SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Detailed Technical Specifications

MAGNETOM Prisma

Part No. / Product	Description
14432220 **MAGNETOM Prisma - System**	MAGNETOM Prisma - The 3T PowerPack for exploration - integrates our most recent innovations in MRI, enabling the power to outperform, the power to explore and the power to succeed. **The system includes:** **The Benchmark in 3T magnets** - Whole-body superconductive 3T magnet with active shielding (AS) technology with counter coils - Zero Helium Boil-off Technology - External Interference Shielding (E.I.S.) - Excellent homogeneity enabled magnet design which allows for a cylindrically optimized homogeneity volume resulting in higher image quality (50 × 50 × 50 cm³ DSV, typ. 1.1 ppm based on the 24-plane plot method) - The magnet has a helium capacity of approximately 933l 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 **XR Gradients: an unmatched gradient system** - Maximum amplitude of 80 mT/m and maximum slew rate of 200 T/m/s on each axis simultaneously - Actively shielded water-cooled with dedicated cooling for each gradient axis - All axes force compensated for lowest vibrations and acoustic performance - Outstanding performance and stability for long duration scans **TimTX TrueShape** TimTX TrueShape is Siemens' architecture for parallel transmit (pTX) technology. TimTX TrueShape allows dynamic parallel transmission of radio frequency (RF) pulses, shaping the RF excitation field locally and thus enabling selective excitation. It enables benefits for MR imaging and spectroscopy applications through optimized image homogeneity or efficient selective excitation. TimTX TrueShape Applications - *syngo* ZOOMit is the first application utilizing TimTX TrueShape. It allows "zooming into" a part of the image. - ZOOMit EPI realized by selective excitation, i.e. avoiding infolding artifacts in phase encoding directions, improving image quality locally with fewer distortions and speeding up acquisition time by lowering the requirements on spatial encoding. - ZOOMit SPACE realized by inner volume excitation. **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 takes away the complexity in MRI scanning and provides consistent reproducible results by patient personalization, user guidance and process automation. Optimized scan strategies can be selected based on patient condition, which allows for high quality exams even when conditions change. Integrated decision points allows the user to easily add or remove one or a group of protocols with one click. Step by step real-time on board guidance guides novice users even through the most complicated exams. Process automation allows optimal timing for breathing, scanning, planning or contrast arrival. Dot can be easily customized to follow the individual standards of care.

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description
(Continued) **14432220** **MAGNETOM Prisma - System**	Dot is personalized, guided and automated and designed to improve workflow efficiency and image consistency. **DirectRF - RF Transmit/Receive System:** - Fully integrated Transmit- and Receive path in the magnet housing including extremely compact water-cooled solid state amplifier with 50kW peak power - High dynamic range - Real time feedback loop for inline sequence adaptation - Integrated no tune transmit/receive Body Coil The revolutionary Tim 4G technology allows connecting up to 204 coil elements simultaneously enabling higher SNR and iPAT in all directions. No repositioning of patients is needed even for large Field of View examinations. - Dual-Density Signal transfer enables ultra-high density coil design by integrating key RF components into the local coil. **Tim 4G Coils:** The new Tim 4G coil technology with Dual-Density Signal Transfer, DirectConnect and SlideConnect technology combines key imaging benefits: Excellent image quality, high patient comfort, and unmatched flexibility The Tim 4G coils are designed for highest image quality combined with easy handling. The high element density of the coils increases SNR and reduces examination times. DirectConnect and 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 The 20-channel coil with its 20 integrated pre-amplifiers ensures excellent signal-to-noise ratio. The unique DirectConnect technology allows users connecting the 20 coil elements of the Head/Neck 20 without cables. The patient friendly open design allows for maximum patient comfort which is supported in addition by a look-out mirror for claustrophobic patients. The high channel coil is iPAT compatible in all directions. The open and light design of the upper coil part increases patient comfort and is removable for easy patient handling. The lower coil part may remain on the table for most of the examinations can be used without the upper part .The Head/Neck 20 and Spine 32 are smoothly integrated into the patient table, thus enabling high flexibility in imaging and fewer coil changes and easy handling when switching patients. The Head /Neck 20 coil is equipped with two removable cushioned head stabilizers for stable and comfortable patient positioning. The Head/ Neck 20 can be used for applications like head examinations, neck examinations, MR Angiography, combined head/neck examinations or for imaging of the TMJ (temporomandibular joints). Typically combined with the Spine 32 and Body 18 or Peripheral Angio 36 but also other combinations eg with flexible coils like the Flex Large 4 are possible. - Body 18 The 18-channel coil with its 18 integrated pre-amplifiers ensures maximum signal-to-noise ratio. The 18 coil elements of the Body 18 with only one SlideConect Plug allows for fast and easy patient preparation resulting in less table time. Fast acquisition times enabled by iPAT in all directions. The light-weighted coil ensures highest patient comfort. Body 18 operates in an integrated fashion with the Spine 32 as 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 The Body 18 is typically used in combination with the Spine 32 for examinations of the thorax, abdomen, pelvis or hip and operates as a 30 channel body coil (3 rings 10 elements).The Body 18 can also be used for cardiac or vascular applications. Through its perfect combinability with the Spine 32, further Body 18

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description
(Continued) **14432220** **MAGNETOM Prisma - System**	(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 its 32 integrated pre-amplifiers ensures maximum signal-to-noise ratio. The unique DirectConnect technology allows connecting the 32 coil elements of the Spine 32 without the need to plug in any cable. The patient friendly ergonomical design allows for maximum patient comfort. The high element coil is iPAT compatible in all directions. Smoothly integrated into the patient table the Spine 32 may remain on the patient table for nearly all exams. The Spine 32 is typically combined with Body 18, Head/Neck 20, Peripheral Angio 36 or Flex Large 4, Flex Small 4. - Flex Large 4/ Flex Small 4 Light-weighted, very flexible, iPAT compatible, 4-element no-tune receiver coils which are made of soft and smooth material. The coils can be wrapped around or used flat. Both coils can be connected via Flex Coil interface. One Flex Coil interface is already delivered as standard. The coils can be used for different examinations ranging from examinations of the extremities to abdominal examinations. **Tim Table** - The maximum scan range of the Tim Table is 280 cm. - 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 64 cm from the floor, for easier patient positioning and better accessibility for geriatric, pediatric or immobile patients. An infusion stand is integrated to ensure fast patient set up also for critical patients. - Multiple Tim4G coils can be connected at once for efficient and patient friendly examinations. - The Tim Table can be moved with two clicks into the isocenter - one click to the upmost position and one click into the isocenter. **Dot (Day Optimizing Throughput) Engine** Dot multiplies the power of Tim resulting in greater image consistency and diagnostic confidence **Dot Control Centers and Dot Display** - The ergonomically designed Dot Control Centers are integrated left and right into the front covers for controlling table movement and interaction with the Dot Display. The Dot Control Centers are well illuminated for easy visual recognition. - Automated table move up to upmost position, to center position or Home position facilitate smooth patient 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** Dot makes it easy to get the best possible results for virtually any type of patient. Dot gives uniquely tailored, optimized scans configurable to patient condition or clinical question. Dot provides patient personalization, user guidance and process automation and is of course configurable by the user to adapt to the different clinical needs and standards of care. **Brain Dot Engine** The Brain Dot Engine simplifies general brain examinations with guided and automated workflows customized to the site specific standards of care. The Brain Dot Engine supports the user in achieving reproducible image quality with increased ease of use and time efficient exams.

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description
(Continued) **14432220** **MAGNETOM Prisma - System**	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 placed at the isocenter without any laser marking required. AutoAlign Head allows automatically slice positioning and aligns on the anatomically derived sagittal, coronal, and axial slices of the localizer. The operator-free alignment and anatomical marking are consistent, independently of patient age, head position, or disease. Automatic real-time calculation of trace-weighted images and ADC maps with Inline DiffusionTechnology. Easy rerun or repeat with functionality allows for reduced table time even in case of patients with pain or claustrophobia. An image inside the examination UI can be selected and a rerun of the corresponding series can be triggered with identical sequences or parameters. Alternatively an exam can be repeated with a changed strategy. The Brain Dot Engine as all Dot Engines can be modified by the user to their individual standard of care. **Tim Application Suite** The Tim Application Suite offers a complete range of clinically optimized sequences, protocols and workflow functionalities for all body regions. Excellent head-to-toe imaging can be accomplished with the sequences and features included in this application suite. To enable this comprehensive application range, ten dedicated application packages have been included. - *syngo* TimCT FastView - Neuro Suite - Angio Suite - Cardiac Suite - Body Suite - Onco Suite - Breast Suite - Ortho Suite - Pediatric Suite - Scientific Suite - Whole Body Suite ***syngo* TimCT FastView** *syngo* TimCT FastView is a "one go" localizer for the whole body or large body regions such as the whole spine or the whole abdomen. It acquires the complete extended Field of View in one volume with isotropic resolution. Transversal, coronal and sagittal reformats of the volume are calculated inline and displayed for planning subsequent exams. Moreover, while planning is underway, adjustments are acquired automatically for further time savings in subsequent measurements. *syngo* TimCT FastView runs without laser light positioning to further streamline the workflow for several indications. **Neuro Suite** Comprehensive head and spine examinations can be performed with dedicated programs. High resolution protocols and fast protocols for uncooperative patients are provided. The Neuro Suite also includes protocols for diffusion imaging, perfusion imaging, and fMRI. It includes for example:

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description

(Continued)
14432220
MAGNETOM Prisma - System
	- 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 directionsDynamic Analysis software (included in standard configuation) 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-operativeimaging and stereotactic planning
	- 3D CISS (Constructive Interference in Steady State) for excellent visualization of fine structures such as cranial nerves. High resolution maging 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 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.

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description
(Continued) **14432220** **MAGNETOM Prisma - System**	*syngo BEAT* - Unique tool for fast and easy cardiovascular MR imaging - E.g. 1 click change from FLASH to TrueFISP for easy contrast optimization - 1-click to switch arrhythmia rejection on / off - 1-click change from Cartesian to radial sampling to increase effective image resolution (e.g. in pediatric patients) and avoid folding artifacts in large patients *Visualization of structural cardiovascular pathologies with CMR - syngo BEAT* - Breath-hold and free breathing techniques for strong contrast between the blood and vascular structures. Dark Blood TSE and HASTE imaging are available for the structural evaluation of the cardiothoracic anatomy, including vessels or heart valves. Cine techniques (FLASH & TrueFISP) for high-resolution valve evaluation - Multiple contrasts such as T1- and T2-weighted imaging for use in diseases such as myocarditis (inflammation / hyperaemia), ARVD (fibrous-fatty degeneration) or acute myocardial infarction (edema) - Dark-blood TSE with motion compensation for high-quality vessel wall imaging in small or large vessels *Tools for rapid evaluation of left or right ventricular function* - Acquisition of a stack of short-axis slices (standard segmented FLASH, or advanced segmented TrueFISP) - Automatic adjustment of the acquisition window to the current heart rate - Use of the Inline ECG for graphical ECG triggering setup - Retrospective gating with cine sequences (TrueFISP, FLASH) - Protocols for whole-heart coverage - iPAT integration for highest temporal and spatial resolution - Real-time imaging in case the patient is not able to hold his breath *Dynamic imaging and tissue characterization with syngo BEAT* - Protocols for high-contrast and high-resolution tissue characterization - Protocols for stress and rest imaging with TrueFISP or TurboFLASH contrast support the acquisition of multiple slices with high resolution and arbitrarily adjustable slice orientation for each slice - T-PAT with mSENSE and GRAPPA for advanced parallel imaging provides fast high-resolution dynamic imaging - Segmented IR TrueFISP / FLASH with TI scout for optimization of tissue contrast - Advanced tissue characterization with 2D phase-sensitive IR (PSIR) sequences TrueFISP and FLASH contrast. Magnitude and phase-sensitive images with one acquisition - Simple: no adjustment of inversion time (TI) necessary with PSIR technique - Ungated single-shot PSIR imaging for tissue characterization under difficult conditions: free-breathing technique that can be applied even in case of arrhythmia Physiological Measurement Unit (PMU) - Wireless Physio Control - Synchronizes the measurement with the physiological cycles (triggering to minimize motion artifacts caused by cardiac and respiratory movements) - Wireless Sensors - Wireless Vector ECG / respiration and pulse sensors for physiologically synchronized imaging, rechargeable battery-powered - for optimized patient handling - Physiological Signals Display - ECG (3 channels) - Pulse - Respiration - External Trigger Input Display 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

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description
(Continued) **14432220** **MAGNETOM Prisma - System**	the examination room - Interface for trigger input from external sources (e.g. pulse generator, trigger sources for fMRI) outside the examination room - Optical trigger output for fMRI - Retrospective gating for ECG, peripheral pulse, and external trigger input **Breast Suite** MR imaging has proven a very high sensitivity for breast lesions and is the gold standard for the examination of silicone implants. Extremely high spatial and temporal resolution can be achieved in very short measuring times by using iPAT with GRAPPA. Excellent soft tissue differentiation, customized protocols (e.g. with fat saturation or water excitation or silicone excitation), as well as flexible multiplanar visualization allow for fast, simple and reproducible evaluation of MR breast examinations. This package includes: - Quantitative evaluation and fast analysis of the data with colorized Wash-in, Wash-out, Time-To-Peak, Positive-Enhancement-Integral, MIPtime and combination maps with Inline technology or for offline calculation - High-resolution 2D protocols for morphology evaluation - High-resolution 3D protocols covering both breasts simultaneously - Protocols to support interventions (fine needle and vacuum biopsies, wire localization) - Protocols for evaluating breasts with silicone implants - Automatic and manual frequency adjustment, taking into account the silicone signal - Detection of the silicone signal either to suppress the silicone signal, if the surrounding tissue is to be evaluated, or to suppress the tissue signal in order to detect an implant leakage - SPAIR - robust fat sat (robust fat suppression using an adiabatic frequency selective inversion pulse) - DIXON - 2-point Dixon with 3D VIBE, the following contrasts can be obtained: in-phase, opposed phase, fat and water image. - iPAT with GRAPPA for maximum resolution in short time - Inline subtraction and MIP display - Offline subtraction, MPR and MIP display - *syngo* REVEAL: diffusion imaging for breast exams - iPAT Extension 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 direction - submillimeter voxel - highest resolution for precise evaluation **Body Suite** Body Suite covers your needs for clinical body applications. Ultrafast high resolution 2D and 3D protocols are provided for abdomen, pelvis, MR Colonography, MRCP, dynamic kidney, and MR Urography applications. Siemens unique 2D PACE technique makes body imaging easy allowing for multi-breath hold examinations as well 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)

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description
(Continued) **14432220** **MAGNETOM Prisma - System**	- 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 - CAIPIRINHA enables VIBE sequence with improved iPAT2 algorithm to improved abdominal dynamic scans as well as SNR. Reduced patient stress can be achieved through reduced acquisition (and breathhold) times. ***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 postprocessing application. This includes the capability of using additional datasets as a guide for defining regions of interest even faster and easier than before. - *syngo* REVEAL: diffusion imaging for liver and whole body exams Dedicated prostate protocols for detection, localization, and staging of tumors and recurrences - *syngo* REVEAL (diffusion-weighted imaging) - Protocols with high temporal resolution allow time course evaluation based on pharmacokinetic modeling **Ortho Suite** 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

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description
(Continued) **14432220** **MAGNETOM Prisma - System**	- Susceptibility-insensitive protocols for imaging in the presence of a prosthesis - Multi-Echo SE sequence with up to 32 echoes for the calculation of T2 time maps (calculation included in the Scientific Suite) - High resolution 3D DESS (Double Echo Steady State): T2 / T1-weighted imaging for excellent fluid-cartilage differentiation *syngo WARP Susceptibility Artifact Reduction* - 2D TSE sequences with high bandwidth protocols tailored to reduce susceptibility artifacts. Available protocols include T1-weighted, T2-weighted, proton density and STIR contrast. **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 must evaluate the benefits of the MR examination compared to those of 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 **Whole Body Suite** Tim and the Tim Whole Body Suite enable for true whole body MR scanning for head-to-toe imaging. Whole body imaging with highest image quality without patient repositioning and without the need to change a single coil, not even once, this means whole body imaging without compromise. - The all-new Tim Table or Tim Dockable Table enable a full Field-of-View with coverage up to 280 cm (6' 9"). The table top has the same length as the standard system without whole body capabilities. Additional free space is required at the rear part of the magnet to ensure, that the table movement is not limited by the rear wall. - Table movement to its full extent can be remotely controlled from the operator console either by the operator or by sequence protocols. - Protocols and programs for whole body MR angiography and morphology e.g. for metastasis visualization and preventive care examinations. - Whole body MR Angiography is possible with high speed, high resolution and high image contrast on the entire volume combining high speed gradients and iPAT. - The large FoV of 205 cm supports the assessment of metastases distribution in the body with sequences such as TIRM (Turbo Inversion Recovery). The sequences, features and techniques for acquisition and reconstruction included in the Tim Application Suite are described in detail below. **Sequences** Spin Echo family of sequences: - Spin Echo (SE) - Single, Double, and Multi Echo (up to 32 echoes); Inversion Recovery (IR) - 2D / 3D Turbo Spin Echo (TSE) - Restore technique for shorter TR times while maintaining excellent T2 contrast; TurboIR: Inversion Recovery for STIR, DarkFluid T1 and T2, TrueIR; Echo Sharing for dual-contrast TSE - 2D / 3D HASTE (Half-Fourier Acquisition with Single Shot Turbo Spin Echo) - Inversion Recovery for STIR and DarkFluid contrast

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description
(Continued) **14432220** **MAGNETOM Prisma - System**	- 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 fi eld 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 TI scout; Retrogating Standard Fat/Water Imaging: - Fat and Water Saturation. Additional frequency selective RF pulses used to suppress bright signal from fatty tissue. Two selectable modes: weak, strong - Quick FatSat - SPAIR: robust fat suppression for body imaging using a frequency selective inversion pulse - Fat / Water Excitation. Spectral selective RF pulses for exclusive fat / water excitation - Dixon technique for fat and water separation - 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 fi les on CD / DVD with DICOM viewer as the viewing tool for hand out to the patients or referrals - Selectable centric elliptical phase reordering via the user interface - Inversion Recovery to nullify the signal of fat, fl uid 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.

SIEMENS

Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description
(Continued) **14432220** **MAGNETOM Prisma - System**	Standard techniques for Flow Artifact reductions: - LOTA (LongTerm Data Averaging) technique to reduce motion and flow artifacts - Pre-saturation techniques using RF saturation pulses to suppress flow and motion artifacts - Tracking SAT bands maintain constant saturation of venous and/or arterial blood flow eg. for 2D/3D sequential MRA - TONE (Tilted Optimized Non-satureating 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 eg of the heart or liver MAGNETOM Prisma 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 Prisma system. Inline technologies, scan@center or AutoVoiceCommands speed up the workflow further. The context-sensitive "Online Help" function and *syngo* Scan Assistant offer support and propose solutions to MR-specific questions and parameter conflicts. Studies can be easily networked and managed using the standard DICOM 3.0 protocol for efficient support of workflow. The following standard functions are supported: Send/Receive, Query/Retrieve, Basic Print for DICOM-compatible laser cameras (Camera is not included in the basic unit. Verify if existing camera is compatible or order separately.), 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 Processors ;: E 5690 - Clock rate of ;: 2 × 3.46 GHz - Main memory (RAM) ;: 128 GB, - Hard disk for raw data ;: 750 GB - Hard disk for system software ;: 100 GB - Parallel Scanning and Reconstruction of up to 8 data sets GPU driven image reconstruction system with 2x Tesla C2075 GPGPU: - Single Preceision Peformance: 515 GFLOPS - Double Precision Performance: 1030 GFLOPS - Memory Bandwidth: 148 GB/s

SIEMENS
Siemens Medical Solutions USA, Inc.
51 Valley Stream Parkway, Malvern, PA 19355
Fax: (866) 486-3602

SIEMENS REPRESENTATIVE
Soren Storgaard - (714) 763-3583

Part No. / Product	Description

(Continued)
14432220
MAGNETOM Prisma - System
	- Memory size: 6 GB GDDR5
	- CUDA Cores: 448
	
	- Reconstruction speed
	  - 20,761 recons per second (256 x 256 FFT, full FoV)
	  - 100,000 recons per second (256 x 256 FFT, 25 % recFoV)
	
	High-performance host computer
	- Intel Xeon processor ;: W3520 QuadCore
	- clock rate ;: 2.66 GHz
	- Main Memory (RAM) ;: 6 GB
	- three hard disks
	  - system SW ;: 300 GB SAS
	  - data base ;: 300 GB SAS
	  - images ;: 300 GB SAS
	- DVD-R writer for CD-R (approx. 4000 images 256^2 DICOM Standard, ISO 9660) and DVD-R (approx. 25 000 images 256^2 DICOM Standard, ISO 9660) storage of DICOM data or other data like AVI files
	  - DVD-ROM drive
	  - 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 flatscreen monitor with 1280 x 1024 pixel display, integrated gamma correction for optimum display of radiographic grayscale images and automatic backlight control for longterm brightness stability.
	
	Installation:
	- The compact integrated design allows for short installation times and reduces the required space to less than 33 sqm (334 sq. ft.) for the entire installation. The necessary room height clearance is 273 cm.
	- MAGNETOM Prisma allows siting of the system without a dedicated computer room - no additional cooling or floor requirements.
	- MAGNETOM Prisma 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.

14432224 **Tim [204x64] XR Gradients #P**	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 an dynamic feedback control for temporal stability and power linearity. The all-new innovative coil architecture packs more coil elements in a smaller space and allows for simultaneous connection of up to 204 coil elements. Combined with the 64 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. **XR gradients** Siemens XQ gradients provide actively shielded, water cooled worldclass gradients. All axes are force-compensated. The XR gradients have: - Maximum gradient amplitude of 80 mT/m, per axis, i.e. 139 mT/m vector summation gradient performance, - Maximum slew rate 200 T/m/s per axis, i.e. 346 T/m/s vector summation, - Minimal rise time 400 µs, from 0 to 80 mT/m amplitude - Maximum output voltage for each of the gradient axes 2250 V - Maximum output current for each of the gradient axes 900 A