenging part of an angiographic exam. Angio Dot guides the user through angiographic single or multi station examinations by providing semi-automatic detection of arterial and venous timing windows using a test bolus technique. This information is fed back into the next planning steps automatically adapting scan parameters to the individual patient and patient's condition. Where needed, AutoVoiceCommands support the communication with the patient and ensure optimal timing of breathing, scanning and contrast media. All steps of contrast injection are presented in a simple, automated graphic on the monitor. syngo Inline Composing and the Tim Planning Suite are included.

Native syngo #Tim

Integrated software package with sequences and protocols for non-contrast enhanced 3D MRA with high spatial resolution. syngo NATIVE particularly enables imaging of abdominal and peripheral vessels and is an alternative to MR angiography techniques with contrast medium, especially for patients with severe renal insufficiency.

Abdomen Dot Engine #T+D

The Abdomen Dot Engine: Personalized Exam Strategies - Guidance - Automatic sequence scaling - Auto Navigator - Auto-FoV - Timeline setup and monitoring - Automatic Voice Commands - Auto Bolus Detection - Inline radial range calculation for MRCP - Inline Subtraction - Inline Registration

Cardiac Dot Engine, USA #T+D

Cardiac examinations: Dot Cardiac - Customized workflows that are easier to repeat. Using anatomical landmarks, standard views of the heart (such as dedicated long axis and short-axis views), are easily generated and can easily be reproduced using different scanning techniques. Scan parameters are adjusted to the patient's heart rate and automatic voice commands are given.

Advanced Cardiac Package #T+D

This package contains special sequences and protocols for advanced cardiac imaging including 3D and 4D syngo BEAT functionalities. It supports advanced techniques for ventricular function imaging, dynamic imaging, tissue characterization, coronary imaging, and more.

Qty

Item Description

Argus 4D Ventr.Function syngo #Tim

syngo Argus 4D Ventricular Function software processes MR cine images of the heart and generates quantitative results for physicians in the diagnostic process.

Spine Dot Engine #T+D

The Spine Dot Engine provides optimized cervical, thoracic and lumbar spine imaging. Amongst various features to support streamlined spine workflow is Labeling of the vertebrae suggested by the system, Tim Planning Suite and In-line Composing. syngo WARP with View Angle Tilting (VAT) technique is provided for reducing in-plane geometric distortions syngo WARP can be used throughout the body.

DTI Package #T+D

The DTI Package is a bundle of: - Diffusion Tensor Imaging - DTI Evaluation and - DTI Tractography syngo The bundle comprehends all acquisition and postprocessing tools for comprehensive DTI exams.

Neuro fMRI Package #T+D

The Neuro fMRI Package is a bundle of: - Inline BOLD Imaging - 3D PACE syngo - BOLD 3D Evaluation syngo - fMRI Trigger Converter The bundle comprehends all acquisition and post processing tools for comprehensive BOLD fMRI exams.

SWI #TIM

Susceptibility Weighted Imaging is a high-resolution 3D imaging technique for the brain with ultra-high sensitivity for microscopic magnetic field inhomogeneities caused by deoxygenated blood, products of blood decomposition and microscopic iron deposits. Among other things, the method allows for the highly sensitive proof of cerebral hemorrhages and the high-resolution display of venous cerebral blood vessels.

Spectroscopy Package #T+D

The Spectroscopy Package is a comprehensive software package which bundles Single Voxel Spectroscopy, 2D Chemical Shift Imaging, 3D Chemical Shift Imaging and syngo Spectroscopy Evaluation. Sequences and protocols for proton spectroscopy, 2D and 3D proton chemical shift imaging (2D CSI and 3D CSI) to examine metabolic changes in the brain (e.g. in tumors and degenerative diseases) and in the prostate are included. Furthermore included is the comprehensive syngo Spectroscopy Evaluation Software which enables fast evaluation of spectroscopy data on the syngo Acquisition Workplace.

TWIST syngo #Tim

This package contains a Siemens unique sequence and protocols for time-resolved (4D) MR angiographic and dynamic imaging in general with high spatial and temporal resolution. syngo TWIST supports comprehensive dynamic MR angio exams in all body regions. It offers temporal information of vessel filling in addition to conventional static MR angiography, which can be beneficial in detecting or evaluating malformations such as shunts. In case of general dynamic imaging, for example an increase in spatial resolution by a factor of up to 2 at 60 seconds temporal resolution (compared to conventional dynamic imaging) is possible due to intelligent k-space sampling strategies. Alternatively, increased temporal resolution at constant spatial resolution is possible.

MR Elastography #T+D

MR Elastography offers a new diagnostic tool for all Tim+Dot systems that allows identifying variations in liver tissue stiffness. The MR Elastography package consists of new protocols and sequences, new reconstruction algorithms and inline reconstruction.

1

1

Qty

Item Description

fMRI Trigger Converter

An optical trigger signal is available to trigger external stimulation devices in fMRI experiments. With the "fMRI Trigger Converter" this signal can be converted to an electrical signal (TTL/BNC and RS 232 interface for PC; modes: toggle or impulse).

Endorectal Coil Kit 1.5T

Kit including interface device for connecting the prostate-, cervix- or colon receive coil probe. The interface device connects to the Flex Coil Interface. An adapter between Medrad interface and Flex Coil Interface for 1.5 Tesla is needed and part of the delivery.

2/4/8-ch Sentinelle BreastCoil #Ae

The 2-/4-/8-channel Sentinelle Breast Coil consists of a positioning frame with exchangeable coils with different numbers of channels as described in detail in the E text. The 244-18-channel Sentinelle Breast Coil can be used as 8-channel imaging coil, 4-channel biopsy coil for lateral biopsy access as well as 2-channel biopsy coil for medial biopsy access. This coil provides a large biopsy access. The preamplifiers are integrated into the coil. The coil is iPAT-compatible. A positioning guidance is provided.

Inline Composing syngo #Tim

Automatic anatomical or angiographic composing of multiple adjacent coronal or sagittal images for presentation and further evaluation. Composed images can be automatically loaded into Graphical Slice Positioning for scan planning purposes.

nation

<u>Period of Warranty</u>	<u>Coverage</u>
Twelve (12) months	(a) Seller shall correct any failure of that Application to perform substantially in accordance with its Documentation (b) Seller shall provide periodic Updates and Releases (as those terms are defined in the Addendum for syngo.via) to that Application and Documentation of these items at no additional license fee, except that Seller reserves the right to charge for Updates and Releases that provide new features or capabilities.
The OEM warranty that is passed through to Purchaser is three (3) years from delivery unless otherwise specified in the quotation	(a) Seller warrants that that server will be ordered new from Seller's supplier(s) and will include the manufacturer's standard end-user warranty for the duration stated above; (b) Seller will pass through to Purchaser all assignable end-user warranties from the server's manufacturer; (c) use of the server may be subject to the Purchaser's agreement to comply with any software licensing terms imposed by the manufacturer for operating system and other software included with the server; and (d) the manufacturer, and not Seller, is solely responsible for any required product recall, warranty service, maintenance, support, and complaint handling, as well as any other applicable FDA regulatory requirements.

Detailed Technical Specifications

MAGNETOM Aera

Description

Aera ex Erlangen ENS_14416900

MAGNETOM Aera - the first 1.5T Tim+Dot system - integrates the next generation Tim - Tim 4G and the Siemens unique Dot Engines (Day Optimizing Throughput Engines) enabling workflow efficiency combined with higher diagnostic confidence due to consistent results.

The system includes:

Tim 4G+Dot

Tim 4G provides increased patient comfort and optimized workflow efficiency. Only one patient setup, no repositioning, and no changing of coils. Ultra-light-weighted coils with high density of coil elements for maximized patient comfort and increased SNR. Feet-first positioning for almost all examinations possible reduces claustrophobia.

Tim 4G is 4G flexibility, accuracy and speed and brings image quality and acquisition speed to a new level.

Dot helps to take away the complexity in MRI scanning through patient personalization, user guidance and process automation. Optimized scan strategies are provided and can be selected based on patient condition, which allows for high quality exams even when conditions change. Integrated decision points allow the user to easily add or remove one or a group of protocols with one click. Step by step real-time on board guidance guides novice users even through the most complicated exams. Process automation allows optimal timing for breathing, scanning, and planning. Dot can be easily customized to follow the individual standards of care.

Dot is personalized, guided and automated and designed to improve workflow efficiency and image consistency.

MAGNETOM Aera with its 70 cm Open Bore design and a system length of only 145 cm gives a patient friendly

Description

appearance that can significantly help patients with anxiety or claustrophobia.

Magnet:

- Ultra-short 137 cm long (145 cm with covers), whole-body superconductive 1.5T magnet with active shielding (AS) technology with counter coils
- External Interference Shielding (E.I.S.)
- Excellent homogeneity enabled by TrueForm magnet design which allows for a cylindrically optimized homogeneity volume resulting in higher image quality (50 x 50 x 45 cm³ DEV, typ. 3.6 ppm based on the 24-plane plot method)
- The magnet has a helium capacity of approximately 1,280 liters and a typical Helium boil-off rate of 0 Vyr during typical, undisturbed clinical operation depending on the sequences used and examination time, and provided the system is serviced in regular intervals.
- It has an integrated magnet cooling system.

Gradient system:

- Actively shielded water-cooled world-class gradient system
- True Form Gradient Design
- All axes force compensated

DirectRF - RF Transmit/Receive System:

- Fully integrated Transmit and Receive path in the magnet housing including extremely compact water-cooled solid state amplifier with 26.1 kW peak power
- High dynamic range
- Immediate feedback loop for real-time sequence adaptation
- Integrated no tune transmit/receive Body Coil
- The revolutionary Tim 4G technology allows connecting up to 204 coil elements simultaneously enabling higher SNR and iPAT in all directions. No repositioning of patients is needed even for large Field of View examinations.
- Dual-Density Signal Transfer enables ultra-high density coil design by integrating key RF components into the local coil.

Tim 4G Coils:

The new Tim 4G coil technology with Dual-Density Signal Transfer, DirectConnect and SlideConnect Technology combines key imaging benefits:

Excellent image quality, high patient comfort, and unmatched flexibility.

The Tim 4G coils are designed for highest image quality combined with easy handling. The high element density of the coils increases SNR and reduces examination times. DirectConnect and SlideConnectTM technology reduce patient set up time significantly. The coils are designed with the patient in mind. Light weighted coils and open design ensure highest patient comfort which results in better patient cooperation and image quality. No coil changing with multi-exam studies saves patient setup- and table time.

AutoCoilSelect enables dynamic, automatic, or interactive selection of the coil elements within the Field of View and speeding the exam preparation at the host.

All coils are time-saving "no-tune" coils.

A comprehensive set of pads for comfortable and stable patient positioning together with safety straps are included.

- Head/Neck 20

The 20-channel coil with its 20 integrated pre-amplifiers ensures excellent signal-to-noise ratio. The unique DirectConnect technology allows users connecting the 20 coil elements of the Head/Neck20 without cables. The patient friendly open design allows for maximum patient comfort which is supported in addition by a look-out mirror for claustrophobic patients. The high channel coil is iPAT compatible in all directions.

The open and light design of the upper coil part increases patient comfort and is removable for easy patient handling. The lower coil part may remain on the table for most of the examinations can be used without the upper part. The Head/Neck 20 and Spine 32 are smoothly integrated into the patient table, thus enabling high flexibility in imaging and fewer coil changes and easy handling when switching patients. The Head /Neck 20 coil is equipped with two removable cushioned head stabilizers for stable and comfortable patient positioning.

The Head/ Neck 20 can be used for applications like head examinations, neck examinations, MR

Description

Angiography, combined head/neck examinations or for imaging of the TMJ (temporomandibular joints).

Typically combined with the Spine 32 and Body 18 or Peripheral Angio 36 but also other combinations eg with flexible coils like the Flex Large 4 are possible.

Body 18

The 18-channel coil with its 18 integrated pre-amplifiers ensures maximum signal-to-noise ratio. The 18 coil elements of the Body 18 with only one SlideConnect Plug allows for fast and easy patient preparation resulting in less table time. Fast acquisition times enabled by iPAT in all directions. The light-weighted coil ensures highest patient comfort.

Body 18 operates in an integrated fashion with the Spine 32 as a 30 channel body coil

Body 18 can be combined with further Body 18 coils for larger coverage and positioned in different orientations (0°, 90°, 180°, 270°) for patient specific adaptations

The Body 18 is typically used in combination with the Spine 32 for examinations of the thorax, abdomen, pelvis or hip and operates as a 30 channel body coil (3 rings 10 elements). The Body 18 can also be used for cardiac or vascular applications. Through its perfect combinability with the Spine 32, further Body 18 (optional), the Peripheral Angio 36 (optional), but also the Head/Neck20 and all flexible coils (e.g. Flex Large 4, Flex Small 4) it contributes for a broad range of indications up to whole-body imaging.

Spine 32

The 32-channel coil with its 32 integrated pre-amplifiers ensures maximum signal-to-noise ratio. The unique DirectConnect technology allows connecting the 32 coil elements of the Spine 32 without the need to plug in any cable. The patient friendly ergonomic design allows for maximum patient comfort. The high element coil is iPAT compatible in all directions.

Smoothly integrated into the patient table the Spine 32 may remain on the patient table for nearly all exams.

The Spine 32 is typically combined with Body 18, Head/Neck 20, Peripheral Angio 36 or Flex Large 4, Flex Small 4.

Flex Large 4/ Flex Small 4

Light-weighted, very flexible, iPAT compatible, 4-element no-tune receiver coils which are made of soft and smooth material. The coils can be wrapped around or used flat.

Both coils can be connected via Flex Coil interface. One Flex Coil interface is already delivered as standard.

The coils can be used for different examinations ranging from examinations of the extremities to abdominal examinations.

TimTable

The maximum scan range of the Tim Table is 140 cm. A scan range of 205 cm can be achieved with the Tim Whole Body suite (optional)

The maximum patient weight of 250 kg (550 lbs) is valid for horizontal and vertical movements, which ensures maximized patient comfort for obese patients.

The patient table can be lowered to a minimum height of 52 cm from the floor, for easier patient positioning and better accessibility for geriatric, pediatric or immobile patients. An infusion stand is integrated to ensure fast patient set up also for critical patients.

Multiple Tim4G coils can be connected at once for efficient and patient friendly examinations.

The Tim Table can be moved with two clicks into the isocenter - one click to the upmost position and one click into the isocenter.

Dot (Day Optimizing Throughput) Engine

Dot multiplies the power of Tim resulting in greater image consistency and diagnostic confidence

Dot Control Centers and Dot Display

The ergonomically designed Dot Control Centers are integrated left and right into the front covers for controlling table movement and interaction with the Dot Display. The Dot Control Centers are well illuminated for easy visual recognition.

Automated table move up to upmost position, to center position or Home position facilitate smooth patient

Description

preparation and will reduce table time

Variable (6 levels) ventilation and lighting inside the magnet bore or volume adjustments are possible for increased patient comfort

The Dot Display provides on board guidance for patient set up where its needed - directly at the scanner. Information such as Patient name or exam type or required patient position, guidance for ECG set up and immediate visualization of physiological curves will be provided for convenient operation.

Almost all table control functions, including ventilation and illumination of the magnet bore, can be also controlled from the operator console for convenient operation.

Dot Technology

Dot makes it easy to get the best possible results for virtually any type of patient. Dot gives uniquely tailored, optimized scans configurable to patient condition or clinical question.

Dot provides patient personalization, user guidance and process automation and is of course configurable by the user to adapt to the different clinical needs and standards of care.

Brain Dot Engine

The Brain Dot Engine simplifies general brain examinations with guided and automated workflows customized to the site specific standards of care. The Brain Dot Engine supports the user in achieving reproducible image quality with increased ease of use and time efficient exams.

The brain workflow can be personalized to the individual patient condition and clinical need. Several predefined strategies are included, which can be easily selected with one click. They can be changed at any time during the brain workflow.

Protocols tailored for use of contrast media are integrated.

Standard: Standard examination with 2D protocols

Resolution focus: Examination with 3D protocols (with e.g. SPACE) for detailed views

Speed focus: Examination with fast 2D protocols (with e.g. HASTE) for further speeding up the exam

Limited patient capabilities: Examination with *syngo* BLADE protocols

to minimize and correct for the effects of motion automatically

Step-by-step user guidance is seamlessly integrated. Example images and guidance text are displayed for each individual step of the scanning workflow. Both - images and text - are easily configurable by the user.

Easy positioning of the patient with AutoPosition. The patient is automatically placed at the isocenter without any laser marking required.

AutoAlign Head allows automatically slice positioning and aligns on the anatomically derived sagittal, coronal, and axial slices of the localizer. The operator-free alignment and anatomical marking are consistent, independently of patient age, head position, or disease.

Automatic real-time calculation of trace-weighted images and ADC maps with Inline DiffusionTechnology.

Easy rerun or repeat with functionality allows for reduced table time even in case of patients with pain or claustrophobia. An image inside the examination UI can be selected and a rerun of the corresponding series can be triggered with identical sequences or parameters. Alternatively an exam can be repeated with a changed strategy.

The Brain Dot Engine as all Dot Engines can be modified by the user to their individual standard of care.

Tim Application Suite

The Tim Application Suite offers a complete range of clinically optimized sequences, protocols and workflow functionalities for all body regions. Excellent head-to-toe imaging can be accomplished with the sequences and features included in this application suite. To enable this comprehensive application range, nine dedicated application packages have been included.

Neuro Suite

Angio Suite

Cardiac Suite

Body Suite

Onco Suite

Description

Breast Suite
Ortho Suite
Pediatric Suite
Scientific Suite

Neuro Suite

Comprehensive head and spine examinations can be performed with dedicated programs. High resolution protocols and fast protocols for uncooperative patients are provided. The Neuro Suite also includes protocols for diffusion imaging, perfusion imaging, and fMRI. It includes for example:

EPI sequences and protocols for diffusion, perfusion and fMRI for advanced neurological applications. Diffusion weighted imaging is possible with up to 16 b-values in the orthogonal directions. Dynamic Analysis software (included in standard configuration) enables calculation of:

- ADC maps
- Hest maps from the EPI images for fMRI
- Time-to-Peak maps for perfusion analysis.

Whole spine protocols acquire in multiple steps via software controlled table movement in a single click.

3D isotropic resolution volume imaging using T1 3D MPRAGE / 3D FLASH, SPACE DarkFluid, T2 SPACE and 3D TSE

T2-weighted high resolution 3D Restore protocols optimized for inner ear examinations

Whole-spine protocols in multiple steps with software controlled table movement

2D and 3D MEDIC protocols for T2-weighted imaging, particularly for C-spine examinations in axial orientation where reproducibility is difficult due to CSF pulsations and blood flow artifacts

3D Myelograms with 3D HASTE and 3D True-FISP for anatomical details

Dynamic sacro-iliac joint imaging after contrast administration using a fast T1-weighted FLASH 2D sequence

Spine diffusion protocols to differentiate osteoporosis versus tumor infiltration and post-radiotherapy changes versus residual tumor with PSIF sequence

Precision filter for high spatial accuracy e.g. for neuro intra-operative imaging and stereotactic planning

3D CISS (Constructive Interference in Steady State) for excellent visualization of fine structures such as cranial nerves. High resolution imaging of inner ear and spine

AutoAlign Head LS providing a fast, easy, standardized, and reproducible patient scanning supporting reading by delivering a higher and more standardized image quality

Angio Suite

Excellent MR Angiography can be performed to visualize arteries and veins with or without contrast agent.

Contrast-enhanced MRA

3D contrast-enhanced MRA protocols for e.g. single step, dynamic, peripheral, whole body MRA with the shortest TR and TE. The strong gradients make it possible to separate the arterial phase from the venous phase.

TestBolus workflow for optimized bolus timing and superb image quality.

CareBolus functionality for accurate determination of the bolus arrival time and the "Stop and Continue" of the 3D ce-MRA protocol after the 2D bolus control scan.

Dynamic ce-MRA for 3D imaging over time.

Non-contrast-MRA and venography

2D and 3D Time-of-Flight (ToF) protocols for MRA for the Circle of Willis, carotids, neck vessels, and breath-hold protocols for abdominal vessels

Triggered 2D ToF sequences for non-contrast MRA, particularly of the abdomen and the extremities

2D/3D Phase-Contrast

MR venography with 2D/3D Time-of-Flight (ToF) and Phase-Contrast

TONE (Tilted Optimized Non-saturation Excitation) and MTC (Magnetization Transfer Contrast) techniques for improved Contrast-to-Noise Ratio (CNR)

Image processing tools

- MPR, MIP, MinIP, and 3D SSD
- Inline MIP for immediate results
- Inline subtraction of pre- and post-contrast measurements
- Inline standard deviation maps of Phase-Contrast measurements for delineation of arteries and veins

Description

Cardiac Suite

The cardiac suite covers comprehensive 2D routine cardiac applications, ranging from morphology and ventricular function to tissue characterization. Featuring *syngo* BEAT 2D in conjunction with iPAT and T-PAT techniques.

Cardiac views

Fast acquisition of the basic cardiac orientations for further examination planning

Cardiac scouting provides users with a step-by-step procedure for the visualization and planning of typical cardiac views, e.g. based on TrueFISP or Dark Blood TurboFLASH: short axis, 4-chamber and 2-chamber views.

syngo BEAT

Unique tool for fast and easy cardiovascular MR imaging

E.g. 1 click change from FLASH to TrueFISP for easy contrast optimization

1-click to switch arrhythmia rejection on / off

1-click change from Cartesian to radial sampling to increase effective image resolution (e.g. in pediatric patients) and avoid folding artifacts in large patients

Visualization of structural cardiovascular pathologies with CMR - syngo BEAT

Breath-hold and free breathing techniques for strong contrast between the blood and vascular structures.

Dark Blood TSE and HASTE imaging are available for the structural evaluation of the cardiothoracic anatomy, including vessels or heart valves. Cine techniques (FLASH & TrueFISP) for high-resolution valve evaluation

Multiple contrasts such as T1- and T2-weighted imaging for use in diseases such as myocarditis (inflammation / hyperaemia), ARVD (fibrous-fatty degeneration) or acute myocardial infarction (edema)

- Dark-blood TSE with motion compensation for high-quality vessel wall imaging in small or large vessels

Tools for rapid evaluation of left or right ventricular function

Acquisition of a stack of short-axis slices (standard segmented FLASH, or advanced segmented TrueFISP)

Automatic adjustment of the acquisition window to the current heart rate

Use of the Inline ECG for graphical ECG triggering setup

Retrospective gating with cine sequences (TrueFISP, FLASH)

Protocols for whole-heart coverage

iPAT integration for highest temporal and spatial resolution

- Real-time imaging in case the patient is not able to hold his breath

Dynamic imaging and tissue characterization with syngo BEAT

Protocols for high-contrast and high-resolution tissue characterization

Protocols for stress and rest imaging with TrueFISP or TurboFLASH contrast support the acquisition of multiple slices with high resolution and arbitrarily adjustable slice orientation for each slice

T-PAT with mSENSE and GRAPPA for advanced parallel imaging provides fast high-resolution dynamic imaging

Segmented IR TrueFISP / FLASH with TI scout for optimization of tissue contrast

Advanced tissue characterization with 2D phase-sensitive IR (PSIR) sequences TrueFISP and FLASH contrast. Magnitude and phase-sensitive images with one acquisition

Simple: no adjustment of inversion time (TI) necessary with PSIR technique

Ungated single-shot PSIR imaging for tissue characterization under difficult conditions: free-breathing technique that can be applied even in case of arrhythmia

Physiological Measurement Unit (PMU) - Wireless Physio Control

Synchronizes the measurement with the physiological cycles (triggering to minimize motion artifacts caused by cardiac and respiratory movements)

Wireless Sensors

Wireless Vector ECG / respiration and pulse sensors for physiologically synchronized imaging, rechargeable battery-powered - for optimized patient handling

Physiological Signals Display

ECG (3 channels)

Pulse

Respiration

External Trigger Input Display

Description

ECG Triggering:

Acquisition of multiple slices, e.g. of the heart, at different phases of the cardiac cycle

Excellent image quality by synchronizing data acquisition with cardiac motion

Peripheral Pulse Triggering:

Reduces flow artifacts caused by pulsatile blood flow

Excellent image quality by synchronizing data acquisition to the pulsatile blood flow

Respiratory Triggering:

Excellent image quality by synchronizing data acquisition with the respiratory motion

External Triggering:

Interface for trigger input from external sources (e.g. Patient Monitoring System) inside the examination room

Interface for trigger input from external sources (e.g. pulse generator, trigger sources for fMRI) outside the examination room

Optical trigger output for fMRI

Retrospective gating for ECG, peripheral pulse, and external trigger input

Breast Suite

MR imaging has proven a very high sensitivity for breast lesions and is the gold standard for the examination of silicone implants. Extremely high spatial and temporal resolution can be achieved in very short measuring times by using iPAT with GRAPPA.

Excellent soft tissue differentiation, customized protocols (e.g. with fat saturation or water excitation or silicone excitation), as well as flexible multiplanar visualization allow for fast, simple and reproducible evaluation of MR breast examinations.

This package includes:

Quantitative evaluation and fast analysis of the data with colorized Wash-in, Wash-out, Time-To-Peak, Positive-Enhancement-Integral, MIPtime and combination maps with Inline technology or for offline calculation

High-resolution 2D protocols for morphology evaluation

High-resolution 3D protocols covering both breasts simultaneously

Protocols to support interventions (fine needle and vacuum biopsies, wire localization)

Protocols for evaluating breasts with silicone implants

Automatic and manual frequency adjustment, taking into account the silicone signal

Detection of the silicone signal either to suppress the silicone signal, if the surrounding tissue is to be evaluated, or to suppress the tissue signal in order to detect an implant leakage

SPAIR - robust fat sat (robust fat suppression using an adiabatic frequency selective inversion pulse)

DIXON - 2-point Dixon with 3D VIBE, the following contrasts can be obtained: in-phase, opposed phase, fat and water image.

iPAT with GRAPPA for maximum resolution in short time

Inline subtraction and MIP display

Offline subtraction, MPR and MIP display

syngo REVEAL: diffusion imaging for breast exams

iPAT Extension allows bilateral 3D sagittal breast imaging with Fat Sat or Water excitation

The Breast Suite also includes:

***syngo* VIEWS (Volume Imaging with Enhanced Water Signal)**

bilateral - both breasts are examined simultaneously

axial - the milk ducts are directly displayed

fat-saturated or water-excited - fat complicates clinical evaluation and is suppressed

near-isotropic 3D measurement - the same voxel size in all three directions for reconstruction in any slice direction

submillimeter voxel - highest resolution for precise evaluation

Body Suite

Body Suite covers your needs for clinical body applications. Ultrafast high resolution 2D and 3D protocols are provided for abdomen, pelvis, MR Colonography, MRCP, dynamic kidney, and MR Urography applications.

Siemens unique 2D PACE technique makes body imaging easy allowing for multi-breath hold examinations as well

Description

as free breathing during the scans. Motion artifacts are greatly reduced with 2D PACE Inline technology.

This package includes:

Free breathing 2D PACE applications with 2D/3D HASTE (RESTORE) and 2D/3D TSE (RESTORE)

Optimized fast single shot HASTE protocols and high-resolution 3D RESTORE protocols based on SPACE and TSE for MRCP and MR Urography examinations

ABDOMEN:

2D:

T1w (FLASH) breath-hold scans +/- Fat Sat (SPAIR, Q-FatSat, in-/opp-phase)

T2w (HASTE, TSE/BLADE, EPI) breath-hold scans +/- Fat Sat (SPAIR, FatSat, STIR)

T1w (TFL) triggered scans (2D PACE free breathing) in-lopp-phase

T2w (HASTE, TSE/BLADE, EPI) triggered scans (2D PACE free breathing) +/- Fat Sat (SPAIR, FatSat, STIR) as well as HASTE- and TSE-multi-echo

Optimized fast single shot HASTE protocols and high-resolution 3D RESTORE protocols based on SPACE and TSE for MRCP and MR urography examinations

3D:

Dixon (VIBE 2pt-Dixon) breath-hold scans, following contrasts can be obtained: in-phase, opposed phase, fat and water image.

Dynamic (VIBE + Q-FatSat) protocols for best visualization of focal lesions with high spatial and temporal resolution

- Colonography bright lumen with T2-weighted TrueFISP and dark lumen with T1-weighted VIBE

PELVIS:

High-resolution T1w, T2w pelvic imaging (prostate, cervix)

Isotropic T2w SPACE 3D protocols for tumor search in the pelvis

Dynamic volume examinations with 3D VIBE

syngo REVEAL: diffusion imaging for liver and whole body exams

Onco Suite

MR imaging has an excellent advantage of soft tissue contrast, multi-planar capabilities and the possibility of selectively suppressing specific tissue e.g. fat or water. This helps visualize pathologies, particularly metastases. The Onco Suite features a collection of sequences as well as protocols and evaluation tools that guide through a detailed screening of clinical indications, such as in hepatic neoplasms.

This package includes:

STIR TSE and HASTE, FLASH in-phase and opposed-phase protocols with a high sensitivity to metastases visualization

Dynamic imaging protocols for assessment of the kinetic behavior for lesion visualization and characterization

Quantitative evaluation and fast analysis of the data with colorized Wash-in, Wash-out, Time-To-Peak, Positive-Enhancement-Integral, MIPTIME and combination maps with Inline technology or for offline calculation

Display and analysis of the temporal behavior in selected regions of interest with the included MeanCurve post-processing application. This includes the capability of using additional datasets as a guide for defining regions of interest even faster and easier than before.

syngo REVEAL: diffusion imaging for liver and whole body exams

Dedicated prostate protocols for detection, localization, and staging of tumors and recurrences

- *syngo* REVEAL (diffusion-weighted imaging)
- Protocols with high temporal resolution allow time course evaluation based on pharmacokinetic modeling

OrthoSuite

Ortho Suite is a comprehensive collection of protocols for joint and spine imaging. MR imaging is especially suitable for avascular necrosis and internal derangements. The protocols included in this Suite can also be applied for imaging of tumors and infections.

This package includes:

2D TSE protocols for PD, T1 and T2-weighted contrast with high in-plane resolution and thin slices

3D MEDIC, 3D TrueFISP protocols with water excitation for T2-weighted imaging with high in-plane resolution and thin slices

High resolution 3D VIBE protocol for MR arthrography (knee, shoulder and hip)

Description

3D MEDIC, 3D TrueFISP, 3D VIBE protocols with water excitation having high isotropic resolution, optimized for 3D post-processing

PD SPACE with fat saturation and T2 SPACE with high isotropic resolution optimized for 3D post-processing

Whole spine single-step or multi-step protocols

Excellent fat suppression in off-center positions, e.g. in the shoulder due to high magnet homogeneity

Dynamic TMJ and ilio-sacral joint protocol

Susceptibility-insensitive protocols for imaging in the presence of a prosthesis

Multi-Echo SE sequence with up to 32 echoes for the calculation of T2 time maps (calculation included in the Scientific Suite)

High resolution 3D DESS (Double Echo Steady State): T2 / T1-weighted imaging for excellent fluid-cartilage differentiation

Pediatric Suite

The parameters for pediatric imaging vary significantly in comparison to the parameters for adults. The reasons are developing tissues, body size, faster heart rates and restricted compliance with breath-hold commands. Protocols can be adapted for imaging infants.

Scientific Suite

Scientific Suite supports the scientifically oriented user with an easy access to application-specific data for further processing and advanced image computation methods.

- Support of USB memory sticks
- Access to the file system by means of a secure and convenient browser
- Anonymization of patient data
- Easy generation of AVIs and screenshots for integration into presentations and training videos
- Export function for tables, statistics and signal-time-courses in a communal format (MeanCurve, Spectroscopy, DTI evaluation)
- Advanced image computation methods such as T2 and T1 time calculation, addition, subtraction, multiplication, division, and integration of images

The sequences, features and techniques for acquisition and reconstruction included in the Tim Application Suite are described in detail below.

Sequences

Spin Echo family of sequences:

- Spin Echo (SE) - Single, Double, and Multi Echo (up to 32 echoes); Inversion Recovery (IR)
- 2D / 3D Turbo Spin Echo (TSE) - Restore technique for shorter TR times while maintaining excellent T2 contrast; TurboIR: Inversion Recovery for STIR, DarkFluid T1 and T2, TrueIR; Echo Sharing for dual-contrast TSE
- 2D / 3D HASTE (Half-Fourier Acquisition with Single Shot Turbo Spin Echo) - Inversion Recovery for STIR and DarkFluid contrast
- SPACE for 3D imaging with high isotropic resolution with T1, T2, PD, and DarkFluid Contrast

Gradient Echo family of sequences:

- 2D / 3D FLASH (spoiled GRE) - dual echo for in- / opposed phase imaging 3D VIBE (Volume Interpolated Breathhold Examination) - quick fat saturation; double echo for in-phase / opposed phase 3D imaging; DynaVIBE: Inline 3D elastic motion correction for multi phase data sets of the abdomen; Inline Breast Evaluation
- 2D / 3D MEDIC (Multi Echo Data Image Combination) for high resolution T2 weighted orthopedic imaging and excellent contrast
- 2D / 3D TurboFLASH - 3D MPRAGE; single shot T1 weighted imaging e.g. for abdominal imaging during free breathing
- 3D GRE for field mapping
- 2D / 3D FISP (Fast Imaging with Steady State Precession)
- 2D / 3D PSIF - PSIF Diffusion
- Echo Planar Imaging (EPI) - diffusion-weighted; single shot SE and FID e.g. for BOLD imaging and Perfusion-weighted imaging; 2D / 3D Segmented EPI (SE and FID)
- ce-MRA sequence with Inline subtraction and Inline MIP

Description

- 2D / 3D Time-of-Flight (ToF) Angiography - single slab and multi slab; triggered and segmented
- 2D / 3D Phase Contrast Angiography
- *syngo* BEAT Tool - TrueFISP segmented; 2D FLASH segmented;
- Magnetization-prepared TrueFISP (IR, SR, FS); IR T1 scout; Retrogating

Standard Fat/Water Imaging

- Fat and Water Saturation. Additional frequency selective RF pulses used to suppress bright signal from fatty tissue. Two selectable modes: weak, strong
- Quick FatSat
- SPAIR: robust fat suppression for body imaging using a frequency selective inversion pulse
- Fat / Water Excitation. Spectral selective RF pulses for exclusive fat / water excitation
- Dixon technique for fat and water separation - based on VIBE (2 point Dixon)

Standard Techniques

- True Inversion Recovery to obtain strong T1-weighted contrast
- Dark Blood inversion recovery technique that nulls fluid blood signal
- Saturation Recovery for 2D TurboFLASH, gradient echo, and T1-weighted 3D TurboFLASH with short scan time (e.g. MPRAGE)
- Freely adjustable receiver bandwidth, permitting studies with increased signal-to-noise ratio
- Freely adjustable flip angle. Optimized RF pulses for image contrast enhancement and increased signal-to-noise ratio
- MTC (Magnetization Transfer Contrast). Off-resonance RF pulses to suppress signal from certain tissues, thus enhancing the contrast. Used e.g. in MRA
- Argus viewer for reviewing cine studies•
- Report Viewer for DICOM structured reports including report editing
- Dynamic Analysis for addition, subtraction, division, standard deviation, calculations of ADC maps, T1 and T2 values, TTP, t-Test, etc.
- Image Filter
- 3D post-processing MPR, MIP, MinIP, SSD
- Flexible film formats and paper print
- Data storage of images and cine AVI files on CD / DVD with DICOM viewer as the viewing tool for hand out to the patients or referrals
- Selectable centric elliptical phase reordering via the user interface
- Multiple Direction Diffusion Weighting (MDDW) - perform diffusion tensor imaging with multiple diffusion weightings and up to 12 directions for generating data sets.
- Inversion Recovery to nullify the signal of fat, fluid or any other tissue

Standard techniques for Flow Artifact reductions

- LOTA (LongTerm Data Averaging) technique to reduce motion and flow artifacts
- Pre-saturation techniques using RF saturation pulses to suppress flow and motion artifacts
- Tracking SAT bands maintain constant saturation of venous and/or arterial blood flow e.g. for 2D/3D sequential MRA
- TONE (Tilted Optimized Non-saturating Excitation - variable excitation flip angle to compensate inflow saturation effects in 3D MRA - selectable on desired flow direction and speed
- Gradient Motion rephasing permitting effective reduction of flow artifacts

Standard Motion Correction

- *syngo* Blade - improves image quality by minimizing and correcting for the effects of motion during an MR sequence acquisition. e.g. head, spine, orthopedic imaging and the abdomen
- 1D PACE (Prospective Acquisition CorrEction) allows examination of patients with free breathing
- 2D PACE (Precise Motion Correction) detects and corrects respiratory motion eg of the heart or liver

MAGNETOM Aera runs *syngo* MR software. *syngo*® is the unique software platform for medical applications. Parallel working and one-click exams are efficiently supported and increase productivity. Parallel scanning and

Description

reconstruction are standard.

The unique Phoenix technique is the easiest way to exchange protocol data. It supports intelligent extraction of sequence parameters from images acquired on a MAGNETOM Aera system.

Inline technologies, scan@center or AutoVoiceCommands speed up the workflow further.

The context-sensitive "Online Help" function and *syngo* Scan Assistant offer support and propose solutions to MR-specific questions and parameter conflicts.

Studies can be easily networked and managed using the standard DICOM 3.0 protocol for efficient support of workflow. The following standard functions are supported: Send/Receive, Query/Retrieve, and Basic Print for DICOM-compatible laser cameras (camera is not included in the basic unit), DICOM Worklist, DICOM Storage Commitment (SC) DICOM Modality Perform Procedure Step (MPPS), DICOM Structured Report (SR), DICOM Study Split.

Patient Communication

- The intercom system includes an ergonomically designed patient communication unit for desktop positioning on the *syngo* Acquisition Workplace and pneumatic headphones for the patient.
- Active Noise Cancellation allows for increased user comfort in the control room combined with comprehensive patient supervision.
- It controls emergency table stop, volume control of speaker and headphones in the examination room, volume control of speaker in the control room, response to the patient's activation of the assistance-call button and provides a connection to an external audio system (external audio system is not included in the basic unit) for music playback.

Computer system

The high performance host computer and the new high performance measurement and reconstruction system are ideally suited for even the most demanding applications. The PC-based computer system uses the intuitive *syngo* MR user interface. The computer system includes the following components:

High-performance measurement and reconstruction system

- Two Intel Quadcore Processor z E 5540
- clock rate of z 2 x 2.53 GHz
- Main memory (RAM) of 48 GB,
- Hard disk for raw data z 300 GB
- Hard disk for system software z 100 GB
- Parallel Scanning and Reconstruction of up to 8 data sets
- Reconstruction speed
 - 12.195 recons per second (256 x 256 FFT, full FoV)
 - 37.914 recons per second (256 x 256 FFT, 25 % recFoV)

High-performance host computer

- Intel Xeon processor z W3520 QuadCore
- clock rate z 2.66 GHz
- Main Memory (RAM) z 4 GB
- three hard disks
 - system SW z 146 GB SAS
 - data base z 146 GB SAS
 - images z 146 GB SAS
- DVD-R writer for CD-R (approx. 4000 images 256² DICOM Standard, ISO 9660) and DVD-R (approx. 25 000 images 256² DICOM Standard, ISO 9660) storage of DICOM data or other data like AVI files
 - DVD-ROM drive
 - Electronic mouse.
- The combination of host computer and the measurement and reconstruction system offers a truly powerful imaging system designed for large image matrix sizes of up to 1024 x 1024. The unrestricted multitasking capability allows time-saving parallel scanning and reconstruction.
- High-resolution 19" color LCD flat screen monitor with 1280 x 1024 pixel display, integrated gamma correction for optimum display of radiographic grayscale images and automatic backlight control for long term brightness stability.

Description

Installation:

- The relatively lightweight design of the MAGNETOM Aera in most cases eliminates the need for structural building reinforcements and thus facilitates installation in upper floors.
- The compact integrated design allows for short installation times and reduces the required space to less than 30 sqm (323 sq. ft.) for the entire installation. The minimum room height clearance is only 2.40 m (7' 10").
- MAGNETOM Aera allows siting of the system without a dedicated computer room - no additional cooling or floor requirements.
- MAGNETOM Aera combines state-of-the-art performance with peace of mind. High system availability is ensured by the expert, highly trained Siemens MR service engineers;
- Your Siemens service contract (not included in the basic unit) offers a comprehensive range of benefits such as Uptime Remote Diagnostics for improved productivity and maximum uptime.

Tim [204x48] performance level

Tim 4G offers DirectRF a completely redesigned RF architecture. This new all digital-in/ digital-out design integrates all RF transmit and receive components at the magnet, eliminating analog cables for true signal purity. This compact and efficient design enables a dynamic feedback control for temporal stability and power linearity. The all-new innovative coil architecture packs more coil elements in a smaller space. Therefore up to 204 coil elements can be simultaneously connected. The newly designed ultra high density array is an essential part supplementing Tim4G. Combined with the 48 independent RF channels advanced iPAT capabilities and SNR are enabled.

An additional benefit of multiple coil elements and receiver channels is improved performance in multi-directional, i.e. three dimensional, high-speed, high-resolution iPAT in the head-feet, anterior-posterior or left-right directions.

This option includes also Advanced High Order Shim.

XQ gradients

Siemens XQ gradients provide actively shielded, water cooled world-class gradients. All axes are force-compensated.

The XQ gradients have:

- Maximum gradient amplitude of 45 mT/m, per axis, i.e. 78 mT/m vector summation gradient performance,
- max. slew rate 200 T/m/s per axis, i.e. 346 T/m/s vector summation,
- minimal rise time 225 ps, from 0 to 45 mT/m amplitude
- Max. output voltage for each of the gradient axes 2250 V
- Max. output current for each of the gradient axes 900 A
- Separate cooling channels that simultaneously cool primary and secondary coils allow the application of extremely gradient intensive techniques in a new class of performance.
- 100% duty cycle for fast and demanding techniques such as ultra-short TE MRA in continuous operation, thin slice single breath-hold liver studies and EPI imaging techniques (all optional in appropriate clinical packages).
- Variable Field-of-View selection from 0.5 cm to 50 cm (up to 45 cm in z direction) for optimal coverage and highest spatial resolution in diagnostic. The minimum slice thickness in 2D and 3D is 0.1 mm and 0.05 mm, respectively.
- Acquisition of sagittal, transverse, corona!, single oblique and double oblique slices with highest resolution.
- The extremely compact water-cooled gradient amplifier features a modular expandable design with excellent linearity and pulse reproducibility. It is digitally controlled and has very low switching losses due to ultrafast solid state technology.

The keys of the numerical key panel are assigned to syngo-specific functions and labeled with the corresponding syngo icons. The keyboard supports the country specific special characters.

The unique color and material selection enhances the visual appeal of the new system design, thereby creating an enticing, patient-friendly impression.

The Dot Control Centers and the unique Dot Display are neatly integrated into this main face plate. The aesthetically pleasing and ergonomically designed control elements of the Dot Control Centers are well illuminated for easy visual recognition.

Description
<p>In particular, the table cover and the asymmetric left deco area cover have also been designed to promote a modern visual appearance. This combination of ingenuity and practical design as presented with "Pure White" design with its brilliant white and the silver trim simply makes the MAGNETOM an overall visually appealing system and creates a patient-friendly environment.</p>
<p>The Tim Dockable Table with its light appealing design allows for a fast patient preparation and maximized patient comfort.</p> <p>It provides unobstructed foot space for attending staff and direct access to the patient. The patient table can be lowered to a minimum height of 56 cm (18.5") from the floor, for easier moving of immobile patients and better access for geriatric, pediatric patients or immobile patients. The Tim Dockable Table can be moved with two clicks into the isocenter - one click to the upmost position and one click into the isocenter. The tabletop travels beyond the rear end of the system, enabling additional patient access.</p> <p>Multiple Tim4G coils can be connected at once for efficient patient set up and patient friendly examinations. The seamless integration of multiple Tim 4G coils is possible via 4 SlideConnect and 4 DirectConnect connector slots, which are embedded in the table. This allows for comprehensive examinations without the need of repositioning.</p> <p>The Tim Dockable Table is easily adjustable for height even in the undocked state. A minimum height of 61 cm allows for easy wheelchair access or easy patient movement to the hospital bed.</p> <p>The integrated infusion stand and arm rests allow for fast patient set up anywhere and also for critical patients</p>
<p>Brief description</p> <p><i>syngo.via</i> provides one graphical user interface to prepare and read images from various modalities.</p> <p>Supported images types are:</p> <ul style="list-style-type: none"> - Computed Tomography Images - Magnetic Resonance Images - PET Images - Computed Radiography Images - Digital X-Ray Images - X-Ray Angiographic Images - X-Ray Radio-Fluoroscopic Images - Ultrasound 2D Images - Secondary Capture Images - Encapsulated PDFs <p>General reading functions, such as:</p> <ul style="list-style-type: none"> - Browser functionality for patient and data access - Loading and displaying images - Scrolling through images (e.g. movie mode, fast mouse scrolling, synchronized scrolling) - Mirror, rotate, invert, windowing, pan/zoom, annotations, distance and angle measurement, pixel lens, ROI / VOI evaluation - Findings navigator - create, collect and navigate findings - Correlated cursor - Series synchronization for pan/zoom, windowing, LUT, scrolling - Locked navigation of different modality types (e.g. MR / CT) - User-defined context menu - Multiple layouts for 2D, 3D, 4D diagnosis - Snapshot images as secondary capture <p>Integrated 3D tools, such as:</p> <ul style="list-style-type: none"> - All reformats immediately available: VRT, MIP thin/thick, MPR thin / thick, interactive slice thickness change - VRT Punch - VRT Gallery - Clip plane and clip box

Description

Bone removal for fast segmentation and removal of bony structures
Fusion and registration
Parallel, curved & radial ranges
2D & 3D reference lines, 3D reference point
Region growing for interactive segmentation of anatomical structures

Anatomic intelligence:

Automatic spine labeling
Automatic landmark registration for accurate anatomical alignment of multiple timepoint cases

Applications for dedicated clinical areas

Beside general 2D/3D/4D capabilities, the following advanced functionalities for dedicated clinical areas are part of *syngo.via*.

These applications are medical products in their own right and necessary country-specific approvals might not yet be available (e.g. 510k, CE Mark).

CT Cardiac

Review Marker, Heart Isolation, Movie (Beating Heart), Manual Coronary Tracking, Cardiac Planes, Curved & Cross-Section MPR, Integrated Reporting

CT Vascular

Bone Removal, Table Removal, Review Marker, MPR, Thin MIP Ranges, Curved & Cross Sectional MPR, Integrated Reporting

PET&CT Oncology

10 CT image series per time point, RECIST/WHO measurement, Basic PET evaluation, Image fusion, Registration, Time point comparison (two time points) 3D overview image, Local registration, Export CSV

syngo.CT Dual Energy

syngo.CT Dual Energy offers a viewer that displays a fused image for initial diagnosis. It includes Optimum Contrast to calculate automatically contrast-optimized images as well as the possibility to calculate monoenergetic images for a range of 40 - 190 keV. The additional, optional Dual Energy applications utilize *syngo* Dual Energy's two data sets even further: the material-specific difference in attenuation enables an easy classification of the elementary chemical composition of the scanned tissue. *syngo.CT* Dual Energy works with Dual Energy images from SOMATOM Definition Family (AS20 up to Flash).

MR Reading

Automatic data loading:
All data of the current study is automatically loaded in a 2*2 stack layout - including 3D and 4D data.
Follow-up support:
Follow-up layout for comparison between two timepoints.
Rescan handling:
Repeated scans are collected in one stack that provides an overview layout to select the best rescan for reading.
Workflow customization and creation:
MR Reading allows the user to generate new, customized workflows.
MR Reading report template included.

Workflow Automation

Triggered by PACS or modality:
Disease-specific workflow mapping can also be done based on image information (modality and/or study description)

Triggered by RIS:

syngo.via requests the DICOM Modality Worklist (DMWL) from the connected RIS to enable automatic disease-specific workflow mapping and prefetching of examinations from PACS for follow-up reading.

Disease-specific reporting:

Disease-specific reports can be derived from different clinical applications (structured reporting).
Findings collected in the Findings Navigator can be transferred to disease-specific reporting application and can then be stored as DICOM Structured Reports.

Description

- The reports created with *syngo.via* are stored as encapsulated PDF DICOM objects. Additionally the report can be saved in the file system as a PDF file. The stored PDF report can be viewed and printed by the clinical user.
- A modified report can be saved as new report template.

Further functionality, such as:

- *syngo* Expert-i support for *syngo* MMWP integration
- *syngo.plaza* Integration
- Query/retrieve from DICOM nodes
- Export images and creating patient media
- Filming (DICOM print) or postscript printing functionality

Prerequisites for all service related issues:

Availability of a customer administrator that performs dedicated administration and support tasks (e.g. 1st line support, data security, backup,...).

Minimum broadband internet connection bandwidth for uncompromised service support are 2000 kBit/s downstream and 512 kBit/s upstream.

Otherwise, certain support services may not be provided and the agreed remote response time cannot be guaranteed.

Specification of minimum broadband internet connection in detail:

- Downstream: 2000 kBit/s for Software update, IT- and Application support
- Upstream: 512 kBit/s for Application support
- Upstream: 256 kBit/s for Software update and IT support

Scope of delivery:

- DVDs with *syngo.via* software
(software license for one *syngo.via* client user)

The additional *syngo.via* user license provides 2D, 3D image reading capabilities at almost every workplace for various modalities (e.g. CT, MR, PET/CT, CR, XA image types). Up to 2 patients can be loaded simultaneously. The *syngo.via* client runs on standard Windows computers in the network and integrates into radiologist's reading workplace (RIS; PACS) for efficient image reading.

Applications for dedicated clinical areas

Beside general 2D/3D capabilities, the following advanced functionalities for dedicated clinical areas are part of *syngo.via*.

These applications are medical products in their own right and necessary country-specific approvals might not yet be available (e.g. 510k, CE Mark).

CT Cardiac

Review Marker, Heart Isolation, Movie (Beating Heart), Manual Coronary Tracking, Cardiac Planes, Curved & Cross-Section MPR, Integrated Reporting

CT Vascular

Bone Removal, Table Removal, Review Marker, MPR, Thin MIP Ranges, Curved & Cross Sectional MPR, Integrated Reporting

PET&CT Oncology

10 CT image series per time point, RECIST/WHO measurement, Basic PET evaluation, Image fusion, Registration, Time point comparison (two time points) 3D overview image, Local registration, Export CSV

CT Dual Energy

syngo.CT Dual Energy offers a viewer that displays a fused image for initial diagnosis. It includes Optimum Contrast to calculate automatically contrast-optimized images as well as the possibility to calculate monoenergetic images for a range of 40 - 190 keV. The additional, optional Dual Energy applications utilize *syngo* Dual Energy's two data sets even further: the material-specific difference in attenuation enables an easy classification of the

Description

elementary chemical composition of the scanned tissue. syngo.CT Dual Energy works with Dual Energy images from SOMATOM Definition Family (AS20 up to Flash).

MR Reading

- Automatic data loading:
All data of the current study is automatically loaded in a 2*2 stack layout - including 3D and 4D data.
- Follow-up support:
Follow-up layout for comparison between two timepoints.
- Rescan handling:
Repeated scans are collected in one stack that provides an overview layout to select the best rescan for reading.
- Workflow customization and creation:
MR Reading allows the user to generate new, customized workflows.
MR Reading report template included.

MR Radiology Workflows: predefined layouts for Head, C-Spine, T-Spine, L-Spine, Whole Spine, Breast, Prostate, Abdomen, Hip and Knee scans, Composed Images.

MR Cardio-Vascular Workflows: Cardiac, Angio Single Station, Angio Multi Station, Angio TimCT and Angio

TWIST

MR Evaluation: Subtraction, MeanCurve, Image Filter, 2D/3D Distortion Correction.

Workflow optimized report template included.

MR Remaining Imams: collection of additional data, that have not been loaded in any of the predefined layouts (e.g. additional scans, normally not part of the workflow). A single click that makes sure no data was missed by the user.

Scope of delivery:

1 x syngo.MR General Engine software package with MR Radiology Workflows

- MR Cardio-Vascular Workflows
- MR Evaluation

Scope of delivery:

- 1 x additional user for syngo.MR General Engine software package with MR Radiology Workflows including
MR Cardio-Vascular Workflows
MR Evaluation (Subtraction, MeanCurve)

Please note that max 4 extensions are possible.

Brief description

Based on the tensor, in addition to the already inline-calculated parameter images, further images characterizing the anisotropy of diffusion properties can be calculated and stored. The display options include 2D and 3D tensor graphics, color-coded images and overlay images on the anatomical images.

In fusion mode the color-coded diffusion images can be overlayed on an anatomical 3D image data set acquired in the same examination. The overlaid image volume can be acquired, displayed and stored in cut planes with any double oblique angulation.

If the option "syngo BOLD 3D Evaluation" is available, the results of an fMRI experiment from the same examination can also be displayed fused with DTI and anatomy.

Clinical application is supported by a dedicated DTI evaluation mode. Multiple diffusion parameter images (e.g. Fractional Anisotropy, ADC, B=0) and an anatomical image are displayed next to each other in the same slice position for comparison. The images can be evaluated together based on ROI and the results can be documented in a table.

The following parameter imams can be calculated and displayed:

- Dimensions of isotropic diffusion:
ADC, trace-weighted, exponential ADC
- Proprietary vectors of the diffusion tensor:
EI, E2, E3
- Dimensions of anisotropic diffusion:
Fractional Anisotropy (FA), Relative Anisotropy (RA),
Volume Ratio (VR), EI -E3, EI -E2, E2-E3

Description

- Shape-describing dimensions of the diffusion tensor:
Linear, planar, spherical

Visualization options include:

- 2D/3D grayscale and color display
- 2D/3D display with color coding of one preferred diffusion direction, e.g. Fractional Anisotropy image with color coding of the direction of the first diffusion tensor proprietary vector.
- Display of tensor as an overlaid graphic on parameter images or anatomical images as an ellipsoid or cuboid (colored).
- Overlay of parameter images on anatomical images (if "syngo BOLD 3D Evaluation" is available: also simultaneous overlay of fMRI results)

Documentation

- Storage of parameter image series
- Storage of all views
- Storage of the result table of the common ROI-based evaluation of parameter images
- Storage of multi-planar, double oblique reconstructed series from overlaid 3D visualizations (anatomy + diffusion parameters)

The DTI Evaluation package with comparing evaluation mode is optimized for clinical application to support diagnostics of white matter diseases (e.g. Encephalopathia Diseminata, brain maturation disorders, displacement of nerve fiber tracts through masses)...).

In addition, the package offers the scientific user full flexibility of 2- and 3-dimensional visualization of diffusion tensor with dimensions of isotropic and anisotropic diffusion, proprietary vectors of the diffusion tensor and shape-describing dimensions of the diffusion tensor.

Brief description

syngo DTI Tractography is optimized for the clinical use: DTI data sets can be explored fast and intuitively using the interactive QuickTracking. This also allows identifying good regions to place seeding ROIs. Seeding ROIs can be placed in fused views displaying the anatomical reference and e.g. the colored FA map simultaneously. At the same time the package provides the scientific user with the flexibility to configure the tracking algorithm and to change display settings for the tracts.

All views can be exported as DICOM images or bitmaps. Tract and seeding ROI statistics can be exported as html files.

- Advanced 3D visualization of white matter tracts in the context of 2D or 3D anatomical datasets and DTI datasets (also fMRI results if the option "BOLD 3D Evaluation" is present)
- Interactive QuickTracking displays the tract originating from the mouse pointer position while moving over the DTI data set.
- Texture Diffusion, a highly versatile in-plane visualization of white matter tracts, allows to display and read DTI Tractography results on PACS reading stations and in the OR.
- Seed points for tracking with single ROI and with multiple ROIs to assess connectivity.
- Tract and seeding ROI statistics (mean/max FA value, min/mean/max ADC value, ...).

This application provides velocity- and flow-related data of an examined patient quickly and easily.

Image Display

- Two large screen segments for viewing magnitude and phase Images
- Synchronized movie display
- Application of color look-up tables similar to Doppler-ultrasound

Automated Segmentation Tools

- Semi-automatic edge detection for vessel lumen from initial user input
- Automatic compensation of in-plane motion as well as vessel size or shape changes

Quantitative Analysis

Description

- Through-plane and in-plane flow analysis
- Background phase correction
- Display of value and location of peak velocity on each image
- Calculation of: Mean and peak velocity; mean, cumulative, forward and retrograde flow; regurgitation fraction
- Changes in vessel size

Digital and Paper Reports

- Various graphs: Velocity vs. time, flow rate vs. time, integral flow vs. time, area vs. time
- Summary tables
- Dedicated reporting of flow evaluation results.

Scope of delivery:

1 x syngo.MR Cardiac Flow software

Scope of delivery:

1 x additional user for syngo.MR Cardiac Flow software

Please note that max 4 extensions are possible.

Brief description

Type: Hewlett Packard rack mount server.

Processor: 2 CPU

RAM: 72GB

System Disk: RAID Level 1

DB Data Disk: RAID Level 1

Data Disk: RAID Level 5,

1x Hot Spare for RAID 5

Image Storage: approximately 4.900 GB

Optical drive: CD/ DVD-RW

Graphical Processing Unit: 2x NVIDIA GPUs

Mouse: USB Optical Scroll Mouse

Keyboard: USB standard international

Rack mount kit for 19" HP rack included

Operating System: Windows Server 2008 R2, 64 Bit - Enterprise Edition

This server is configured with a redundant fan and a redundant power supply.

Recommended Environment Requirements

Server for operation only in server rooms

A 100 Mbit/s (minimum) / 1 Gbit/s (recommended) network environment is needed for optimal performance.

For remote access a 10 Mbit/s (minimum) / 16 Mbit/s (recommended) broad-band connection is required.

Service Package

Basic care pack for this server configuration is not included and has to be ordered separately!

Technical details are subject to change without notice!

Brief description

The HP Care Pack Option "24 x 7 x 4 hours on-site" consists of the following deliverables:

- **Remote problem diagnosis and support** — Siemens Remote Services uses HP remote support tools to isolate your problem and facilitate resolution in close cooperation with the next HP service hub in your area.
- **24 hours x 7 days, 4h reaction time, break & fix service onsite** — For issues that cannot be resolved remotely, an authorized HP Services representative arrives at your site within 4 hours after a defect has been

Description

confirmed. HP Services returns your system to operational condition, repairing or replacing components or entire units. If required, HP services restore at the same time system and network functionality to allow Siemens Remote Services to seamlessly continue with any further required service activity.

- **Defective Media Retention Service** — This option lets you protect sensitive data by keeping your defective disk, without having to return a defective media to the manufacturer.
- **Integrated service management** — Siemens and HP has bundled a set of proactive and reactive service elements with Siemens and HP Mission Critical Engineers working together from joint service centers in your region. This optimizes the coordination and execution of all required service activities without unnecessary delays.
- **Proactive monitoring** — Proactive monitoring of HW status and events to be able to correct HW problems before they affect system stability.
- **Enhanced HW support** — Provision of necessary BIOS-, Firmware and Driver update packages to keep the HW system up to date. Required patches and updates are provided remotely to be installed conveniently during the next application maintenance or service window by the responsible IT system administrator.

Brief description

The *syngo* Multi Modality Workplace client is configured as a DICOM-connected standalone system. The workstation is ideal for providing additional or specialist clinical workplaces, and is particularly suited to multi-modality installations. The base viewing system can be extended by adding a wide range of cross-modality and modality-specific application options.

Scope of delivery

- PC
- Enhanced Graphics Card
- 12 GB RAM
- Base User software
- *syngo* 3D
- *syngo* Expert-i
- *syngo* CT Basic Evaluation
- *syngo* CT Dual Monitor
- User documentation in selected language
- 19" Monitor

PC

High Performance Windows XP based Workstation with a Quad-Core processor and a RAM capacity of 12 GB and a minimum disk capacity of 147 GB for patient data. The workstation is equipped with an Enhanced Graphics Card to support 3D applications. To exchange medical images on DICOM-compatible DVD-R, CD-Rs the system is equipped with a DVD-Recording unit.

PC can be connected to an existing network via 10/100 Mbit Ethernet and 1 Gbit Ethernet.

Base User Software:

Software features an intuitive and thus easy to learn user interface developed from prototypes tested in close cooperation with users.

Standard functions such as filming or image review, and optional clinical application software, are performed in individual processes on dedicated task cards. A number of functions and input parameters, as well as the language used, can be selected according to individual requirements.

Package comprising the following software licenses:

Base software with CD and dongle for the functions patient browser, filming, image review and system services.

syngo Patient Browser.

Patient management

- DICOM 3 communication with Send, Receive, Query&Retrieve

Description

DICOM Print

Reading of DVDs, CDs

DVD-R module for writing DICOM-DVDs for data exchange. Writing is in background mode.

syngo Filming

A virtual film sheet shows a 1:1 display of the film sheets to be printed, thus permitting an effective preview of the filming job and re-windowing the images, as well as providing a large number of evaluation functions.

syngo SR Viewer

Reading and creation of DICOM structured reports.

syngo Viewing

Image Review supports interactive 2D review, evaluation and documentation functions. Multiple studies from the same patient can be displayed side-by-side for comparison.

Image display

1024 x 1024 screen matrix, configurable as up to 64 image segments.

CINE Display

Automatic or interactive dynamic presentation technique for the visualization of time and volume series. Synchronized viewing of multiple series.

Measurement and annotation:

Text annotation; Distance, angle, circle, ROI and pixel lens, depending on information available from the acquisition system.

Video sequences stored on offline media:

Any user-selectable file, such as cardiac, DSA or InSpace AVI video sequences, can be burned to DVD, CD to prepare quality presentations and demos of pathologies.

System services:

Microsoft Office 2000 (except FrontPage) is supported (not provided).
Software for burning user-selectable files to DVD-R, CD ROM.

Network module:

For connection to a local Ethernet (10 or 100 baseT) for communication with networked printers, diagnostic and therapy workstations, HIS/ RIS systems and teleradiology routers.

Scope of functions:

Network stations can be configured.

Unlimited selection of stations.

DICOM: industrial standard for the transmission of information between DICOM-compatible units from different manufacturers. The scope of functions is described in detail in the DICOM Conformance Statement and in its standard version includes the Transmission/ Reception, Query/ Retrieve and Basic Print functions.

syngo 3D

3D Basic

Basic 3D Viewer platform for display of 3D series with multi-planar reconstruction (MPR), shaded surface display (SSD), and maximum intensity projection (MIP).

3D VRT

Advanced 3D functionality as containing volume rendering technique (VRT) and advanced editing functions.

Fly Through

High quality SSD/VRT virtual endoscopic viewing using high performance rendering modes.

Image Fusion and FusedVision3D

Spatial alignment and visualization of image data of one patient where image data has been generated at different points in time or by different modalities. Visualization of fused anatomical and functional volumes via projection of the volumes onto an arbitrary oriented plane in full screen mode or together with the 3-orthogonal fused datasets. Allows precise localization of lesions while using either the Clip plane view or the Slab Plane view displays. Displays correlated rotating Maximum Intensity Projection (MIP), and special 3 x 3 layout to display correlated CT, PET and fused images.

Description
<p><u>3D Dual Monitor</u> Viewing and manipulation of two different datasets on two monitors.</p> <p>syngo Expert-i Enables the interaction with the <i>syngo</i> MMWP Client from virtually anywhere in your hospital.</p> <p>syngo CT Basic Evaluation Supports the evaluation of CT images through volume calculation and dynamic evaluation.</p> <p>syngo CT Dual Monitor Enables dual monitor operation for capable CT applications.</p> <p>19" Monitor 19 in high-resolution LCD flat panel color monitor (1280 x 1024 pixels) in landscape format for images and text.</p>
<p><i>syngo</i> keyboard for the selected language. For easy operation of <i>syngo</i> browser, viewer and filming tasks. Special keys for windows, sheets, printing, marking and network communication.</p>
<p>The PACS-Driven Implementation Package includes the following tasks:</p> <ul style="list-style-type: none"> - Activation of Siemens Remote Services connections - Import of all <i>syngo.via</i> server license files - Basic clinical configuration and integration of up to 5 DICOM nodes in <i>syngo.via</i>, such as one modality, one PACS, not more than two <i>syngo</i> MultiModality Workplaces, one printer, or one RIS/ DMWL-source including the request of a DICOM Modality Worklist sent to <i>syngo.via</i> for a networked Siemens scanner. All nodes need to be validated for connection with <i>syngo.via</i>. - Installation of a software upgrade and a <i>syngo.via</i> client on one formerly installed <i>syngo</i> MMWP, already configured in <i>syngo.via</i> as a DICOM node; - Configuration DICOM access to <i>syngo.via</i> in <i>syngo</i> MMWP; Integration of the basic <i>syngo</i> MMWP access into one <i>syngo.via</i> client workplace by installation and configuration of the software Expert-i on the <i>syngo.via</i> client. - <i>syngo</i> MMWP versions 2009B (VE36A) onwards with service pack VX29A support <i>syngo.via</i> client integration and remote desktop access using <i>syngo</i> Expert-i. <i>syngo</i> MMWP version 2009B (VE36A) when used in dual monitor configuration needs to be upgraded to <i>syngo</i> MMWP versions 2012A (VE50A) or higher. - Frontend integration of <i>syngo.via</i> with one PACS workplace (for image call-up directly out of the PACS application user interface) - Integration of <i>syngo.via</i> into the IT infrastructure using an existing Active Directory, consultation of the customer's IT administrator for routing/ports. - Configuration of basic workflow rules: autodelete, archiving, autorouting in <i>syngo.via</i> - Acceptance Test in cooperation with the customer <p>Context of the implementation tasks:</p> <ul style="list-style-type: none"> - The DICOM conformance of the DICOM nodes is prerequisite for connection to <i>syngo.via</i>. - The DICOM nodes to be connected to <i>syngo.via</i> must be configured and tested by the customer, for e.g. configuration of the remote DICOM node <i>syngo.via</i>, routing rules, procedures. If necessary, the customer orders these services from the DICOM node's vendor. - The DMWL-source must be able to provide the DMWL to <i>syngo.via</i> identical to the DMWL provided to the modalities. - The configuration of the customer's Local Area Network is performed by the customer. - Provision of a minimum broadband Internet connection bandwidth with 2000 kBit/s downstream and 256 kBit/s upstream for Siemens Remote Services (SRS) by the customer. If the customer does not provide SRS connectivity, then additional professional services for implementation without SRS support are offered. For service support after implementation the following minimum specification has to be provided: Downstream 2000 kBit/s (for Software update, IT- and Application support)• <u>Upstream</u> 512 kBit/s (for Application support); <u>Upstream</u> 256 kBit/s (for Software update and IT support). - The customer provides information, such as: IP addresses of the server for its network integration and the DICOM nodes identifiers.

Description

- The customer provides the required power supply and the installation location for the server hardware.
- Presence and support of the customer's administrators (clinical and IT administrator) is required during implementation. In preparation for implementation support the customer's administrators have completed the *syngo.via* web-based trainings, which are part of the scope of delivery.
- A list of applications and systems with validated connectivity to *syngo.via* can be requested from your Siemens Sales Representative.
- If a DICOM node or another system has not been validated yet for connection to *syngo.via* by Siemens, then the customer will give his acceptance though there could be a narrowed functionality of the connection.
- Installation of *syngo.via* client software on additional workplaces, or configuration of additional DICOM nodes, or the distribution of the frontend integration to additional PACS workplaces are performed by the customer's administrator or can be ordered from Siemens separately as an option.
- Implementation of a new *syngo* MMWP 2010B (Hardware and Software) or a *syngo* MMWP software upgrade to an on-site already installed sMMWP is performed as an additionally offered service.
- The image call-up implementation and configuration will be upgraded by the customer with future software versions of the calling application (RIS, PACS).
- Project coordination is performed by Siemens. Please see the *syngo.via* Data Sheet for system requirements and detailed description of implementation tasks.

The *syngo* MMWP implementation includes the following tasks:

- Unwrapping of server and monitors (if applicable). Consolidation of all packaging material and notification to the Customer that the materials are ready for removal
- Mechanical and electrical connections at site of operation, connection to the power supply
- Startup of operating system, check status of patches, drivers, service packs and hot fixes etc., import of all license files for the *syngo* MMWP 2010A
- Connection to LAN; network configuration
- Activation of an additional Siemens Remote Services connection for *syngo* MMWP (if applicable)
- Basic clinical configuration, autodelete, archiving, autorouting on *syngo* MMWP
- Configuration on *syngo* MMWP for connection to one new modality (if sold in a bundle)
- Integration with *syngo.via* and one validated PACS, i.e. installation of *syngo.via* client on the *syngo* MMWP
- Basic integration of this *syngo* MMWP in one *syngo.via* client using Expert-i
- Enhancement of the *syngo.via* workflow rules configuration on the *syngo.via* server: autorouting referring to *syngo* MMWP
- Backup of the *syngo* MMWP configuration on DVD/ CD or on customer file server
- Acceptance test of the installed *syngo* MMWP in cooperation with the customer, handover of the readily installed system to the customer.

Context of the implementation tasks:

- The connection of one or two monitors to a *syngo* MMWP client does not include monitor calibration. Depending on local legal regulations, this monitor installation may allow viewing only.

The customer provides, as described in the *syngo.via* Data Sheet:

- Access to the location and space for *syngo* MMWP client operation as well as for the monitors (if applicable)
- *syngo* MMWP client hardware and monitor(s) are on site of operation. The customer's monitors are accompanied by appropriate cables.
- Electrical power
- LAN access and LAN configuration
- Configuration of the broadband internet access for Siemens Remote Services
- The customer provides the information for the *syngo* MMWP network integration, such as: IP addresses.
- Integration of the *syngo* MMWP on additional *syngo.via* clients (Expert-i) is performed by the customer's administrator
- Configuration of additional DICOM nodes in the *syngo* MMWP is performed by the customer's administrator. Optionally, configuration of additional DICOM nodes can be ordered from Siemens.

Description
<ul style="list-style-type: none"> - Please see the syngo.via Data Sheet for the overall system configuration of syngo.via with syngo MMWP and detailed description of implementation tasks.
<p>This hardware installation service includes the following tasks:</p> <ul style="list-style-type: none"> - Unwrapping. Consolidation of all packaging material and notification to the customer that the materials are ready for removal. - Mechanical and electrical connections at site of operation - Mechanical installation in a common rack (e.g. HP, Fujitsu, IBM, Rittal) not older than three years and connection to a console. - Connection to the power supply, to Uninterruptable Power Supply (if applicable) - Startup of operating system; check status of patches, drivers, service packs and hot fixes, etc. - Connection and network configuration of the server and the remote service board to the LAN - Configuration of remote service board (network settings, users configuration) - Handover of the readily installed system to the customer. <p>Context of the implementation tasks: The customer provides, as described in the syngo.via Data Sheet:</p> <ul style="list-style-type: none"> - Access to the location and space for server operation - Electrical power - LAN access and LAN configuration - Configuration of the broadband internet access for Siemens Remote Services - IT Administrator's coordination and support for the mechanical and IT installation. - Server and monitor(s) are on-site of operation. The customer's monitors are accompanied by appropriate cables.
<p>The objective of this course is to give the participants the necessary theoretical knowledge and practical skills to routinely work with syngo.via and to become acquainted with the settings and configuration options of the system.</p> <p>Target Group This course is designed for clinical administrators, technologists and physicians who act as departmental key user for the syngo.via system.</p> <p>Learning Target syngo.via is a software solution intended to be used for viewing, manipulating, communicating and storing medical images. It supports interpretation and evaluation of examinations within healthcare institutions for example in Radiology, Nuclear Medicine and Cardiology environments. Having attended this course the participants will be able to comprehensively utilize the syngo.via basic operation and universal functionality. In addition the participants will get familiarized with the syngo.via configurations and setting options for applications, workflow and reporting issues.</p> <p>Prerequisite Basic application knowledge on imaging systems like CT, MI and MR Understanding of clinical workflow Basic understanding of IT and DICOM</p> <p>Contents syngo.via system overview, basic principles and user interface Demonstration and exercises on Patient Browser Worklist management Workflow management 2D/3D/4D image processing and evidence document generation Transfer of data Clinical configuration and setting options User management</p>

Description
<p>Duration 5.00 days</p>
<p>syngo.via is the latest product from Siemens Healthcare for Advanced visualization of 2D/3D/4D data sets. This server client system is fully embedded in the customers IT infrastructure and allows access to information from anywhere to any modality and supports the user with appropriate, time saving reading workflow according to modality and disease. Having attended this course, the participant will understand the workflow and implementation concept of syngo.via. In practical exercises he learns to use the Service UI and is prepared to perform the administrative tasks. In addition basic first level support questions are covered.</p> <p>Target Group IT Administrators syngo.via responsible for local user management, regular maintenance tasks and first level service support</p> <p>Learning Target syngo.via is the latest product from Siemens Healthcare for Advanced visualization of 2D/3D/4D data sets. This server client system is fully embedded in the customers IT infrastructure and allows access to information from anywhere to any modality and supports the user with appropriate, time saving reading workflow according to modality and disease. Having attended this course, the participant will understand the workflow and implementation concept of syngo.via. In practical exercises he learns to use the Service UI and is prepared to perform the administrative tasks. In addition basic first level support questions are covered.</p> <p>Prerequisite Basic understanding of clinical workflow Basic IT know how Basic DICOM knowledge</p> <p>Contents Overview of the Enterprise Platform and syngo.via IHE, Infrastructure and Function View Client install Workflow configuration Service UI Trouble shooting Tools</p> <p>Notice Virtual training course for USA- No travel required</p> <p>Duration 2.00 days</p>
<p>The option features:</p> <ul style="list-style-type: none"> Display and storage of full-format images, e.g. of the spine, the central nervous system or the vessel tree (starting from <i>syngo</i> MR B13), combined from multiple overlapping stages. Dedicated composing algorithms, optimized for the generation of anatomical or angiographic (starting from <i>syngo</i> MR B13) full-format images. Data sets with different FoV, resolutuion, matrix and slice thickness can be combined (starting from <i>syngo</i> MR B13). Generation of full-format images from inline MIPs (starting from <i>syngo</i> MR B13). Original, detail and reconstructed images can be displayed in different layouts. Comparison of two reconstructed images for evaluation and diagnosis is thus made possible. Filming in different layouts is supported. Measurements of basic functions via reconstructed images is then possible. Measurements of extended orthopedic functions: <ul style="list-style-type: none"> scoliotic angle, kyphotic angle, vertical distance measurement and differences in width of the intervertebral spaces. <p><i>Prerequisite: SW syngo MR B13.</i></p>

<p>Description</p> <p>Flow Quantification enables the acquisition of flow encoded images and the evaluation of blood as well as of cerebro-spinal fluid (CSF).</p> <p>Sequences include:</p> <ul style="list-style-type: none"> ECG triggered 2D phase contrast with iPAT support Retrospective reconstruction algorithms for full R-R interval coverage Maxwell Term Compensation
<p>The combination of automated contouring and easy-to-use editing tools, provides users with a rapid way to quantify flow parameters.</p> <p>Argus Flow includes:</p> <ul style="list-style-type: none"> Calculation of flow and velocity parameters(e.g. mean and max velocity, mean, cumulative, prograde, retrograde flow) for large and small vessels. Semi-automatic detection of regions of interest over time Color-coded display of velocity values Calculation of flow and velocity parameters (e.g. peak velocity, average velocity, flow, integral flow) Graphical and tabular display of the results (e.g. flow-time curves) Integration of the results in Argus structured report and storage in DICOM format for documentation.
<p>Dot Exam Strategies</p> <p>The workflow can be personalized to the individual patient condition and clinical need. The Large Joint Dot Engine comes with the following predefined strategies, which the user can select according to patient conditions or change at any time during the workflow, when conditions change:</p> <ul style="list-style-type: none"> Image quality: Achieve high image quality in a reasonable scan time with 2D and 3D protocols. Speed focus: Examine patients in a short time frame with protocols being accelerated to the maximal extent. Motion artifact reduction: Compensate for the effects of motion, e.g. with motion insensitive syngo BLADE protocols. Artifacts reduction: Reduce susceptibility artifacts, using syngo WARP. <p>AutoAlign</p> <p>Automated, localizer based positioning and alignment of slice groups to the anatomy, relying on anatomical landmarks. Providing fast, easy, and reproducible patient scanning and supporting the reading by consistently delivering high image quality with a standardized slice orientation.</p> <p>Inline MPRs - Automatic multiplanar reconstruction for 3D datasets</p> <p>The Multi Planar Reconstruction (MPR) tool uses the position information from the AutoAlign algorithm and can be easily configured to automatically generate required 2D images from high resolution 3D acquisitions.</p> <p>syngo WARP Susceptibility Artifact Reduction</p> <p>2D TSE sequences with high bandwidth protocols tailored to reduce susceptibility artifacts. Available protocols include TI-weighted, T2-weighted, proton density and STIR contrast.</p> <p>Guidance View</p> <ul style="list-style-type: none"> Step-by-step user guidance is seamlessly integrated. Example images and guidance text are displayed for each individual step of the scanning workflow. Both images and text are easily configurable by the user <p>Customization</p> <p>The Large Joint Dot Engine can be modified by the user to their individual standard of care.</p> <ul style="list-style-type: none"> Add/remove protocol steps Change guidance content (images and text) Change or add Dot exam strategies Add clinical decision points Add/remove parameters in the parameter viewing card

Description

RESOLVE is a diffusion-weighted, readout-segmented EPI sequence optimized towards high resolution imaging with reduced distortions.

The sequence uses a very short echo-spacing compared to singleshot EPI, substantially reducing susceptibility effects. A 2Dnavigator correction is applied to avoid artefacts artifacts due to motioninduced phase errors. This combination allows diffusion weighted imaging of the breast, prostate, brain and spinewhole body with a high level of detail and spatial precision.

Additionally, an automatic reacquisition of data with large phase errors can be used to ensure that diffusion-weighted images of the brain are not affected by CSF pulsation.

S-Text o For neuro applications where high-resolution diffusion is required. Is the basis of distortion insensitive high-resolution DTI, e.g. in spine.Especially beneficial for 3T systems.

Tim and the Tim Whole Body Suite enable for true whole body MR scanning for head-to-toe imaging. Whole body imaging with highest image quality without patient repositioning and without the need to change a single coil, not even once, this means whole body imaging without compromise.

The Tim Whole Body Suite features:

- The all-new Tim Table or Tim Dockable Table enable a full Field-of-View with coverage up to 205 cm (6' 9"). The table top has the same length as the standard system without whole body capabilities. Additional free space is required at the rear part of the magnet to ensure, that the table movement is not limited by the rear wall.
- Table movement to its full extent can be remotely controlled from the operator console either by the operator or by sequence protocols.
- Protocols and programs for whole body MR angiography and morphology e.g. for metastasis visualization and preventive care examinations.
- Whole body MR Angiography is possible with high speed, high resolution and high image contrast on the entire volume combining high speed gradients and iPAT.
- The large FoV of 205 cm supports the assessment of metastases distribution in the body with sequences such as TIRM (Turbo Inversion Recovery).

The iPAT compatible Shoulder 16 Large and Shoulder 16 Small are ergonomically designed and adapted to the shape of the shoulder.

The different sizes obtain maximum image quality for different body sizes:

- 165 mm (6.5 in) diameter for small and medium sized shoulders
- 200 mm (7.9 in) diameter for large shoulders

The coils can be used either for left or right shoulders. It features sliding attachments to the base plate and can easily be adjusted for comfortable positioning. The coils excels in highest resolution imaging with exceptional signalVnoise ratio.

The 16-element coil with 16 integrated pre-amplifiers excels in highest resolution imaging with exceptional signalVnoise ratio, while taking full advantage of iPAT in all directions.

Hand/Wrist 16 is ergonomically designed and adapted to the shape of the hand/wrist region. The coil features a hinged design of the upper part and slidable attachment to the base plate. Together with the included stabilization pads the coil allows easy, fast and comfortable patient positioning.

The 16-element coil with 16 integrated pre-amplifiers excels in highest resolution imaging with exceptional signalVnoise ratio, while taking full advantage of iPAT in all directions.

Foot/Ankle 16 is ergonomically designed and features a boot-like coil design. Together with the included stabilization pads the coil allows easy, fast and comfortable patient positioning.

Thanks to its 15-channel design this coil is perfectly suited for high-resolution images with excellent SNR. With the arrangement of the antennas in three rings of 5 elements each, the coil is specially designed for parallel imaging

Description

with high acceleration factors.

The coil is positioned on a laterally movable support and therefore allows for comfortable patient positioning of both legs for off-center examinations. SlideConnect Technology allows for fast and easy patient preparation, resulting in less table time. Furthermore, the upper part can be removed for easier patient positioning. Additional cushions allow for optimum patient immobilization.

The integrated transmission function makes volume-sensitive excitation with greatly reduced RF power possible on the one hand and, on the other, prevents aliasing artifacts (e.g. due to the other knee).

Special video camera for monitoring the patient during an MR examination.

Color 640 x 480 pixel LCD monitor may be positioned at the *syngo* Acquisition Workplace or at a convenient wall location (wall support not included in scope of delivery) in the control room.

Power cable to connect the 3 KVA Powerware 9125 small UPS system (pn PWR9125H3000) to the ACC cabinet of the MAGNETOM Avanto/ Espree/ Tim Trio for backing up the host computer and imager.

Configuration includes connection box.

The standard cable length is 9 m.

Voltage range: 180 - 276 V
Input frequency: 50 / 60 Hz
Output voltage: 230 VAC
Dimensions (H x W x D): UPS 346 x 214 x 412 mm
incl. UPS bracket set
Weight: approx. 36 kg

MR_ADVNEUR_NW

This course 3 day physician or technologist advanced neuroimaging workshop held at Northwestern University, Department of Radiology, Feinberg School of Medicine, focuses on imaging physics, functional MRI (acquisition, stimulus presentation, experiment design, data analysis, and interpretation), perfusion imaging (ASL and DSC), diffusion imaging (analysis and tractography), and MR spectroscopy. Topics will be presented through lectures and hands-on sessions, followed by hands-on data analysis sessions. Emphasis will be placed on the clinical application for all of the methods discussed. Attendees will be given copies of the experiments and protocols used during the course to take back to their institution.

*NOTE: Expenses for travel and lodging are not included. Tuition is for one attendee only, additional attendees may purchase separately.

**NOTE: Siemens and/or other vendors' workstations may be used.

***NOTE: Third party training offerings are subject to change and availability at time of scheduling.

This educational offering must be completed (12) months from install end date. If training is not completed within the applicable time period, Siemens obligation to provide the training will expire without refund.

An MR-compatible arm rest that supports the patient's arm on the magnet patient table when starting intravenous lines. The board is removed after the IV is inserted.

This product has been tested and verified for compatibility with the following Siemens' products: MAGNETOM Trio, Verio, Espree, Essenza, Avanto, Symphony, Area Skyra and Biograph mMR. Compatibility with other products cannot be assured and may void service contracts and/or system warranties.

Chiller KKT ECO 133 - L

Function:

Supplies dedicated primary chilled water in cases where no chilled water supply is available on site. Air-cooled version, for outdoor installation up to a maximum distance of 25 m for connection to the IFP, incl. 50 m FOC for control.

The cooling capacity of the chiller is 60 kW, the chilled water temperature is 20°C, the water flow is 130 Vmin. Ambient temperature: -20 to +48°C

Description

Connection rating: 28 kW
Voltage: 3/PE 400 V to 480 V / 50/60 Hz
Fuse rate: 80 A
Power consumption: 66 A
Dimensions: 2000 mm x 1100 mm x 2100 mm (height x width x depth).
Weight: 760 kg
Noise level at a distance of 10 m at outside temperatures of:
21°C 47 dB(A)
32°C 52 dB(A)
48°C 58 dB(A)

IFP (Interface Panel)

Main functions of the IFP:

- Interface function between the KKT chiller and the MR cabinet
- Water supply for MREF, MBB, CBB and TX box.

Additional devices such as integrated differential pressure control, a pressure gage, and a filter are used in order to guarantee the precise functioning of the cooling circuit, especially for the cold head compressor (MREF).

The connection must be made locally with 2" lines up to a maximum distance of 25 m.

Dimensions: 800 mm x 1150 mm x 210 mm (height x width x depth).

Weight: 67 kg

Includes Spectris Solaris EP injector and Integrated Continuous Battery Charger (ICBC).

- Optimized color touch screen with few keystrokes.
- Six user-programmable phases for added flexibility.
- Independent Keep Vein Open (KVO) allows more time to focus on patient.
- Large 115 mL saline syringe allows for longer KVO and multiple flushes.
- Design of low pressure tubing eliminates dead space in the "T" connection that can waste contrast.
- The clear barrel design with molded FluidDots help detect the presence of air in a syringe.
- Pressure Limit Setting control software enables user to select from one to six preset maximum pressure limits, ranging from 100-300 psi, and to view current pressure during injection next to the pre-selected maximum value on the Solaris display.

Installation, applications and one year warranty provided by Medrad.

Not for mobile use, refer to Siemens part number M3SSMR300EPM for the Solaris injector used in a mobile environment.

This product has been tested and verified for compatibility with the following Siemens' products:

MAGNETOM Trio, Espree, Essenza, Verio, Avanto, Symphony, Aera, Skyra and Biograph mMR.

Compatibility with other products cannot be guaranteed and use with any other products may void service contracts and/or system warranties.

Specifically designed for use in and around the MRI suite. Storage pocket on rear of chair has "MR" prominently displayed. Weight capacity of 250 lbs. Flip-up arm rests. Detachable, swing-away, flip-up footrests. IV pole also available, sold separately. Full specs available upon request.

This product has been tested and verified for compatibility with the following Siemens' products:

MAGNETOM Trio, Verio, Essenza, Espree, Avanto, Symphony, CI, Concerto, Biograph mMR, Skyra and Aera. Compatibility with other products cannot be assured and may void service contracts and/or system warranties.

Medrad's MR Veris Vital Signs Monitor - Base Plus Package. Includes: MR monitor, pulse oximetry (SpO2), non-invasive blood pressure (NIBP), and ECG. A remote (slave) monitor is available as an additional option (Siemens part number M23010482). Data sheet and detailed list of included parts available upon request. One year warranty and installation provided by Medrad.

This product has been tested and verified for compatibility with the following Siemens' products:

MAGNETOM Symphony, Avanto, Espree, Trio, Essenza, Skyra, Aera and Biograph mMR. Compatibility with other products cannot be assured and may void service contracts and/or system warranties.

Description

Remote display (with printer and wireless network interface) ONLY. Used with the Medrad Veris MR vital signs monitor. This is an additional option for the Veris monitor. Remote display can be sold with the following Veris packages: cardiac, anesthesia and anesthesia with temp. One year warranty and installation (during initial install of the Veris system) provided by Medrad. Installation after initial delivery will be at an additional cost.

This product has been tested and verified for compatibility with the following Siemens' products: MAGNETOM Trio, Espree, Avanto, Symphony, Essenza, Aera, Skyra and Biograph mMR. Compatibility with other products cannot be assured and may void service contracts and/or system warranties.

Guidance View

- Step-by-step user guidance is seamlessly integrated.
- Example images and guidance text are displayed for each individual step of the scanning workflow.
- Both images and text are easily configurable by the user

Test bolus

- Automatic detection of arterial / venous timing window

Feedback of bolus timing information

- Timing information is fed back into planning steps and parameters are adapted automatically

Auto Voice Commands

- Integrated into the scanning workflow.
- The system plays them automatically at the right point in time.
- This ensures optimal timing of scanning, breathing and contrast media.
- The user can monitor which breath hold or pauses are actually played, and could add pauses between the automatic breath hold commands if necessary

Customization

Existing Dot Engines can be modified by the user to their individual standard of care.

- Add/remove protocol steps
- Change guidance content (images and text)
- Change or add Dot Exam Strategies and Decision Points
- Modify the Parameter View

Application Packages:

syngo Inline Composing

- Automatic anatomical or angiographic composing of multiple adjacent corona! or sagittal images
- Composed images can be automatically loaded into Graphical Slice Positioning for scan planning purposes

Tim Planning Suite

With the Tim Planning Suite, multiple regions in the entire body can be examined in a minimum of time through measurement planning on a single FoV of any desired size.

syngo NATIVE offers:

- Non-contrast enhanced MRA
- Separate imaging of arteries and veins
- Visualization of - e.g. - renal arteries or peripheral vessels

The *syngo* NATIVE package comprises:

- *syngo* NATIVE TrueFISP
- *syngo* NATIVE SPACE

Abdomen Dot Engine

Guidance view

- Step-by-step user guidance is seamlessly integrated.
- Example images and guidance text displayed for each step of scanning workflow.

Description

- Both images and text are easily configurable by the user

Patient View

- Easily tailored to the individual patient.
- Several pre-defined, integrated Dot Exam Strategies are included
- Single click update of queue and the complete scan set-up.
- Integrated contrast media protocols (Vibe Dynamic)

Parameter View

- A new view that displays the essential parameters
- Can be opened at any time during an examination

Automatic sequence scaling

- Auto FoV: optimal FoV is proposed, based on the localizer images.
- AutoNavigator: based on automatic breathing pattern detection and scaling of triggered scans.
- Breath-hold adaptations

Dot Exam Strategies

Personalize to the individual patient condition and clinical need.

- Predefined strategies:
 - Standard with breath-hold
 - Standard with PACE triggering
 - Limited patient capabilities using *syngo* BLADE and PACE triggering.

Dot Decisions

Seamlessly integrated into scanning workflow:

- Select the queue and the appropriate protocol or set of protocols are automatically added.
- Abdomen Dot Engine integrates MRCP and Diffusion decision points.

Timeline setup and monitoring

Convenient visual overview of multi-phase breath-hold examinations and CM enhancement curve visualization.

Auto Voice Commands

- Played automatically
- Facilitate timing of scanning, breathing and contrast media.
- The user controls breath-hold or pauses are actually played
- Ability to add pauses between automatic breath-holds.

Auto Bolus Detection

- Automatically initiates the dynamic upper abdomen examination based on bolus detection.
- The user can override this function.

Inline radial range calculation for MRCP

- MRCP is measured
- Inline Radial Ranges are automatically generated.

Inline Subtraction

Automatically subtracts the native (non-contrast) measurement from the arterial, portal-venous and late phase.

Inline Registration

The system automatically performs a registration / alignment of the anatomy for the different dynamic phases, of interest when examining nodular enhancing pathologies.

Customization

Existing Dot Engines can be modified by the user to their individual standard of care.

- Add / remove protocol steps
- Change guidance content (images and text)

<p>Description</p> <ul style="list-style-type: none"> - Change or add Dot Exam Strategies and Decision Points - Modify the Parameter View
<p>Cardiac Dot Engine</p> <p>Guidance View</p> <ul style="list-style-type: none"> - Step-by-step user guidance is seamlessly integrated. - Example images and guidance text are displayed for the individual steps of the scanning workflow. - Both images and text are easily configurable by the user <p>Patient View</p> <ul style="list-style-type: none"> - Within the Patient View the user can easily tailor the exam to each individual patient (e.g. patient with arrhythmia, breath hold capability). - Pre-defined Dot Exam Strategies are integrated. The user just selects the appropriate strategy with one click and the queue and the complete scan set-up are automatically updated <p>AutoFoV (automatic Field of View calculation)</p> <ul style="list-style-type: none"> - Based on the localizer images the optimal FoV is automatically estimated. - If the patient moves during the examination, this step can be repeated at any time <p>Automated parameter adaptation</p> <ul style="list-style-type: none"> - Scan parameters are automatically adapted to the patient's condition (e.g. heart rate) <p>Novel heart localization method</p> <ul style="list-style-type: none"> - On-board guidance visually facilitates anatomic landmark settings which are used for calculation - Automated localization - Automated localization of short-axis views <p>Cardiac Views</p> <ul style="list-style-type: none"> - Easy selection of cardiac views (e.g. 3 chamber view) during scan planning <p>Inline Ventricular Function Evaluation</p> <ul style="list-style-type: none"> - <i>syngo</i> Inline VF performs volumetric evaluation of cardiac cine data fully automatically right after image reconstruction. - If desired, inline calculated segmentation results can be loaded to 4D Ventricular Function Analysis for further review or processing <p>Cardiac specific layout for the Exam task</p> <ul style="list-style-type: none"> - layouts show the new physio display and are configured for every step of the exam <p>Automated Naming</p> <ul style="list-style-type: none"> - Automated naming of series depending on cardiac views and sequence type <p>Auto Voice Commands</p> <ul style="list-style-type: none"> - Seamlessly integrated into scanning workflow. - Played automatically - The user controls breath-hold or pauses are actually played - Ability to add pauses between automatic breath-holds <p>Dot Exam Strategies</p> <p>The workflow can be personalized to the individual patient condition and clinical need. The following predefined strategies are included. They can be changed at any time during the workflow:</p> <ul style="list-style-type: none"> - Standard: Segmented acquisition techniques - Limited patient capabilities: switch to real-time and single shot imaging if breath-hold is not possible or arrhythmias occur

Description

Customization

Existing Dot Engines can be modified by the user to their individual standard of care.

- Add/remove protocol steps
- Change guidance content (images and text)
- Change or add Dot Exam Strategies and Decision Points
- Modify the Parameter View

Combining the unique advantages of Tim and *syngo* BEAT with iPAT and powerful gradients, it allows performing cardiac MR examinations without compromise in image resolution or acquisition speed.

syngo BEAT is a unique tool for fast and easy cardiovascular MR imaging. It provides 1-click switch from cine imaging to tagging for wall motion evaluation and 1-click switch from 2D to 3D imaging. *syngo* BEAT automatically adjusts all parameters associated with the changes.

Cardiac and Vessel Morphology

- Multi echo technique for e.g. thalassemia assessment
- 3D aortopathy imaging with free breathing (SPACE)

Global or Regional Wall Motion Analysis with *syngo* BEAT

- 3D cine acquisition for full CT-like heart coverage
- 2D segmented FLASH for visualization of the regional wall motion using various tagging techniques (grid or stripes)

Dynamic myocardial imaging with *syngo* BEAT

- Ultra-fast, high-SNR sequence for dynamic imaging with GRE EPI contrast for stress and rest exams

Tissue characterization with *syngo* BEAT

- Robust myocardial tissue characterization with 3D PSIR (phase-sensitive inversion recovery), e.g. after myocardial infarction or for differentiation of cardiomyopathies
- Fast and complete coverage of the myocardium with IR 3D FLASH and TrueFISP

Coronary imaging with *syngo* BEAT

- 3D Whole-Heart non-contrast Coronary MRA
- 3D Whole-Heart MRA with advanced free-breathing navigator compensating diaphragm shifts during the acquisition (motion-adaptive respiratory gating)

This package includes Argus Function as well as Argus 4D Ventricular Function.

Argus Function:

- Automatic, semi-automatic, or manual segmentation of the left and semi-automatic or manual segmentation of the right ventricle.
- Volumetric analysis and wall thickness analysis.
- Output of parametric results, volume-time curves and bull's-eye plots.
- DICOM Structured Reporting.

Argus 4D Ventricular Function:

- Calculation of volumetric cardiac data of a given patient very quickly and easily.
- Parametric results and volume-time curves are calculated upon automatic creation and adaptation of a 4D model of the left ventricle.
- The resulting 4D model of the patient's heart can be visualized superimposed to anatomical images as a reference.

The Spine Dot Engine provides optimized cervical, thoracic and lumbar spine imaging for patients of all conditions.

Spine Dot Engine provides the functionality to simplify your spine workflow by providing tools to reduce examination times, achieve optimal image quality, and assist you during reading.

Description

- User guidance step-by-step
- AutoPosition
- AutoAlign Spine with intervertebral disc detection
- AutoCoverage
- AutoSatPosition
- Initial and interactive snapping
- AutoLabeling of vertebrae
- Automatic curved multiplanar reconstructions of 3D datasets

The Spine Dot Engine includes:

- Tim Planning Suite license
- In-line Composing license

syngo WARP - high bandwidth protocols tailored to reduce susceptibility artifacts. Available protocols include T1-weighted, T2-weighted, proton density and STIR contrast. View Angle Tilting (VAT) technique is provided for reducing in-plane geometric distortions syngo WARP can be used throughout the body.

The Spine Dot Engine does not support whole spine imaging in its first release.

Diffusion Tensor Imaging

Diffusion Tensor Imaging allows for a complete description of the diffusion properties of the brain within the scope of the tensor diffusion model, both for anisotropic and isotropic diffusion. Efficient diffusion direction schemes are pre-defined to allow for optimal diffusion directional resolution. Schemes with up to 256 directions can be selected. Inline technology enables automatic and immediate calculation of the diffusion tensor, including grey-scale and colored "fractional anisotropy" (FA) map derived from it.

Details:

- Measurements with up to 256 different directions and with up to 16 different b-values
- Inline calculation of tensor, grey-scale and colored FA map, ADC map and trace-weighted image
- Support of parallel imaging (iPAT)
- Clinical protocols with full head coverage, incl. inline calculation of tensor, FA, ADC and trace-weighted images in 4 minutes.

DTI Tractography **syngo**

syngo DTI Tractography is optimized for the clinical use by providing advanced 3D visualization of white matter tracts in the context of 2D or 3D anatomical datasets and DTI datasets. DTI data sets can be explored fast and intuitively using the interactive QuickTracking. QuickTracking instantaneously displays the tract originating from the mouse pointer position while moving over the DTI data set. This also allows identifying qualified regions to place seeding ROIs. Seed points can be set to assess connectivity by tracking with single ROI and with multiple ROIs. Furthermore they can be placed in fused views displaying the anatomical reference and e.g. the colored FA map simultaneously.

Texture Diffusion, a highly versatile in-plane visualization of white matter tracts, allows to display and read DTI Tractography results on PACS reading stations and in the OR.

At the same time the package provides the scientific user with the flexibility to configure the tracking algorithm and to change display settings for the tracts. Tract and seeding ROI statistics are included to support publications (e.g. mean/max FA value, min/mean/max ADC value).

All views can be exported as DICOM images or bitmaps. Tract and seeding ROI statistics can be exported as html files.

DTI Evaluation

Clinical applications are supported by a dedicated DTI evaluation mode to support diagnostics of white matter diseases (e.g. multiple sclerosis and brain maturation disorders). Based on the tensor, in addition to the already inline-calculated parameter maps, further maps characterizing the anisotropy of diffusion properties can be calculated and stored. Multiple diffusion parameter maps (e.g. Fractional Anisotropy, ADC, b=0) and an anatomical image are displayed next to each other in the same slice position for comparison. The images can be evaluated together based on ROIs and the results can be documented in a table. The display options include 2D and 3D tensor graphics, colour-coded images and overlay images on the anatomical images.

Description

In addition, the package offers the scientific user full flexibility of 2- and 3-dimensional visualization of the diffusion tensor with measures of isotropic and anisotropic (fractional and relative) diffusion, Eigen vectors (E1, E2, E3) of the diffusion tensor and shape-descriptive measures of the diffusion tensor (linear, planar, spherical).

Inline BOLD Imaging

The BOLD imaging package allows the user to define protocols which, apart from the measurement, configure automatic evaluation of the measured data during the scan. With Inline Technology it is thus possible to generate statistical images (t-value) based on 3D motion corrected and spatially filtered data automatically in real time without any further user interaction. The Inline display of activation cards allows the user to decide during the scan whether enough statistical power has built up for his brain mapping task or if the examination is corrupted by motion. As a result examinations will be shorter with a higher success rate. Functional brain mapping can be easily integrated into the clinical routine e.g. prior to neurosurgical interventions.

Additional Features:

- Inline retrospective 3D motion detection and correction in 3 rotational and 3 translational directions
- Inline t-statistics calculation for variable paradigms and display of t-value images
- Statistical evaluation by means of "General Linear Model (GLM)":
- Paradigms can be configured
- Transitions between passive and active states can be modelled by the hemodynamic response function
- Correction of low-frequency trends
- Allows for time delays due to the BOLD-EPI slice order during a measurement
- Display of GLM design matrix
- Display of a continuously updated t-value card during measurement
- Display of colored activation cards continuously updated during measurement, overlaid over the respective BOLD images using Inline technology
- MOSAIC image mode for accelerating display, processing and storage of images

3D PACE *syngo*

By tracking the patients head 3D PACE reduces motion resulting in increased data quality beyond what can be achieved with a retrospective motion correction. As a result the sensitivity and specificity of BOLD experiments are increased.

Features:

- Real time prospective motion correction: Highest accuracy real time motion detection algorithm feeding a real time feed back loop to the acquisition system with updated positioning information
- 3D motion correction for 6 degrees of freedom (3 translation and 3 rotation)
- Motion related artifacts are avoided in first place instead of correcting for them retrospectively
- Significant reduction of motion-related artifacts in statistical evaluations
- Increased sensitivity and specificity of BOLD experiments

BOLD 3D Evaluation *syngo*

All tasks from statistical evaluation of the fMRI datasets to reading and exporting results are supported by BOLD 3D Evaluation *syngo*:

Generation of statistical maps:

- In cases an inline calculated statistical map is not available a statistical map can be generated easily using processing protocols. An intuitive editor UI allows the paradigm definition and offers the selection of head motion correction, image filters and statistical evaluation.
- Predefined processing protocols and paradigms are available, which can be edited if required.

Statistical evaluation using General Linear Model (GLM)

- Transitions between passive and active states modeled by the hemodynamic response function.
- Correction of low-frequency trends.
- Corrects for time delays due to the BOLD-EPI slice order during a measurement.
- Output of a t-value map and the GLM design matrix

Inline monitoring of the fMRI exam

Description
<p>During an ongoing BOLD imaging exam results are calculated (by Inline BOLD imaging) and displayed in real time.</p> <p>The results are displayed and continuously updated as an overlay on online adjustable, free angulated cut planes through the anatomical 3D data set.</p> <p>The evolving signal time courses in task-related areas of activation can be displayed and monitored.</p> <p>Visualization of fMRI Results</p> <p>Visualization with 3D volume rendering.</p> <p>Superimposing on cut planes through the volume.</p> <p>Interactive Navigation: Zoom, pan and rotate in 3D without noticeable delay. Free double oblique angulation of up to 6 cut planes.</p> <p>Cine display of the BOLD time series and of EPI volumes in 3 orthogonal cuts for evaluation of non-corrected head motion.</p> <p>Data Quality Monitoring</p> <p>Based on the BO field map, loaded automatically with the fMRI data, areas with less reliable results are indicated.</p> <p>fMRI Trigger Converter</p> <p>An optical trigger signal is available to trigger external stimulation devices in fMRI experiments. With the IMRI Trigger Converter" this signal can be converted to an electrical signal (TTUBNC and RS 232 interface for PC; modes: toggle or impulse).</p>
<p>Despite a strong sensitivity for local magnetic field inhomogeneities Susceptibility Weighted Imaging (SWI) as a 3D technology keeps up the signal near large susceptibility leaps due to very thin slices and high resolution in the slice (high image quality e.g. in the area of the forebrain near the frontal sinus).</p> <p>Moreover, the phase information of the MR signal is integrated in the image display. In order to further increase sensitivity for localized microscopic magnetic field inhomogeneities, large-area magnetic field inhomogeneities (e.g. caused by susceptibility leaps near the sinus) are specifically suppressed in the phase images. This allows even small amounts of deoxygenated hemoglobin (e.g. in cerebral veins) or from products of hemoglobin decomposition (e.g. from hemorrhages) to be displayed.</p> <p>Interesting measuring times for the ultra-high-resolution 3D protocols are achieved through parallel imaging with iPAT (GRAPPA).</p> <p>The Susceptibility Weighted Imaging package includes:</p> <ul style="list-style-type: none"> - SWI measuring sequence, iPAT compatible — optimized measuring protocols for the head <p>inline-postprocessing for automatic calculation of relevant images within the scope of image reconstruction:</p> <ul style="list-style-type: none"> calculation of susceptibility-weighted images venous angiography: MIP of a thin slice block <p>SWI has been optimized for clinical use to support diagnostics with cerebrovascular diseases (e.g. cerebral insult), venous malformation, brain trauma and tumors.</p> <p>Prerequisite: Software syngo MR B13</p>
<p>The Single Voxel Spectroscopy option is used to measure proton spectra from single voxels. The spectra may show alterations in brain metabolism e.g. in brain tumors, in degenerative changes of the brain and in metabolic diseases. The possibility of automatic adjustment, measurement and evaluation permits near automatic spectroscopy measurements. The whole procedure, including the evaluation of the spectra using the mandatory spectroscopy evaluation option, takes approx. 6 minutes and can be done by doctors or technologists.</p> <p>The 2D Chemical Shift Imaging option is used to measure 2D proton spectroscopic data to generate metabolite images e.g. in brain tumors, metabolic diseases of the brain and degenerative changes in brain metabolism. The whole procedure, including the generation of metabolite images using the spectroscopy evaluation takes approximately 8 minutes.</p> <p>The 3D Chemical Shift Imaging option is used to measure 3D proton spectroscopic data and allows for the evaluation of the spectra in measured volumes and the generation of metabolite images and spectral maps, e.g. in <u>cases of brain tumors, metabolic diseases of the brain and degenerative changes in brain metabolism. The whole</u></p>

Description

procedure, including the generation of metabolite images using the spectroscopy evaluation takes approximately 10-16 minutes
Optimized protocols for 3D CSI in the prostate are also included.

The evaluation software is fully integrated in *syngo* MR.
Evaluation protocols adapted to the scan protocols carry out a complete and automatic evaluation of the measured data.

The following functions are included:

- Subsequent water suppression with optional phase correction
- Apodization
- Zero filling
- Fourier transformation
- Base line correction
- Automatic or manual phase correction
- Curve fitting and peak labeling
- Summaries in tabular form of the essential results specifying the metabolites, their position, integrals and signal ratios in relation to a selectable reference.
- Capability of exporting spectroscopy header information and data into a documented external format.
- Automated peak normalization to tissue, water or reference.

For CSI the following functions are included:

- Spectra of selected voxels are automatically calculated, corrected for possible BO deviations and displayed.
- Spectral fit is automatically optimized for each voxel.
- CSI data can be represented as spectral maps and colored metabolite images that can be superposed onto anatomical images.

syngo TWIST provides:

- Visualization of contrast agent dynamics in the vessel system of interest with maximum flexibility.
- Needs only a low amount of contrast agent.
- Imaging in all body regions, e.g. carotids, pulmonary and peripheral vessels with brilliant spatial and temporal resolution.
- Clear separation of the arterial and venous phase.
- High speed acquisition by intelligent k-space strategies and use of iPAT, powered by Tim.
- *syngo* TWIST provides fat suppression using water selective excitation.
- Inline technologies, such as subtraction and MIP are provided for optimal workflow.
- In case of very high spatial resolution *syngo* TWIST may even replace conventional static MR angio. Moreover, *syngo* TWIST does not require any bolus timing - just inject and go.

The 8-channel Sentinelle Breast Coil consists of 2 lateral 3-channel coil elements and a 2-channel coil middle element.

The 4-channel Sentinelle Breast Coil consists of 2 lateral 1-channel coil elements and a 2-channel coil middle element.

The 2-channel Sentinelle Breast Coil consists of a lateral 1-channel coil element and another lateral 1-channel coil element.

The Sentinelle Breast Coil supports the GRID biopsy method.

The 2-/4-/8-channel Sentinelle Breast Coil delivers brilliant image quality for high-resolution 2D and 3D MR breast imaging. Techniques for reducing scan times, such as parallel imaging, can be used very well.

Together with the Tim Whole Body Suite, the coil can also be operated in "feet first" mode. This function substantially improves the examination flow with claustrophobic patients.

Description
<p>For optimal patient positioning, a set of comfortable positioning cushions and aids, such as a height-adjustable head rest, is included in the scope of delivery.</p> <p>A set of GRID plates and a Biopsy Training Starter Kit are further included in delivery. (Not for use on humans)</p> <p>The 2-/4-/8-channel Sentinelle Breast Coil measures approx. 1097 x 582 x 279mm (L x W x H) and weights approx. 22kg with base plate and 16kg without base plate.</p>
<p>The Inline Composing option includes the following functions:</p> <ul style="list-style-type: none"> - Inline calculation of full-format images of the spine, the central nervous system or the vessel tree, for example, combined from multiple overlapping steps. - Dedicated composing algorithms, optimized for the generation of anatomical or angiographic full-format images. - Data sets with different FoV, resolution, matrix and slice thickness can be combined. - Generation of full-format images from inline-computed MIPs. - Different inline functions can be combined; e.g. in case of multiple-step angios, Inline subtraction, Inline MIP and Inline Composing can be performed fully automatically. - Full-format acquisitions from Inline Composing are ideal for further measurement planning on large FoV, e.g. with the Tim Planning Suite (optional, urgently recommended). <p>Prerequisite: Software syngo MR B13.</p>