

SAN JUAN WHSE FC6003

V.A. Medical Center

CHIEF, A&MMS (80)

10 CALLE CASIA

SAN JUAN, PR 00921-3201

P.O.# 672-FC6003

Qty

1

MAGNETOM Skyra - System

MAGNETOM Skyra is designed to provide you the versatility you need to meet the increasing demands in healthcare. Maximize 3T with its core technologies Tim(r) 4G and Dot(r), along with its comprehensive application portfolio and experience unique functionalities to increase patient comfort.

Every case. Every day.

System Design

- Short and open appearance (173 cm system length and 70 cm Open Bore Design) to reduce patient anxiety and claustrophobia
- Whole-body superconductive Zero Helium Boil-Off 3T magnet
- Actively Shielded water-cooled Siemens gradient system for maximum performance
- TrueForm Magnet and Gradient Design

Tim 4G (Total imaging matrix in the 4th generation) for excellent image quality and speed

- Siemens unique DirectRF(tm) technology enabling the all digital-in/ digital-out design
- Dual-Density Signal Transfer Technology
- Head/Neck 20 DirectConnect
- Spine 32 DirectConnect
- Body 18
- Flex Large 4
- Flex Small 4
- Flex Coil interface
- Tim Coil interface

Dot (Day optimizing throughput) for higher consistency, flexibility and efficiency

- Dot Display
- Dot Control Centers
- Brain Dot Engine

Tim Application Suite allowing excellent head-to-toe imaging

- Neuro Suite
- Angio Suite
- Cardiac Suite
- Body Suite
- Onco Suite
- Breast Suite
- Ortho Suite
- Pediatric Suite
- Scientific Suite

Qty**Item Description**

Further included

- High performance host computer and measurement and reconstruction system
- Siemens uniqueTimCT FastView localizer and CAIPIRINHA
- syngo MR software including
 - 1D/2D PACE
 - BLADE
 - iPAT²
 - Phoenix
 - Inline Diffusion
 - WARP
 - MDDW (Multiple Direction Diffusion Weighting)
 - CISS
 - DESS

The system (magnet, electronics and control room) can be installed in 31 sqm space. For system cooling either the Eco Chiller options or the Separator is required.

1

Tim [204x48] XQ Gradients #Sk

Tim [204x48] XQ-gradients performance level - Tim 4G's 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. XQ - gradients - The XQ - gradients - high performance and linearity to support clinical whole body imaging at 3T. 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.

1

PC Keyboard US english #Tim

Standard PC keyboard with 101 keys.

1

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.

1

Tim Dockable Table #Sk

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.

1

Height Leveling kit,120mm#T+D(Dock tabl)

Height leveling kit to adjust the Tim Dockable Table for MAGNETOM Aera/ MAGNETOM Skyra systems which are installed on a pedestal with the following heights:

90 mm - 195 mm in combination with the Tim Dockable Table

1

SW syngo MR E11

syngo MR E11 software with new Dot features and applications.

DotGO

Go for consistent results, efficiently with Dot engines.

Qty**Item Description****Dot Cockpit**

The central tool to continuously build knowledge into standardized exam strategies and to make those available for every user in the MRI department.

Dot Cockpit is the new starting point for every exam.

- TGSE

- WARP including VAT

1

Quiet Suite #T+D

Quiet Suite enables complete, quiet examinations for neurology and orthopedics with at least 70% reduction in sound pressure levels.

1

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.

1

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.

1

QISS #T+D

Software package with QISS sequence, protocols and Dot AddIn for non-contrast enhanced peripheral MRA. QISS particularly enables higher reproducibility than existing methods and is an alternative to MR angiography techniques with contrast medium, especially for patients with severe renal insufficiency.

1

Vessel View syngo #Tim

1

Vessel View AVS #Tim

As a separate additional option of Vessel View, this package allows for automated segmentation and separation of arteries and veins, as well as suppression of surrounding tissue. Supports modes allowing the display of only arteries or only veins, or arteries and veins together in different colors.

1

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

1

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.

Qty**Item Description**

1

TimCT Onco Dot Engine #T+D

syngo TimCT Onco Dot Engine employs the TimCT Continuous Table move technology for large Field of View applications with smooth workflow and superb image quality. syngo TimCT Oncology is built on the Tim technology as well as on a highly advanced patient table with high positioning accuracy and an RF shielded table drive. Simultaneous coverage of the a large Field of View using local coils with a high signal to noise ratio enables excellent image quality and extremely fast imaging with iPAT.

TimCT Onco Dot Engine makes the easy workflow of syngo TimCT even easier by guidance throughout the exam and by providing the coil position and automatic coil selection (AutoCoilSelect).

1

FREEZEit Body MRI Package #T+D

FREEZEit Body Package contains two robust sequences for advanced body imaging: TWIST VIBE and StarVIBE.

- TWIST VIBE is a new fast, high-resolution 4D imaging sequence for multi-arterial liver imaging.

- StarVIBE is a motion insensitive VIBE sequence using a stack-of-stars trajectory.

1

Tissue 4D syngo #Tim

Tissue 4D is an application for visualizing and post-processing dynamic contrast-enhanced 3D datasets.

This card provides two evaluation options:

- Standard curve evaluation

- Curve evaluation according to a pharmacokinetic model

1

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.

1

Flow Quantification #Tim

Special sequences for quantitative assessment of flow.

1

Argus Flow

1

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.

1

MyoMaps # 3T

This package contains special sequences and protocols for inline T1 and T2 calculation at the heart. The generation of T1 and T2 parametric maps is enhanced by the use of motion correction. T1 and T2 parametric maps could be used to support assessment of cardiovascular disease.

1

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.

1

Image Fusion syngo

This application provides a dedicated evaluation software for spatial alignment (matching) and visualization of image data either from different modalities (CT,MR,NM,PET) or from the same modality but from multiple examinations of the same patient. It supports optimal diagnostic outcome (fusion of morphological and functional information) and therapy planning.

Qty**Item Description**

1

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.

1

Peripheral Angio 36 #Sk

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:

- 36 channels
- Dual Density Signal Transfer
- Ultra light-weight
- SlideConnect Technology

The 36-channel coil includes 36 integrated pre-amplifiers for excellent signal-to-noise ratio. The single SlideConnect Plug allows for fast and easy patient preparation.

1

Shoulder 16 Coil Kit #Sk

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.

1

Hand/Wrist 16 #Sk

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.

1

Tx/Rx 15-channel Knee Coil DDST #Sk

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

1

MR Workplace Table 1.2m

Table suited for syngo Acquisition Workplace and syngo MR Workplace based on syngo Hardware.

1

MR Workplace Container, 50cm

50 cm wide extra case for the syngo host computer with sliding front door to allow change of storage media (CD/DVD/USB).

Qty	Item Description
1	<p>Separator 60kW</p> <p>The SEP (Separation cabinet) has to be used if a central hospital chilled water supply is available or if a chiller of any brand/type is already available. The SEP is the interface between the on-site water chiller (of any brand or type) or the interface to the central hospital cooling water supply. For the above-mentioned cases the SEP is mandatory! In these cases, the primary water specifications must fulfill the requirements (i.e. 63 kW heat dissipation; 100+-10l/min flow; 6 to 12°C water temperature; pH value 6 to 8, max. working pressure 6 bar). Dimensions: 1950mm x 650mm x 650mm (height x width x depth) Weight: approx. 340kg</p>
1	<p>Additional Set of Manuals</p> <p>Additional set of manuals for the above selected MR system.</p>
1	<p>MR_GOV_RIG_INSTL</p>
1	<p>T+D Preinstall kit for dockable table</p>
1	<p>Standard Cryogens</p>
1	<p>MR Project Management</p> <p>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.</p>
1	<p>Initial onsite training 32 hrs</p> <p>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.</p>
1	<p>Follow-up training 32 hrs</p> <p>Up to (32) 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.</p>
1	<p>MR Dot Govt. Training Class (No T&L)</p> <p>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.</p>
1	<p>Armrest #MR</p>
1	<p>Dimplex chiller - 60 kW/Coastal</p> <p>The Dimplex Thermal Solutions outdoor, air-cooled, water/glycol chiller has been specially designed for medical applications to provide stable, fully dedicated cooling.</p> <p>Coastal design includes upgrade to stainless steel cabinet and e-coated condenser.</p> <p>60 kW water/glycol air-cooled heat exchanger/chiller package for outside installation. Features dual tandem refrigerator circuits and dual redundant pumps. Unit also includes fluid reservoir and controls as well as remote control display to monitor the heat exchanger package operation from indoors at the operator's work station. This design also includes the</p>

Qty**Item Description**

features to meet the specification of OSHPD requirements. For use with Siemens SEP cabinet. Features: Dual 10 hp compressor, dual refrigerant circuits to smoothly transition through the 25 to 100% heat load capacity cycles of patient scanning and idling. Energy savings and quiet operation when minimal cooling is required between patient use, and overnight for facilities located amongst residential areas. Full capacity cooling enabling optimized utilization. Dual, redundant fluid pumps, with automatic switch-over ensures no loss of flow. Pricing also includes: Filter & flow meter kit. Service package including two start-up visits (one upon cold head start-up, one at commissioning), one PM visit during 12 month P&L warranty period. One year warranty through Dimplex Thermal Solutions. Customer is responsible for rigging and installation. Customer is responsible for providing glycol as specified by the manufacturer.

1

Start-up of DTS chiller

1

IEC Main Disconnect Panel - MR

Integrated Electrical Cabinet/Main Disconnect Panel for MR. Components supplied: The IEC Main Disconnect Panel This Operations & Maintenance Manual (4) sets of Emergency Power Off pushbuttons and installation instructions.

Drawings and electrical schematics DOES NOT INCLUDE installation. Customer is responsible for the installation of the cabinet. Includes one year warranty.

1

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.

1

Local Offset - Angio Dot Engine

1

Dot Engine 1 pricing offset

To be eligible for this promotion, a binding purchase order of the application(s) must be received by Siemens Medical on or before September 30, 2016.

1

Local Offset - Abdomen Dot Engine

1

Dot Engine 1 pricing offset

To be eligible for this promotion, a binding purchase order of the application(s) must be received by Siemens Medical on or before September 30, 2016.

1

Local Offset - TimCT Onco Dot Engine

1

Dot Engine 2 pricing offset

To be eligible for this promotion, a binding purchase order of the application(s) must be received by Siemens Medical on or before September 30, 2016.

Qty	Item Description
1	Local Offset - Cardiac Dot Engine, USA
1	Dot Engine 2 pricing offset To be eligible for this promotion, a binding purchase order of the application(s) must be received by Siemens Medical on or before September 30, 2016.
1	Additional Rigging/Out of Scope Inbound
1	De-installation , Rig out , transport, and disposal exsiting system
1	UPS Warranty for one year flex service plan
1	Offset Part 14407354 Additional Set of Manuals
1	One complimentary biomedical tuition is included with the purchase of this system.
1	
1	Offset Part MR_FOLLOWUP_32 Follow-up training 32 hrs
1	Offset for Initial onsite train 32 hrs

OPTIONS

Qty	Item Description
1	Eaton 93PM-180 kW UPS Complete system backup without interruption. One UPS per MR. Includes the following: Eaton 93PM UPS Electronics Cabinet w/integrated maintenance bypass sidecar Eaton 93PM Single Battery Cabinet System (Full load back-up time @ 180kW of 5.1 minutes.) Network Card Eaton 24x7 start-up One year (24x7) warranty through Eaton Corp. Shipping to the customer's dock. Not approved for sites that require OSHPD. Optional Remote Monitoring Panel Shipment is to customer's dock. Customer is responsible for logistics from the dock to inside location.
1	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.
1	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

Detailed Technical Specifications

Description

Skyra ex Erlangen ENS_14418500.

MAGNETOM Skyra - the first 3T 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 excellent 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, 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 anxiety and 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. Exam strategies help customers quickly adapt protocols according to the patient's condition and clinical indication. Integrated decision points allow the user to easily add or remove one or a group of protocols with one click. Complicated exams are facilitated by on-board guidance views. 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.

The MAGNETOM Skyra's 70 cm Open Bore design and 173 cm length gives a patient friendly appearance that can significantly help patients with anxiety or claustrophobia.

Magnet:

- Ultra-short 163 cm long, whole-body superconductive 3T magnet with active shielding (AS) technology with counter coils
- External Interference Shielding (E.I.S.)
- Excellent homogeneity enabled TrueForm magnet design which allows for a cylindrically optimized homogeneity volume resulting in high image quality ($50 \times 50 \times 45 \text{ cm}^3$ DEV, typ. 3.6 ppm based on the 24-plane plot method)
- The magnet has a helium capacity of approximately 1,200 liters and a typical Helium boil-off rate of 0 l/yr 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.
- The combination of standard active shim with 3 linear channels (1st order) and 5 non linear channels (2nd order) and passive shim allows for maximized magnetic field homogeneity and consistently high image quality for a wide range of applications

Gradient system:

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

DirectRF - RF Transmit/Receive System:

- Fully integrated Transmit- and Receive path in the magnet housing including extremely compact water-cooled

Description

- solid state amplifier with 37.5 kW peak power
- High dynamic range
- Immediate feedback loop for real-time sequence adaptation
- Integrated no tune transmit/receive Body Coil
- TimTX TrueForm includes innovative techniques in the RF excitation hardware as well as new application and processing features to guarantee uniform RF distribution in all body regions. TimTX TrueForm for MAGNETOM Skyra consists of TrueForm excitation, which uses amplitude and phase transmission settings optimized for dedicated body regions. Feeding the 2 ports of the integrated body coil with an optimized weighting yields a homogeneous B1 distribution.
- 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 SlideConnect™ technology reduce patient set up time significantly. The coils are designed with the patient in mind. Light weight coils with an open design ensure highest patient comfort resulting in better patient cooperation and image quality. No coil changing with multi-exam studies saves patient setup- and table time.

AutoCoilSelect for dynamic, automatic, or interactive selection of the coil elements within the Field of View fastens 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

A 20-channel coil with 20 integrated pre-amplifiers ensures excellent signal-to-noise ratio. DirectConnect technology connects all 20 coil elements without cables. Patient-friendly open design for maximum patient comfort. A Look-out mirror is included for claustrophobic patients. 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 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 e.g. with flexible coils like the Flex Large 4 are possible.

- Body 18

The 18-channel coil with 18 integrated pre-amplifiers ensures maximum signal-to-noise ratio. A single SlideConnect Plug connects all 18 coil elements. The light-weight coil ensures highest patient comfort. iPAT compatible in all directions.

Body 18 operates in an integrated fashion with the Spine 32 as an 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

Description

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 combinability with the Spine 32, further Body 18 (optional), the Peripheral Angio 36 (optional), but also the Head/Neck 20 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 32 integrated pre-amplifiers ensures maximum signal-to-noise ratio. DirectConnect technology connects all 32 coil elements without cables. The patient friendly ergonomic design allows for maximum patient comfort. 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

4-element no-tune receiver coils which are made of soft and smooth material. The light weight coils can be wrapped around or used flat. iPAT compatible.

Both coils connected via the Flex Coil interface. One Flex Coil interface is standard.

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

Tim Table

- 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 excellent 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 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 it's 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

Description

Dot makes it easy to get excellent 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 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 or 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 moved to isocenter without using laser marking.

AutoAlign Head automatically proposes slice positioning on the sagittal, coronal, and axial localizer images. AutoAlign provides standardized, reproducible slice positioning independent of patient age, head position, or disease.

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

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
- Breast Suite
- Ortho Suite
- Pediatric* Suite
- Scientific Suite

Neuro Suite

Comprehensive head and spine examinations can be performed with dedicated programs. High resolution

Description

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
 - t-test 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

Cardiac Suite

The cardiac suite covers comprehensive 2D routine cardiac applications, ranging from morphology and ventricular

Description

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 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 T1 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

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 multi-planar 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 that allows state-of-the-art sagittal breast imaging
- 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

Description

direction

- sub millimeter 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 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-/opp-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 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)

Ortho Suite

Description

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)
- 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 MR conditional implants per the manufacturer instructions.
- 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.

*MR scanning has not been established as safe for imaging fetuses and infants under two years of age. The responsible physician has to decide about the benefit of the MRI examination in comparison to other imaging procedures.

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

Description

- 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
- 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; Retro gating

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 - available both 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

Description

- Selectable centric elliptical phase reordering via the user interface
- Inversion Recovery to nullify the signal of fat, fluid or any other tissue
- Multiple Direction Diffusion Weighting (MDDW) - perform diffusion tensor imaging with multiple diffusion weightings and up to 12 directions for generating data sets.

Standard techniques for Flow Artifact reductions:

- LOTA (Long-Term 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 Mulp2D/3D sequential MRA
- TONE (Tilted Optimized Non-saturating Excitation - variable excitation flip angel 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 e.g. of the heart or liver

MAGNETOM Skyra 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 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 Skyra system.

Inline technologies, scan@center or AutoVoice Commands 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.
- Control features include an 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 for music playback (external audio system is not included in the basic unit) .

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 \geq E 5540
- clock rate of $\geq 2 \times 2.53$ GHz
- Main memory (RAM) of 48 GB,
- Hard disk for raw data ≥ 300 GB
- Hard disk for system software ≥ 100 GB

Description

- 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 \geq W3520 QuadCore
- clock rate \geq 2.66 GHz
- Main Memory (RAM) \geq 4 GB
- three hard disks
 - system SW \geq 146 GB SAS
 - data base \geq 146 GB SAS
 - images \geq 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.

Installation:

- The relatively lightweight design of the MAGNETOM Skyra 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 31 sqm (334 sq. ft.) for the entire installation. The necessary room height clearance is only 2.40 m (7' 10").
- MAGNETOM Skyra allows siting of the system without a dedicated computer room - no additional cooling or floor requirements.
- MAGNETOM Skyra 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-

Description
<p>compensated.</p> <p>The XQ gradients have:</p> <ul style="list-style-type: none"> - 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 μs, 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, coronal, 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.
<p>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.</p>
<p>The unique color and material selection enhances the visual appeal of the new system design, thereby creating an enticing, patient-friendly impression.</p> <p>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.</p> <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 DockableTable 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 Tim 4G coils can be connected at once for efficient patient set up and patient friendly examinations. The seamless integration of multiple Tim4G 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>The software <i>syngo</i> MR E11 permits access to new and innovative applications.</p> <p><i>syngo</i> MR E11 provides the new Dot Cockpit for easy Dot engine configuration together with several workflow and</p>

Description

performance enhancements.

There are new options (with separate licenses) available with the *syngo* MR E11 software:

- Quiet Suite
- MyoMaps
- TWIST VIBE
- StarVIBE
- Advanced WARP
- LiverLab

Now included in the standard configuration:

- **TGSE** is an ultrafast sequence providing high resolution imaging or extremely short acquisition times. Turbo GSE (GRASE) is a sequence that uses different share of spin echoes and gradient (EPI) echoes for fast, high resolution image acquisition. The Turbo factor refers to the Spin echo content while the EPI factor to the gradient echo content. Multi-shot (segmented), as well as single-shot techniques are supported. Extension of the EPI factor leads to further reduction of the acquisition time. Turbo GSE is able to acquire rapid T2 weighted images with resolution ranging from 256 - 1024 matrix. Techniques with Turbo factor between 1 and 65 are provided, while the EPI factor ranges between 1 and 21.
- **WARP**: Supporting the WARP-switch for TSE with high bandwidth mode (with VAT 0-100%).

Effective noise reduction is achieved through Quiet Suite by targeting the main source of MRI noise - rapid switching in the gradient coils. Quiet Suite consists of QuietX, an intelligent algorithm which effectively reduces noise through summation of gradients and reduction of slew rates while keeping timing parameters within the same range. QuietX has been enabled for TSE, SE and GRE sequences for T1, T2 and DarkFluid contrasts as well as for SWI. Within the TSE-sequence, the parameter "Echo-spacing" allows the user to further lower the gradient slew-rates. The automated algorithm runs in parallel to normal protocol handling. All features and contrasts of the TSE, SE, and GRE sequences remain available.

In addition, Quiet Suite contains PETRA, a 3D T1 UTE sequence. The PETRA sequence allows for even lower gradient switching. With its unique gradient trajectories, no acoustic noise associated with gradient switching is generated during a PETRA scan. Residual noise may arise due to radio frequency switching.

With Quiet Suite, optimized quiet protocols for imaging the brain and large joints are also provided.

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.

Description
<ul style="list-style-type: none"> - Add/remove protocol steps - Change guidance content (images and text) - Change or add Dot Exam Strategies and Decision Points - Modify the Parameter View <p>Application Packages:</p> <p><i>syngo</i> Inline Composing</p> <ul style="list-style-type: none"> - Automatic anatomical or angiographic composing of multiple adjacent coronal or sagittal images - Composed images can be automatically loaded into Graphical Slice Positioning for scan planning purposes <p>Tim Planning Suite</p> <p>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.</p>
<p><i>syngo</i> NATIVE offers:</p> <ul style="list-style-type: none"> - Non-contrast enhanced MRA - Separate imaging of arteries and veins - Visualization of - e.g. - renal arteries or peripheral vessels <p>The <i>syngo</i> NATIVE package comprises:</p> <ul style="list-style-type: none"> - <i>syngo</i> NATIVE TrueFISP - <i>syngo</i> NATIVE SPACE
<p>QISS offers:</p> <ul style="list-style-type: none"> - Non-contrast enhanced peripheral MRA - Higher robustness when compared to other non-contrast enhanced peripheral MRA methods - Improved usability provided by the Dot AddIn which enables easier multi-stage planning <p>The QISS package comprises:</p> <ul style="list-style-type: none"> - QISS sequence - QISS Dot AddIn - Non contrast-enhanced peripheral vessels protocols
<p>The combination of automated segmentation and easy-to-use editing tools, provides users with a rapid way to extract vessels and quantify and grade vessel lesions.</p> <p>Vessel View includes:</p> <ul style="list-style-type: none"> - Viewing of MR and CT angio data in VRT, MPR or MIP mode in any orientation - Manual or semi-automatic detection of vessel segments and isolation from surrounding tissue - Manual or semi-automatic positioning of a center line passing exactly through the vascular center - Manual or semi-automatic quantification of changes in vessel size and diameter - Manual or semi-automatic measurement of lesions - Evaluation of stenoses using a Vessel Navigator - Stent planning - Automated log of results - Creation of DICOM structured reports
<p>Vessel View Artery-Vein Separation includes:</p> <ul style="list-style-type: none"> - Manual or automated detection of arterial or venous vessel segments and separation from surrounding tissue

Description

- Suppression of surrounding tissue
- Combined display of arterial and venous vessel tree in different colors
- Display of only arteries or only veins
- Based on these results, further evaluation, for example, for stenosis grading can be performed with the standard Vessel View function.

Prerequisite: Software syngo MR B13

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.
- 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.

Description
<ul style="list-style-type: none"> - The user can override this function. <p>Inline radial range calculation for MRCP</p> <ul style="list-style-type: none"> - MRCP is measured - Inline Radial Ranges are automatically generated. <p>Inline Subtraction Automatically subtracts the native (non-contrast) measurement from the arterial, portal-venous and late phase.</p> <p>Inline Registration The system automatically performs a registration / alignment of the anatomy for the different dynamic phases, of interest when examining nodular enhancing pathologies.</p> <p>Customization Existing Dot Engines 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 and Decision Points - Modify the Parameter View
<p>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.</p> <p>The Tim Whole Body Suite features:</p> <ul style="list-style-type: none"> - 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).
<p>General: <i>syngo</i> TimCT Onco Dot Engine allows a CT-like MR examination:</p> <ul style="list-style-type: none"> - Definition of start point and end point of scan area only - No need to plan in multiple steps - No need to plan overlapping areas - No delay, no measurement pauses during table move - No need for composing - iPAT compability <p>Seamless Scanning Enables high image homogeneity and suppression of boundary artifacts</p> <p>Techniques Based on axial 2D multi-slice sequences for T1-weighted (with FatSat or Dixon technique) and T2-weighted</p>

Description

imaging (with STIR or FatSat) with the TimCT sequence variants of the FLASH, TSE, HASTE, and syngo BLADE technique acquired with continuous table moving. Therefore it serves as a complement to the primary tumor diagnosis done in stationary mode (ex. for upper-abdomen) by providing comprehensive metastasis and lymph node evaluation in thorax-abdomen-pelvis.

Special Features

- The shorter examination times, the BLADE technique and the suppression of boundary artifacts.
- Multi-breath-hold capabilities
- Free selectable breath-hold duration
- Inline display shows progress of breath-hold

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.

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

Main Features:

- TWIST VIBE is a VIBE sequence with CAIPIRINHA capability providing high spatial resolution. The view-sharing mode provides temporal information to ensure the right contrast timing for different lesions. Dixon is used for fat-water separation.
- StarVIBE allows body imaging in free breathing mode, providing a solution for patients without breath hold capabilities.

Visualization features:

- 4D visualization (3D and over time)
- Color display of parametric cards (Ktrans, Kep, Ve, Vp, iAUC)
- Additional visualization of 2D or 3D morphological dataset

Post-processing features:

- Elastic 3D motion correction
- Fully automatic calculation of subtracted images

Standard curve evaluation:

- Calculation and display of enrichment curves

Pharmacokinetic model:

- Pharmacokinetic calculation on a pixel-by-pixel basis using a 2-compartment model
- Calculation is based on the Toft model. Various model functions are available.
- Manual segmentation and calculation on the result images.

The following result images can be saved as DICOM images:

- 3D motion-corrected, dynamic images
- Colored images
- Possibility for exporting results in the relevant layout format.

Description

Cardiac Dot Engine

Guidance View

- 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

Patient View

- 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

AutoFoV (automatic Field of View calculation)

- 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

Automated parameter adaptation

- Scan parameters are automatically adapted to the patient's condition (e.g. heart rate)

Novel heart localization method

- On-board guidance visually facilitates anatomic landmark settings which are used for calculation
- Automated localization
- Automated localization of short-axis views

Cardiac Views

- Easy selection of cardiac views (e.g. 3 chamber view) during scan planning

Inline Ventricular Function Evaluation

- syngo 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

Cardiac specific layout for the Exam task

- layouts show the new physio display and are configured for every step of the exam

Automated Naming

- Automated naming of series depending on cardiac views and sequence type

Auto Voice Commands

- 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

Dot Exam Strategies

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:

- **Standard:** Segmented acquisition techniques
- **Limited patient capabilities:** switch to real-time and single shot imaging if breath-hold is not possible or arrhythmias occur

Customization

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

Description
<ul style="list-style-type: none"> - Add/remove protocol steps - Change guidance content (images and text) - Change or add Dot Exam Strategies and Decision Points - Modify the Parameter View
<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>Combining the unique advantages of Tim and <i>syngo</i> BEAT with iPAT and powerful gradients, it allows performing cardiac MR examinations without compromise in image resolution or acquisition speed.</p> <p><i>syngo</i> 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. <i>syngo</i> BEAT automatically adjusts all parameters associated with the changes.</p> <p>Cardiac and Vessel Morphology</p> <ul style="list-style-type: none"> - Multi echo technique for e.g. thalassemia assessment - 3D aortopathy imaging with free breathing (SPACE) <p>Global or Regional Wall Motion Analysis with <i>syngo</i> BEAT</p> <ul style="list-style-type: none"> - 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) <p>Dynamic myocardial imaging with <i>syngo</i> BEAT</p> <ul style="list-style-type: none"> - Ultra-fast, high-SNR sequence for dynamic imaging with GRE EPI contrast for stress and rest exams <p>Tissue characterization with <i>syngo</i> BEAT</p> <ul style="list-style-type: none"> - 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 <p>Coronary imaging with <i>syngo</i> BEAT</p> <ul style="list-style-type: none"> - 3D Whole-Heart non-contrast Coronary MRA

Description
<ul style="list-style-type: none"> - 3D Whole-Heart MRA with advanced free-breathing navigator compensating diaphragm shifts during the acquisition (motion-adaptive respiratory gating)
<p>The MyoMaps package enables the calculation of quantitative T1 and T2 parametric maps at the heart. The calculation is available shortly after the measurement is finished without the need of post-processing.</p> <p>T1 Parametric Map</p> <ul style="list-style-type: none"> - Acquisition based on ECG triggered modified look-locker inversion recovery (MOLLI) - T1 parametric maps could be used to enhance the characterization of both ischemic and non-ischemic heart disease. <p>T2 Parametric Map</p> <ul style="list-style-type: none"> - Acquisition based on T2-prepared TrueFISP sequence - T2 parametric maps could be used to enhance the evaluation of myocarditis and heart transplant rejection.
<p>This package includes Argus Function as well as Argus 4D Ventricular Function.</p> <p>Argus Function:</p> <ul style="list-style-type: none"> - 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. <p>Argus 4D Ventricular Function:</p> <ul style="list-style-type: none"> - 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.
<p>CT, MR, NM, or PET images are accepted as input for image fusion. Studies can be done with the same modality or with different modalities.</p> <p>Registration Algorithms:</p> <ul style="list-style-type: none"> - Easy-to-use visual alignment with 6 degrees of freedom (3x translation, 3x rotation) - Landmark based registration with convenient landmark editor for point-based registration using anatomical landmarks - Automatic registration - Storage of transformation matrix after registration for later retrieval with datasets <p>Visualization Techniques:</p> <ul style="list-style-type: none"> - Side by side visualization of both datasets with correlated pointer and correlated scrolling with dog ears - 2D alpha-blending in monochrome or pseudo-color with adjustable balance between the two superimposed data sets. <p>Storage of fused results as secondary capture images.</p>
<p><i>syngo</i> TWIST provides:</p> <ul style="list-style-type: none"> - Visualization of contrast agent dynamics in the vessel system of interest with maximum flexibility.

Description
<ul style="list-style-type: none"> - 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. - <i>syngo</i> 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 <i>syngo</i> TWIST may even replace conventional static MR angio. Moreover, <i>syngo</i> TWIST does not require any bolus timing - just inject and go.
<p>The Peripheral Angio 36 has a 36-element design with 36 integrated preamplifiers distributed over 6 planes with 6 elements each.</p> <p>A uniquely designed non-ferromagnetic coil cart for safe coil storage is included. The PA Matrix Coil is also shipped with a set of positioning cushions for proper handling.</p> <p>No tuning of the fully iPAT-compatible Peripheral Angio 36 is required.</p> <p>With a length of about 1m both legs are covered from the iliac artery level down to the foot arch vessels using multiple, flexible wings. For the visualization of the abdominal aorta and the iliac bifurcation it can be combined with the Body 18 and Spine 32. For larger body coverage eg whole body with up to 205 cm possible coverage, it can be combined with Head/Neck20 or a further Body18 to allow for large Field of View examinations with high patient comfort. Patient set up is done once and no repositioning is necessary</p> <p>For peripheral Angiography the PA Matrix coil will be typically used in feet-first position, but also head-first positioning for whole-body examinations is possible (optional Tim Whole Body Suite required).</p> <p>The dimensions of the Peripheral Angio 36 are: 860 mm x 300 - 640 mm x 280 mm</p>
<p>The iPAT compatible Shoulder 16 Large and Shoulder 16 Small are ergonomically designed and adapted to the shape of the shoulder.</p> <p>The different sizes obtain maximum image quality for different body sizes:</p> <ul style="list-style-type: none"> - 165 mm (6.5 in) diameter for small and medium sized shoulders - 200 mm (7.9 in) diameter for large shoulders <p>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 signal/noise ratio.</p>
<p>The 16-element coil with 16 integrated pre-amplifiers excels in highest resolution imaging with exceptional signal/noise ratio, while taking full advantage of iPAT in all directions.</p> <p>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.</p>
<p>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 with high acceleration factors.</p> <p>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.</p> <p>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).</p>

Description
<p>The table design matches the MED-wide uniform design with silver-finished rim, use of friendly colors matching the Siemens color pattern for MAGNETOM and SOMATOM.</p> <ul style="list-style-type: none"> - Width 120 cm - Depth 80 cm - Height 72 cm
<p>The table design matches the MED-wide uniform design with silver-finished rim, use of friendly colors matching the Siemens color pattern for MAGNETOM and SOMATOM. Table height 72 cm, matching the <i>syngo</i> Acquisition Workplace and <i>syngo</i> MR Workplace console table, for installation in the operator room either directly to the left or right of the <i>syngo</i> Acquisition Workplace or <i>syngo</i> MR Workplace console table or separately.</p> <ul style="list-style-type: none"> - Width 50 cm - Depth 80 cm - Height 72 cm <p>Alternatively this casing is also suited for the Recon image processor (except for the MR systems with the Tim generation: there the Recon image processor is always placed inside the electronics cabinet).</p>
<p>Function:</p> <ul style="list-style-type: none"> - Interface between the on-site water chiller (of any brand/type) or - Interface to the central hospital chilled water supply. <p>Delivery volume:</p> <ul style="list-style-type: none"> - Separator - Two 3.0 m hoses (forward and return) for connecting the SEP to the local cooling water supply system - Separation cabinet - With the SEP configuration, the helium compressor is built into the SEP cabinet and connected internal - Regional specific adapter for connection to the hospital installation
<p>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.</p> <p>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.</p>
<p>Integrated Electrical Cabinet/Main Disconnect Panel for MR.</p> <p>Components supplied:</p> <ul style="list-style-type: none"> - The IEC Main Disconnect Panel - This Operations & Maintenance Manual - (4) sets of Emergency Power Off pushbuttons and installation instructions - Drawings and electrical schematics <p>DOES NOT INCLUDE installation. Customer is responsible for the installation of the cabinet. Includes one year warranty.</p> <p>This panel incorporates several features desirable for system installations to minimize down time, protect the MR and Helium Chiller electronics, and to reduce operational delays after a power outage. The panel has a main circuit breaker, Q1 with individual branch breakers for the MR, RF Cabin and Chiller. When the main circuit breaker is turned off, all power circuits within the panel will be deenergized.</p> <p>The MR power is protected by an electronic circuit breaker, Q2, and is controlled by a contactor, K2. Q2 also</p>

Description

provides the disconnect means to lock-out and tag-out (LOTO) the MR power circuit for maintenance purposes. The contactor will open with any loss of power or by pressing any Emergency Power Off (EPO) pushbutton. The K2 contactor control circuit is factory configured to automatically reenergize the MR upon restoration of facilities power. The control circuit may be re-configured to require the operator to manually restart the MR once the incoming power has been restored. This

protects the sensitive electronic circuits of the MR from sags and surges that immediately follow power loss from blackouts, storms, utility reclosure operations, and out of phase automatic transfer switch operations.

The Chiller Loads are protected by an electronic circuit breaker, Q3. Q3 also provides the disconnect and lock-out and tag-out (LOTO) means for the Chiller power circuit for maintenance purposes.

The RF Cabin Load power is connected to terminals protected by a circuit breaker, F1, and powered by the main circuit breaker, Q1. Unless Q1 is turned off, the RF Cabin loads will always be on, and may only be de-energized from inside the IEC panel.

The control circuits are low voltage 24 VDC and are fully powered from within the panel.

The restart functionality and e-stop circuitry is controlled with a safety relay, K10. See page 10 for detail.

The white SAFETIES OK indicator light on the front of the panel is illuminated when none of the Emergency Power Off (EPO) buttons are pressed. When the white light is active, pressing the green START pushbutton will cause the MR system to be energized.

The green START button will illuminate, and the white SAFETIES OK light will go off. Pressing the STOP button will de-energize the MR system. Any EPO pressed while the MR system is energized will result in the immediate deenergizing of the MR system.

If an EPO is pressed at any time, the EPO must be reset which will cause the SAFETIES OK light to activate. Then the START button will activate the MR system.

IMPORTANT:

If building power is removed from the panel while the MR system is energized, the MR system will reenergize when building power is restored without any human interaction.

Panel Dimensions: 36 in x 30 in x 8.0 (H x W x D)

Weight: 150pounds

This product is certified for OSHPD sites.

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.

Description
<p>To be eligible for this promotion, a binding purchase order of the application(s) must be received by Siemens Medical on or before September 30, 2016.</p>
<p>To be eligible for this promotion, a binding purchase order of the application(s) must be received by Siemens Medical on or before September 30, 2016.</p>
<p>To be eligible for this promotion, a binding purchase order of the application(s) must be received by Siemens Medical on or before September 30, 2016</p> <p>.</p>
<p>To be eligible for this promotion, a binding purchase order of the application(s) must be received by Siemens Medical on or before September 30, 2016</p> <p>.</p>
<p>Eaton 93PM-200/180 3-Wire UPS Electronics Cabinet: 200kW Frame cabinet with four (4) Power Modules (UPM) configured as a 180kW capacity system specifically for a medical imaging application. 480 volts input / 480 volts output, 3-Wire + Gnd. Double Conversion Topology, Unit efficiency up to 97% (up to 99% with ESS), Unit output rating @ Unity Power Factor, Input current distortion < 3% @ 100% load, Patented ABM Technology, Patented HotSync parallel firmware control, Scalable Architecture, Parallel Redundancy and Capacity capable. Onboard monitoring of UPS status via front panel display is standard. Includes Four (4) internal min-xslot communication card bays and single feed input with three (3) circuit breaker (BIB, MBP, MIS) integrated maintenance bypass in a 14.7" wide right-mounted sidecar. This sidecar will ship separately on its own pallet. Included Services: Start-up (7x24): PLUS One (1) year on-site labor coverage (7x24).</p> <p>UPS Cabinet Dimensions: 46.7"W x 42.0"D x 74.0"H UPS Cabinet Weight: 1,751 Lbs.</p> <p>Eaton 93PM 480Vdc Battery System: One (1) IBC-LWH Integrated Battery Cabinet consisting of one (1) string of 240 cells (@480Vdc), 40 Batteries, and 500A Circuit Breaker in cabinet. Full load back-up time @ 180kW of 5.1 minutes.</p> <p>Battery Cabinet Dimensions: 34.2"W x 42.0"D x 74.0"H Battery Cabinet Weight: 4,913 Lbs.</p> <p>Eaton Power Xpert Gateway UPS Mini-Slot Card (PXGMS): This card can provide Web/SNMP and Modbus TCP/IP connectivity and functionality for the 93PM UPS system for the purpose of remotely monitoring the status of the UPS via an Ethernet network connection.</p>
<p>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.</p> <p>Configuration includes connection box.</p> <p>The standard cable length is 9 m.</p>
<p>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</p>