



GE

Technical Publication

Versana Premier

Basic Service Manual

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Product Information

This Manual covers the software version of R1.x.x for Versana Premier ultrasound system.



GE

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Revision History

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Important precautions

Translation policy

WARNING

English
(EN)

This Service Manual is available in English only.

- If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.
- Do not attempt to service the equipment unless this Service Manual has been consulted and is understood.
- Failure to heed this Warning may result in injury to the service provider, operator or patient from electric shock, mechanical or other hazards.

AVERTISSEMENT

Français
(FR)

Ce manuel de maintenance est disponible en anglais uniquement.

- Si un client de la personne responsable de la maintenance demande une langue autre que l'anglais, il est de la responsabilité du client de fournir les services de traduction.
- N'essayez pas d'effectuer vous-même la maintenance de l'équipement avant d'avoir préalablement lu et compris le manuel de maintenance.
- Le non-respect cet avertissement peut entraîner des blessures dues à un choc électrique, une défaillance mécanique ou à d'autres éléments dangereux chez la personne en charge de la maintenance, l'opérateur ou le patient.

ADVERTENCIA

Español
(ES)

Este Manual de servicio está disponible en idioma inglés únicamente.

- Si un proveedor de servicio del cliente requiere un idioma distinto, es responsabilidad del cliente ofrecer servicios de traducción.
- No intente reparar el equipo a menos que haya consultado y comprendido este Manual de servicio.
- Si no presta atención a esta Advertencia, se pueden ocasionar lesiones al proveedor de servicio, al operador o al paciente por descarga eléctrica, por riesgos mecánicos o de otra índole.



WARNUNG

Deutsch
(DE)

Dieses Wartungshandbuch ist nur auf Englisch verfügbar.

- Wenn der Kundendiensttechniker eines Kunden eine andere Sprache als Englisch benötigt, unterliegt es der Verantwortung des Kunden eine Übersetzung anfertigen zu lassen.
- Warten Sie das Gerät nur, wenn Sie dieses Wartungshandbuch gelesen und verstanden haben.
- Die Nichtbeachtung dieses Warnhinweises kann zu Verletzungen des Kundendiensttechnikers, Anwenders oder Patienten durch Stromschläge, mechanische oder andere Gefahren führen.

AVVERTENZA

italiano
(IT)

Il presente Manuale di assistenza è disponibile solo in inglese.

- Se il fornitore di servizi di un cliente ne richiede una copia in una lingua diversa dall'inglese, è responsabilità del cliente fornire il servizio di traduzione.
- Non tentare di riparare l'apparecchio se questo Manuale di assistenza non è stato letto e compreso.
- Il mancato rispetto di questa avvertenza può comportare il rischio di lesioni al fornitore di servizi, all'operatore o al paziente causate da scosse elettriche o da pericoli di origine meccanica o di altro tipo.

WAARSCHUWING

Nederlands
(NL)

Deze servicehandleiding is alleen beschikbaar in het Engels.

- Als de serviceleverancier van een klant vraagt om een andere taal dan Engels, is het de verantwoordelijkheid van de klant om een vertaalde versie te bieden.
- Probeer geen onderhoud aan de apparatuur uit te voeren tenzij deze servicehandleiding is geraadpleegd en begrepen.
- Het niet opvolgen van deze waarschuwing kan bij de serviceleverancier, de operator of de patiënt leiden tot letsel door elektrische schokken, mechanische of andere gevaren.



ADVERTÊNCIA

Português
(PT-BR)

Este Manual de Manutenção está disponível apenas em Inglês.

- Caso um prestador de serviços do cliente solicite o manual em idioma diferente do inglês, é de responsabilidade do cliente o fornecimento de serviços de tradução.
- Não tente realizar a manutenção do equipamento antes de ler e compreender este Manual de manutenção.
- O não cumprimento desta advertência pode resultar em danos por choque elétrico e riscos mecânicos para o prestador de serviços, operador ou paciente.

HOIATUS!

Eesti
(ET)

Service Manual (Hooldusjuhend) on saadaval ainult ingliskeelsena.

- Kui kliendi teenusepakkuja nõue on, et juhend oleks mõnes muus keeles, korraldab juhendi tõlkimise klient.
- Tutvuge enne seadme hooldustööde tegemist kindlasti juhendiga Service Manual (Hooldusjuhend).
- Selle nõude eiramise korral võib teenindaja, kasutaja või patsient saada elektrilöögi, samuti võivad kaasneda muud ohud.

OPOZORILO

Slovenščina
(SL)

Ta servisni priročnik je na voljo samo v angleščini.

- Če ponudnik servisnih storitev za stranko potrebuje navodila v drugem jeziku, mora stranka sama poskrbeti za prevajanje.
- Ne poskušajte servisirati opreme, ne da bi prej prebrali in razumeli servisni priročnik.
- Če tega opozorila ne upoštevate, obstaja nevarnost električnega udara, mehanskih ali drugih nevarnosti in posledičnih poškodb ponudnika servisnih storitev, uporabnika opreme ali pacienta.



警告

日本語

(JA)

このサービスマニュアルは英語版のみ提供されています。

- お客様の保守担当者が英語以外のマニュアルを必要とされる場合は、お客様の負担にて翻訳サービスをご利用ください。
- 装置の保守を行う前に、必ずサービスマニュアルを読み、内容を理解してください。
- この警告に注意を払わない場合、保守担当者やオペレータ、患者に対して、電気ショック、機械またはその他の危険による傷害が発生する恐れがあります。

警告

中文
繁体
(ZH-CN)

本维修手册仅提供英文版。

- 如果客户需要其它语种版本，请自行翻译。
- 在维修机器前，请务必阅读并完全理解本维修手册。
- 若违反本警告，有可能会给维修提供商、操作员或患者带来电击伤害、机械损伤或其它危害。

VARNING

Svenska
(SV)

Den här servicehandboken finns endast på engelska.

- Om en kunds servicetekniker kräver ett annat språk än engelska är det kundens ansvar att tillhandahålla en översatt version.
- Försök inte att utföra service på utrustningen om du inte har läst igenom och förstått den här servicehandboken.
- Om du inte tar hänsyn till den här varningen kan serviceteknikern, operatören eller patienten utsättas för elektriska stötar eller mekaniska eller andra faror, vilket kan leda till personskador.

警告

中文
繁體
(ZH-TW)

此服務手冊僅推出英文版。

- 若客戶的維修人員需要英文以外的其他語言版本，客戶需自行負責提供翻譯服務。
- 在詳閱此服務手冊並充分理解其內容之前，請勿試圖開始維修設備。
- 若忽視此警告，可能導致維修人員、操作人員或病患因為觸電、機械問題或其他危險而受傷。



경고

한국어
(KO)

- 이 서비스 설명서는 영어로만 제공됩니다.
- 고객의 서비스 공급자가 영어 이외의 언어를 요구하는 경우 번역 서비스를 제공할 책임은 고객에게 있습니다.
 - 이 서비스 설명서를 참조 및 이해하지 못한 경우 장비를 만지지 마십시오.
 - 이 경고를 무시한 경우 서비스 공급자, 오퍼레이터 또는 환자가 감전, 기계적 위험 또는 기타 위험으로 인한 부상을 입을 수 있습니다.

ПРЕДУПРЕЖДЕНИЕ

На русском языке
(RU)

Данное руководство по обслуживанию доступно только на английском языке.

- Если специалисту по техническому обслуживанию клиента требуется документация на каком-либо другом языке, ответственность за выполнение перевода возлагается на клиента.
- Приступайте к обслуживанию оборудования только после того, как изучите данное руководство по обслуживанию и полностью поймете его содержание.
- Несоблюдение данного требования может привести к травмированию специалиста по техническому обслуживанию, пользователя или пациента вследствие поражения электрическим током, механических и прочих повреждений.

OSTRZEŻENIE

Polski
(PL)

Niniejszy podręcznik serwisowy jest dostępny wyłącznie w języku angielskim.

- Jeżeli dostawca usług klienta posługuje się językiem innym niż angielski, za zapewnienie usług tłumaczeniowych odpowiada klient.
- Przed przystąpieniem do czynności serwisowych należy zapoznać się z informacjami zawartymi w niniejszym podręczniku serwisowym i je zrozumieć.
- W przeciwnym wypadku dostawca usług, operator lub pacjent mogą odnieść obrażenia spowodowane porażeniem prądem elektrycznym, działaniem elementów mechanicznych lub innymi zagrożeniami.



ΠΡΟΕΙΔΟΠΟΙΗΣΗ

Ελληνικά
(EL)

Το παρόν Εγχειρίδιο σέρβις διατίθεται μόνο στα Αγγλικά.

- Εάν ο πάροχος σέρβις του πελάτη απαιτεί γλώσσα εκτός των Αγγλικών, η παροχή μεταφραστικών υπηρεσιών αποτελεί ευθύνη του πελάτη.
- Μην επιχειρήσετε να επισκευάσετε τον εξοπλισμό εάν πρώτα δεν συμβουλευτείτε και κατανοήσετε το παρόν Εγχειρίδιο σέρβις.
- Σε περίπτωση μη τήρησης της παρούσας προειδοποίησης, ενδέχεται να προκληθεί τραυματισμός στον πάροχο σέρβις, το χειριστή ή τον ασθενή εξαιτίας ηλεκτροπληξίας καθώς και μηχανικών ή άλλων κινδύνων.

FIGYELMEZTETÉS

Magyar
(HU)

A szervizkézikönyv kizárólag angol nyelven érhető el.

- Amennyiben az ügyfél szolgáltatójának nem felel meg az angol nyelvű dokumentáció, úgy a fordításról az ügyfélnek kell gondoskodnia.
- Kizárólag úgy lásson hozzá a berendezés karbantartásához, hogy elolvasta és megértette a szervizkézikönyvben foglaltakat.
- Ezen figyelmeztetés figyelmen kívül hagyása esetén a szolgáltató, a kezelő vagy a páciens áramütést, mechanikus sérülést vagy más veszély által okozott személyi sérülést szenvedhet.

VAROVANIE

Slovenčina
(SK)

Táto servisná príručka je dostupná iba v anglickom jazyku.

- Ak poskytovateľ služieb zákazníkom vyžaduje iný jazyk ako anglický jazyk, jeho povinnosťou je zabezpečiť prekladateľské služby.
- Zariadenie nepoužívajte bez prečítania a porozumenia tejto servisnej príručky.
- Nedodržanie tejto výstrahy môže viesť k zraneniu poskytovateľa služieb, operátora alebo pacienta spôsobeného elektrickým šokom, mechanickým alebo iným nebezpečenstvom.



VÝSTRAHA

česky
(CZ)

Tato servisní příručka je k dispozici pouze v angličtině.

- Pokud poskytovatel služby zákazníkovi požaduje jiný jazyk než angličtinu, je odpovědností zákazníka poskytnout služby překladu.
- Nepokoušejte se provádět servis zařízení, dokud si neprostudujete a neporozumíte servisní příručce.
- Nevěnování pozornosti této výstraze může způsobit poskytovateli služeb, obsluze nebo pacientovi úraz elektrickým proudem, mechanická nebo jiná nebezpečí.

UYARI

Türkçe
(TK)

Servis Kılavuzu yalnızca İngilizce olarak mevcuttur.

- Müşterinin servis sağlayıcısı için kılavuzun İngilizce dışında başka bir dile çevrilmesi gerekiyorsa çeviri hizmeti sağlamak müşterinin sorumluluğudur.
- Bu Servis Kılavuzu'na bakıp talimatları anlamadan ekipmanı kullanmaya çalışmayın.
- Bu Uyarının göz ardı edilmesi servis sağlayıcısının, operatörün veya hastanın, elektrik çarpması, mekanik arıza ya da diğer tehlikeler nedeniyle yaralanmasına neden olabilir.

ADVARSEL

Dansk
(DA)

Denne servicemanual fås kun på engelsk.

- Hvis en kundes tjenesteudbyder kræver et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelsesydelse.
- Forsøg ikke at udføre service på udstyret, medmindre denne servicemanual er læst og forstået.
- Manglende overholdelse af denne advarsel kan medføre skade på serviceudbyderen, operatøren eller patienten som følge af elektrisk stød, mekaniske eller andre farer.



ADVARSEL

Norsk
(NO)

Denne servicehåndboken er bare tilgjengelig på engelsk.

- Hvis en kundes tjenestetilbyder krever et annet språk enn engelsk, er det kundens ansvar å tilby oversettelsestjenester.
- Ikke forsøk å utføre service på utstyret før denne servicehåndboken er lest og forstått.
- Dersom det ikke tas hensyn til denne advarselen, kan det føre til skader på tjenestetilbyderen, operatøren eller pasienten fra elektrisk støt, mekaniske eller andre farer.

VAKAVA VAROITUS

Suomi
(FI)

Tämä huolto-opas on saatavana vain englanniksi.

- Jos asiakkaan palveluntarjoaja tarvitsee oppaan jollain muulla kielellä, käännöspalveluiden hankkiminen on asiakkaan vastuulla.
- Laitetta ei saa huoltaa ellei huolto-oppaaseen ole sitä ennen tutustuttu huolellisesti.
- Jos tätä varoitusta ei noudateta, palveluntarjoaja, käyttäjä tai potilas saattaa saada sähköiskun, ja saattaa aiheutua mekaanisia tai muita vaurioita.

ПРЕДУПРЕЖДЕНИЕ

Български
(BG)

Настоящото Сервизно ръководство се предлага само на английски език.

- Ако доставчикът на сервизни услуги на клиента изисква ръководство на език, който се различава от английския, клиентът има отговорност да осигури адекватен превод.
- Не правете опити за сервиз на оборудването, без да проверите и да разберете съветите в Сервизното ръководство.
- Неспазването на това предупреждение може да доведе до нараняване на доставчика на сервизни услуги, оператора или пациента вследствие на токов удар, механична или други опасности.



AVERTISMENT

Română
(RO)

Acest manual de service este disponibil doar în engleză.

- Dacă furnizorul de servicii al unui client solicită altă limbă decât engleza, este responsabilitatea clientului să ofere servicii de traducere.
- Nu încercați să efectuați lucrări de service asupra echipamentului, în afară de cazul când ați consultat acest manual de service și l-ați înțeles.
- Nerespectarea acestui avertisment poate avea ca rezultat rănirea furnizorului de servicii, a operatorului sau a pacientului ca urmare a electrocutării, pericolelor mecanice sau a altor pericole.

UPOZORENJE

Hrvatski
(HR)

Ovaj servisni priručnik dostupan je samo na engleskom jeziku.

- Ako klijentov serviser zahtijeva jezik koji nije engleski, odgovornost klijenta je pružiti usluge prijevoda.
- Nemojte pokušavati servisirati opremu ako niste pročitali i razumjeli servisni priručnik.
- Ako ne poštujete ovo upozorenje, može doći do ozljede serviser, operatera ili pacijenta prouzročene strujnim udarom, mehaničkim i drugim opasnostima.

ĮSPĖJIMAS

Lietuvių k.
(LT)

Šis priežiūros vadovas galimas tik anglų kalba.

- Jei kliento paslaugų teikėjas reikalauja kitos kalbos nei anglų, klientas atsako už vertimo paslaugos teikimą.
- Atlikite įrangos priežiūrą tik gerai susipažinę su priežiūros vadovu ir jį supratę.
- Nesilaikant šio įspėjimo galimas paslaugos teikėjo, operatoriaus ar paciento sužeidimas dėl elektros šoko, mechaninio ar kito pavojaus.



BRĪDINĀJUMS

Latviski
(LV)

Šī apkalpes rokasgrāmata ir pieejama tikai angļu valodā.

- Ja klienta pakalpojumu sniedzējam ir nepieciešama cita valoda, kas nav angļu valoda, klienta pienākums ir nodrošināt tulkojumu.
- Nemēģiniet apkalpot aprīkojumu, ja apkalpes rokasgrāmata nav izlasīta un izprasta.
- Ja šis brīdinājums netiek ievērots, pakalpojumu sniedzējs, operators vai pacients var gūt traumas no elektrošoka vai var rasties mehānisks vai cita veida apdraudējums.

UPOZORENJE

Srpski
(SR)

Ovaj priručnik za servisiranje dostupan je samo na engleskom jeziku.

- Ako klijentov serviser zahteva jezik koji nije engleski, odgovornost je na klijentu da pruži usluge prevođenja.
- Nemojte da pokušavate da servisirate opremu ako prethodno niste pročitali i razumeli ovaj priručnik.
- Ako ne poštujete ovo upozorenje, može doći do povređivanja serviser, operatera ili pacijenta uzrokovanog električnim udarom, mehaničkim i drugim opasnostima.

AVISO

Português
(Portugal)
(PT-PT)

Este manual de assistência está disponível apenas em inglês.

- Se o prestador de serviços de assistência do cliente necessitar do manual noutro idioma, a disponibilização dos serviços de tradução é da responsabilidade do cliente.
- Não tente reparar o equipamento se não tiver consultado e compreendido este manual de assistência.
- O não cumprimento das instruções constantes neste aviso pode resultar em ferimentos no prestador de serviços de assistência, no operador ou no paciente devido a choques eléctricos, perigos mecânicos ou outros problemas.



ПОПЕРЕДЖЕННЯ

Українська
(UK)

Цей посібник із технічного обслуговування доступний лише англійською мовою.

- Якщо постачальнику послуг із технічного обслуговування потрібна інформація мовою, відмінною від англійської, відповідальність за надання послуг перекладу несе користувач.
- Технічне обслуговування обладнання можна виконувати лише після ознайомлення з посібником із технічного обслуговування та усвідомлення його змісту.
- Недотримання цього попередження може призвести до травм постачальника послуг, оператора або пацієнта, спричинених дією електричного струму, механічних або інших пошкоджень.

PERINGATAN

Bahasa
Indonesia
(ID)

Panduan Servis ini hanya tersedia dalam Bahasa Inggris.

- Jika penyedia layanan pelanggan memerlukan bahasa di luar Bahasa Inggris, maka pelanggan bertanggung jawab untuk memberikan layanan tersebut.
- Jangan mencoba menyervis peralatan ini, kecuali Panduan Servis ini telah dijadikan rujukan dan dipahami dengan baik.
- Kelalaian memperhatikan Peringatan ini dapat menyebabkan cedera terhadap penyedia layanan, operator, atau pasien akibat bahaya kejutan listrik, mekanik, dan bahaya lainnya.

คำเตือน

ไทย
(TH)

คู่มือซ่อมบำรุงนี้มีเฉพาะภาษาอังกฤษเท่านั้น

- หากผู้ให้บริการของลูกค้าต้องการจับภาษาอื่นนอกเหนือจากภาษาอังกฤษ ลูกค้าต้องเป็นผู้รับผิดชอบในการจัดเตรียมคู่มือซ่อมบำรุงฉบับแปล
- โปรดอย่าซ่อมบำรุงอุปกรณ์โดยไม่ศึกษา และทำความเข้าใจคู่มือซ่อมบำรุงนี้
- หากไม่ปฏิบัติตามคำเตือนนี้อาจส่งผลให้ผู้ให้บริการ ผู้ใช้งานอุปกรณ์ หรือผู้ป่วยได้รับบาดเจ็บจากไฟฟ้าช็อต อันตรายจากกลไกของอุปกรณ์ หรืออันตรายอื่นๆ



CẢNH BÁO

(VI) Tiếng Việt

Hướng dẫn sử dụng dịch vụ này chỉ sẵn dùng bằng tiếng Anh.

- Nếu nhà cung cấp dịch vụ của khách hàng yêu cầu ngôn ngữ khác ngoài tiếng Anh, thì khách hàng phải có trách nhiệm cung cấp các dịch vụ dịch thuật.
- Không được tìm cách sửa chữa thiết bị trừ khi đã tham khảo và hiểu rõ Hướng dẫn sử dụng dịch vụ này.
- Bỏ qua lời cảnh báo này có thể gây thương tích cho nhà cung cấp dịch vụ, nhân viên vận hành hoặc bệnh nhân do sốc điện, những nguy hiểm về máy móc hoặc yếu tố khác.

ЕСКЕРТУ

(KK) Қазақ тілінде

Осы қызмет көрсету нұсқаулығы тек ағылшын тілінде қолжетімді.

- Егер тұтынушылардың қызметтер жеткізушісі ағылшын тілінен басқа тілді талап етсе, аудару қызметтерімен қамтамасыз ету тұтынушының жауапкершілігіне кіреді.
- Осы қызмет көрсету нұсқаулығын түсініп, ол туралы кеңес алмайынша жабдыққа қызмет көрсетуге тырыспаңыз.
- Осы ескертуді орындамау электр тогының соғуы, механикалық немесе басқа да қауіптер салдарынан қызметтер жеткізушісінің, оператордың немесе емделушінің жарақаттануына алып келуі мүмкін.

BABALA

(T) Tagalog

Available lamang sa Ingles ang Manwal ng Serbisyo ng ito.

- Kung ang kailangan lamang ng tagabigay ng serbisyo ng kustomer ng wika maliban sa Ingles, responsibilidad ng kustomer na magbigay ng serbisyo sa pagsasalin wika nito.
- Huwag subukan na iserbisyo ang mga kasangkapan maliban kung nakonsulta ang nauunawaan itong Manwal ng Serbisyo.
- Ang pagkabigong maunawaan ang Babalang ito ay maaring maging resulta ng pinsala sa tagabigay ng serbisyo, nagpapagana o pasyente mula sa pagkakakoryente, mekanikal o iba pang peligro.



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All packages should be closely examined at time of delivery. If damage is apparent, write "Damage In Shipment" on ALL copies of the freight or express bill BEFORE delivery is accepted or "signed for" by a GE representative or hospital receiving agent. Whether noted or concealed, damage MUST be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period.

Certified electrical contractor statement - For USA Only

All electrical Installations that are preliminary to positioning of the equipment at the site prepared for the equipment shall be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE personnel. In performing all electrical work on these products, GE will use its own specially trained field engineers. All of GE's electrical work on these products will comply with the requirements of the applicable electrical codes.

The purchaser of GE equipment shall only utilize qualified personnel (i.e., GE's field engineers, personnel of third-party service companies with equivalent training, or licensed electricians) to perform electrical servicing on the equipment.



Omission and errors

If there are any omissions, errors or suggestions for improving this documentation, contact the GE Global Documentation Group with specific information listing the system type, manual title, part number, revision number, page number and suggestion details.

**Mail the
information to:**

GE Medical Systems (China) Co., Ltd.
No. 19 Changjiang Road
Wuxi National Hi-Tech Dev. Zone
214028 Jiangsu, China
TEL: +86 510 85225888; FAX: +86 510 85226688

GE employees should use TrackWise to report service documentation issues.

These issues will then be in the internal problem reporting tool and communicated to the writer.

Service Safety Considerations



DANGER

DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.



WARNING

Use all Personal Protection Equipment (PPE) such as gloves, safety shoes, safety glasses, and kneeling pad, to reduce the risk of injury.

For a complete review of all safety requirements, refer to Chapter 1 in the Service Manual.



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Chapter 1

Introduction

This chapter describes important issues related to safely servicing the Ultrasound system. The service provider must read and understand all the information presented here before installing or servicing the units.



1-1 Overview

1-1-1 Contents in this chapter

- 1-1 'Overview' on *page 1-2*
- 1-2 'Manual Overview' on *page 1-3*
- 1-3 'Important conventions' on *page 1-7*
- 1-4 'Product icons' on *page 1-11*
- 1-5 'Labels locations' on *page 1-12*
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- 1-7 'Dangerous procedure warnings' on *page 1-22*
- 1-8 'Lockout/Tagout (LOTO) requirements' on *page 1-23*
- 1-9 'Returning probes and repair parts' on *page 1-24*
- 1-10 'EMC, EMI and ESD' on *page 1-25*
- 1-11 'Customer assistance' on *page 1-27*

1-2 Manual Overview

This manual provides installation and service information for the Versana Premier Ultrasound system. It is divided in ten chapters as shown below.

1-2-1 Contents in this manual

The manual is divided into ten chapters.

In the beginning of the manual, before chapter 1, you will find the *Revision overview*, the *Important precautions* including *Translation policy*, *Damage in transportation*, *Certified electrical contractor statement*, *Omission & errors*, *Service safety considerations* and *Legal notes*, and the *Table of Contents (TOC)*.

An Index has been included after Chapter 10.

Table 1-1: Contents in this manual

Chapter number	Chapter title	Description
1.	Introduction	Contains a content summary and warnings.
2.	Site preparations	Contains pre-setup requirements for the Versana Premier.
3.	System Setup	Contains setup procedure with procedure checklist for the system.
4.	General Procedures and Functional Checks	Contains functional checks that must be performed as part of the installation, or as required during servicing and periodic maintenance.
5.	Components and Functions (Theory)	Contains block diagrams and functional explanations of the electronics.
6.	Service Adjustments	Contains instructions on how to make any available adjustments to the Versana Premier.



Table 1-1: Contents in this manual (Continued)

Chapter number	Chapter title	Description
7.	Diagnostics/ Troubleshooting	Provides procedures for running diagnostic or related routines for the Versana Premier.
8.	Replacement procedures	Provides disassembly procedures and reassembly procedures for all changeable FRU.
9.	Renewal Parts	Contains a complete list of replacement parts for Versana Premier.
10.	Care & Maintenance	Provides periodic maintenance procedures for Versana Premier.
N/A	Index	A quick way to the topic you're looking for.

1-2-2 Typical users of the Proprietary Service Manual

- GEHC Service Personnel (setup, maintenance, etc.)
- GEHC Online Center Personnel
- Licensed Hospital's Service Providers

1-2-3 Purpose of Operator Manual(s)

The Operator Manual(s) should be fully read and understood before operating the Versana Premier and also kept near the unit for quick reference.

NOTE: *Probe information displayed on screen does not necessarily reflect the probes available on your ultrasound system. Please refer to the probe list for available probes and features.*

1-2-4 Versana Premier models covered by this manual

Table 1-2: Versana Premier Model Designations

Model Name	System SW
Versana Premier VA	R1.x.x
Versana Premier VS	R1.x.x

NOTE: When not otherwise specified, the contents of this manual applies to all Versana Premier models.



1-2-5 Smart Manual Function

On each page of this Proprietary Service Manual, there is a smart manual icon to bring you back to Overview of Versana Premier. By clicking on the system overview list, you can be brought to the FRU list directly.

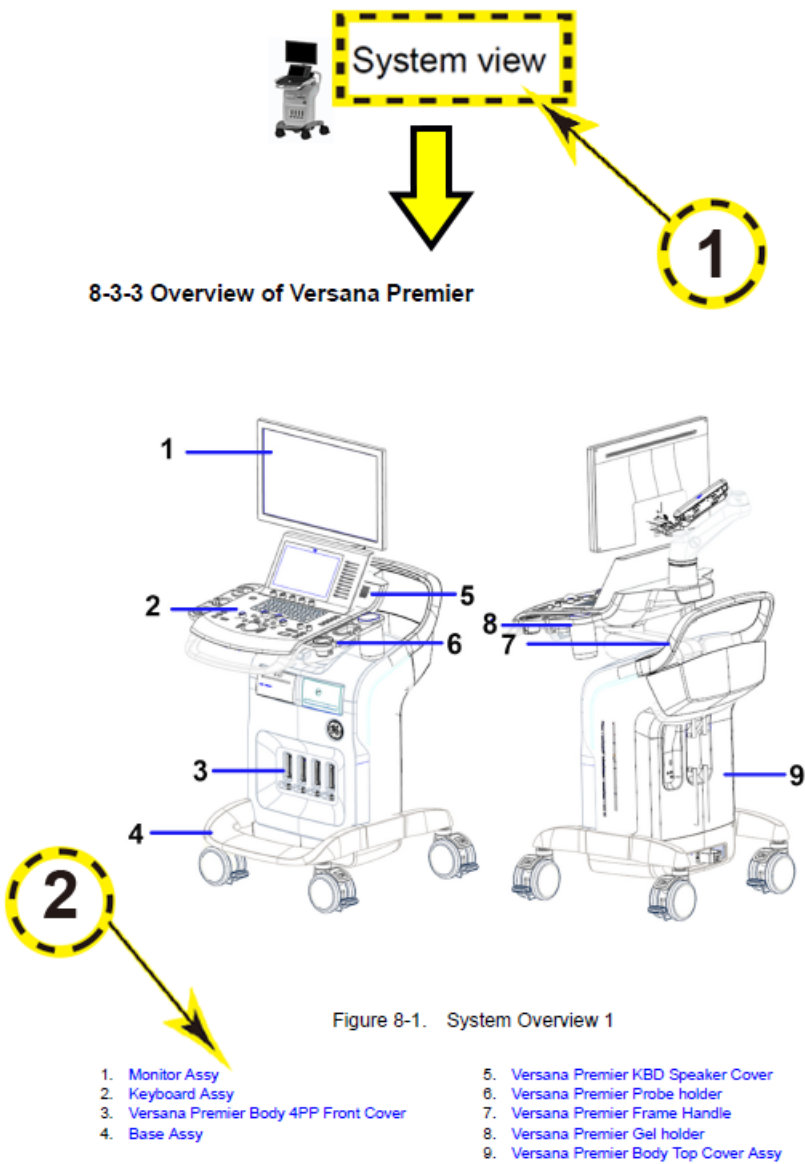


Figure 1-1. Smart Manual Icon

1-3 Important conventions

1-3-1 Conventions used in book

Important conventions, used in this document, are described next.

1-3-1-1 Model designations

This manual covers the Versana Premier Ultrasound systems listed in:

[1-2-4 'Versana Premier models covered by this manual' on page 1-5.](#)

1-3-1-2 Icons

Pictures, or icons, are used wherever they will reinforce the printed message. The icons, labels, and conventions used on the product and in the service information are described in this chapter.



1-3-1-3 Safety precaution messages

Various levels of safety precaution messages may be found on the equipment and in the service information. The different levels of concern are identified by a flag word that precedes the precautionary message. Known or potential hazards to personnel are labeled in one of three ways:

- DANGER
- WARNING
- CAUTION



Danger is used to indicate the presence of a hazard that will cause severe personal injury or death if the instructions are ignored.



Warning is used to indicate the presence of a hazard that can cause severe personal injury and property damage if instructions are ignored.



Caution is used to indicate the presence of a hazard that will or can cause minor personal injury and property damage if instructions are ignored. Equipment damage possible.







NOTE: *Notes are used to provide important information about an item or a procedure.*

NOTE: *Be sure to read the notes; the information contained in a note can often save you time or effort.*

1-3-2 Standard hazard icons

Important information will always be preceded by either the exclamation point (!) contained within a triangle, or the symbols for “Danger”, “Warning” or “Caution”, as seen throughout this chapter. In addition to text, several different graphical icons (symbols) may be used to make you aware of specific types of hazards that could possibly cause harm.

Table 1-3: Standard hazard icons

	ELECTRICAL
	MECHANICAL
	RADIATION
	LASER
	HEAT
	PINCH







NOTE: Even if a symbol isn’t used on the product or in this manual, it may be included for your reference.



1-3-2-1 Standard Icons that indicate that a special procedure is to be used

Some others icons make you aware of specific procedures that should be followed.

Table 1-4: Standard Icons that indicates that a special procedure is to be used

Avoid Static Electricity	Tag and Lock Out	Wear Eye Protection
		
Hand Protection	Foot Protection	Wear Eye Protection
		

Be sure to read the notes; the information contained in a note can often save you time or effort.

1-4 Product icons

It is important to refer to the current revision of the Ultrasound system's Basic User Manual for a full list of product labels prior to servicing the system.



1-5 Labels locations

It is important to refer to the current revision of the Ultrasound system’s Basic User Manual for a full list of product labels prior to servicing the system.

1-5-1 Rating Plate Location

Versana Premier labels are provided in English.

The labels are at the rear of the system. The label content may be different for different regions. Please refer to the labels on the system for the actual content.

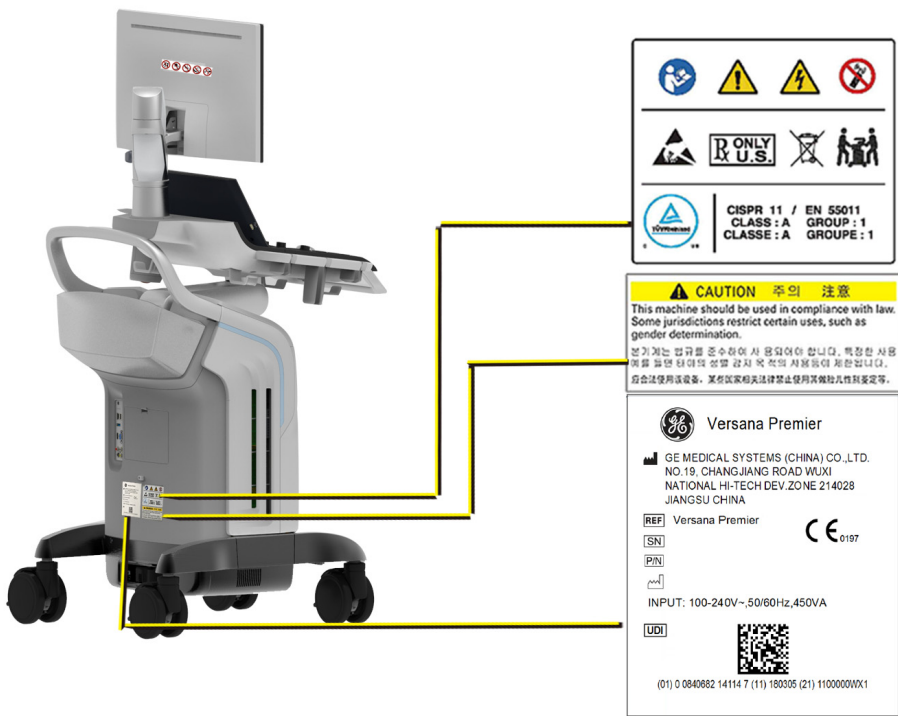




Figure 1-2. Versana Premier Label Location

1-5-1 Rating Plate Location(continued)

1. Rating Plate

Table 1-5: Label Icons

Label/Icon	Purpose/Meaning	Location
	Every system has a unique marking for identification, the Unique Device Identification (UDI) Label. The UDI label consists of a series of alpha-numeric characters and barcode which uniquely identify the Versana Premier system as a medical device manufactured by General Electric. Scan or enter the UDI information into the patient health record as required by country-specific laws.	Rating plate
	Serial Number.	Rating plate

NOTE: *If the new label is needed during the service activities, please click “Ask an Expert” to submit the case in the support central: http://supportcentral.ge.com/products/sup_products.asp?prod_id=44177.*



1-6 Safety considerations

1-6-1 Contents in this section

- [1-6-2 'Introduction' on page 1-14](#)
- [1-6-3 'Human Safety' on page 1-14](#)
- [1-6-4 'Mechanical safety' on page 1-17](#)
- [1-6-5 'Electrical safety' on page 1-20](#)

1-6-2 Introduction

The following safety precautions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual, violates safety standards of design, manufacture and intended use of the equipment.

1-6-3 Human Safety

- Operating personnel must not remove the system covers.
- Servicing should be performed by authorized personnel only.

Only personnel who have participated in a Versana Premier Training Seminar are authorized to service the equipment.

1-6-3 Human Safety(continued)



^W WARNING

Because of the limited access to cabinets and equipment in the field, placing people in awkward positions, GE has limited the lifting weight for one person in the field to 16 KG (35 LBS). Anything over 16 KG (35 LBS) requires 2 people.



^W WARNING

Have two people available to deliver and unpack the Versana Premier.

Attempts to move the Ultrasound system considerable distances or on an incline by one person could result in injury or damage or both.



^W WARNING

Ensure that the Ultrasound system is turned off and unplugged.

Wait for at least 20 seconds for capacitors to discharge as there are no test points to verify isolation. The amber light on the OP panel ON/OFF button will turn off.

Ultrasound system components may be energized. Always refer to the Ultrasound system's Proprietary Service Manual for LOTO warnings and cautions.



1-6-3 Human Safety(continued)



^W WARNING

Risk of electrical shock, Ultrasound system must be turned off and disconnected from power source. Cord must be controlled at all times.

Wait for at least 20 seconds for capacitors to discharge as there are no test points to verify isolation. The amber light on the OP panel on/off button will turn off.

Ultrasound System components may be energized. Always refer to the Ultrasound system's Proprietary Service Manual for LOTO warnings and cautions



^W WARNING

Use all Personal Protection Equipment (PPE) such as gloves, safety shoes, safety glasses, and kneeling pad, to reduce the risk of injury.



^W WARNING

Beware of possible sharp edges on all mechanical parts. If sharp edges are encountered, the appropriate PPE should be used to reduce the risk of injury.



^W WARNING

Wear all PPE including gloves as indicated in the chemical MSDS.



1-6-4 Mechanical safety



WARNING

While the software install procedure is designed to preserve data, you should save any patient data, images, system setups to removable media or hardcopy before doing a software upgrade.



WARNING

Ultrasound probes are highly sensitive medical instruments that can easily be damaged by improper handling. Use care when handling and protect from damage when not in use. **Do NOT** use a damaged or defective probe. Failure to follow these precautions can result in serious injury and equipment damage.



WARNING

Never use a probe that has fallen to the floor. Even if it looks OK, it may be damaged.



WARNING

When the Ultrasound system is raised for a repair or moved along any incline, use extreme caution since it may become unstable and tip over.



CAUTION

Take extra care when moving the system.

The Versana Premier weighs approximately 70 kg (140 lbs) or more, depending on installed peripherals, when ready for use. To avoid possible injury and equipment damage when transporting from one area of use to another:

- Be sure the pathway is clear.
- Limit movement to a slow careful walk.
- Use two or more persons to move the equipment on inclines or long distance.



CAUTION

Before you move or transport the Ultrasound system, make sure to lock the monitor arm firmly and flip down the monitor to prevent damage to the Ultrasound system.



1-6-4 Mechanical safety(continued)



CAUTION

To avoid injury when you move the monitor and the monitor arm, do not put your finger, hand, or object on the joint of the monitor or the monitor arm.



CAUTION

Ensure that nobody touches the console arm when moving the operator panel.



CAUTION

Do not move the Ultrasound system if the Operator Panel is in unlocked position.



CAUTION

Do not transport Versana Premier in a vehicle without locking the casters (wheels) and securing it as described in chapter 4.



CAUTION

Use protective glasses during drilling, filing smooth surfaces, and during all other work where eyes need protection.



CAUTION

Use safety shoes when doing work where there is any chance of foot injury.



1-6-4 Mechanical safety(continued)



CAUTION

Use protective gloves when working with sharp edges or when directed to wear PPE during a removal/replacement procedure.



CAUTION

Be careful not to pinch any of the cables.

NOTE: *Special care should be taken when transporting the Ultrasound system in a vehicle:*

- Before transporting, place the system in its special storage case.
- Lock the wheels (brake).
- Ensure that the system is firmly secured while inside the vehicle.
- Secure system with straps or as directed otherwise to prevent motion during transport.
- Prevent vibration damage by driving cautiously. Avoid unpaved roads, excessive speeds, and erratic stops or starts.



1-6-5 Electrical safety

1-6-5-1 Safe practices

Follow these guidelines to minimize shock hazards whenever you are using the Ultrasound system:

- To minimize shock hazard, the equipment chassis must be connected to an electrical ground.
- The Ultrasound system is equipped with a three-conductor AC power cable. This must be plugged into an approved electrical outlet with safety ground.
- The power outlet used for this equipment should not be shared with other types of equipment.
- Both the system power cable and the power connector must meet international electrical standards.



Connecting a Versana Premier to the wrong voltage level will most likely destroy it.



DO NOT SERVICE OR DISASSEMBLE PARTS UNDER FRU UNIT LEVEL AT ANY CIRCUMSTANCES.

1-6-5-2 Probes

Follow these guidelines before connecting a probe to the Ultrasound system:

- Inspect the probe prior to each use for damage or degradation to the:
 - housing
 - cable strain relief
 - lens
 - seal
 - connector pins
 - locking mechanism
- Do not use a damaged or defective probe.
- Never immerse the probe connector or adapter into any liquid.
- The system has more than one type of probe port. Use the appropriate probe port designed for the probe you are connecting.

1-6-5-3 Peripherals


Refer to the Patient Safety Environment section of the User's Manual for peripheral isolation information.



1-7 Dangerous procedure warnings

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.



 DANGEROUS VOLTAGES, CAPABLE OF CAUSING DEATH, ARE PRESENT IN THIS EQUIPMENT. USE EXTREME CAUTION WHEN HANDLING, TESTING AND ADJUSTING.



If the covers are removed from an operating Versana Premier, some metal surfaces may be warm enough to pose a potential heat hazard if touched, even while in shutdown mode.



Explosion Warning

DO NOT operate the equipment in an explosive atmosphere. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.



DO NOT substitute parts or modify equipment

Because of the danger of introducing additional hazards, **ONLY** install GE approved parts. **DO NOT** perform any unauthorized modification of the equipment.



SHUT DOWN FORCEDLY OR PLUG IN/OUT ACDC INVALID MAY CAUSE THE DAMAGE OF SYSTEM FILES.



AFTER UNPLUG POWER CORD, WAIT FOR AT LEAST 20 SECONDS FOR CAPACITORS TO DISCHARGE AS THERE ARE NO TEST POINTS TO VERIFY ISOLATION.

1-8 Lockout/Tagout (LOTO) requirements

Follow Lockout/Tagout requirements by ensuring you are in total control of the AC power plug at all times during the service process.

To apply Lockout/Tagout (LOTO):

1. Plan and prepare for shutdown.
2. Shutdown the equipment.
3. Isolate the equipment.
4. Remove/disconnect the battery, if present.
5. Apply Lockout/Tagout Devices.
6. Control all stored and residual energy.
7. Verify isolation.

All potentially hazardous stored or residual energy is relieved.



Energy Control and Power Lockout for Versana Premier.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.

Ultrasound System components may be energized.



1-9 Returning probes and repair parts

Equipment being returned must be clean and free of blood and other infectious substances. GE policy states that body fluids must be properly removed from any part or equipment prior to shipment. GE employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or an ultrasound probe).

The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

NOTE: *The US Department of Transportation (DOT) has ruled that “items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care” are “regulated medical waste” for transportation purposes and must be transported as a hazardous material.*

NOTE: *The USER/SERVICE staff should dispose of all the waste properly, per federal, state, and local waste disposal regulations.*

The Ultrasound system is not meant to be used for long-term storage of patient data or images. The user is responsible for the data on the system and a regular backup is highly recommended.

If the system is sent for repair, please ensure that any patient information is backed up and erased from the system before shipping. It is always possible during system failure and repair to lose patient data. GE is not responsible for the loss of this data.

If PHI (Patient Healthcare Information) data needs to be sent to GE employees for service purposes, GE will ascertain agreement from the customer. Patient information shall only be transferred by approved service processes, tools and devices restricting access, protecting or encrypting data where required, and providing traceability in the form of paper or electronic documents at each stage of the procedure while maintaining compliance with cross-border restrictions of patient information transfers.



1-10 EMC, EMI and ESD

1-10-1 Electromagnetic Compatibility (EMC)

Electromagnetic compatibility describes a level of performance of a device within its electromagnetic environment. This environment consists of the device itself and its surroundings including other equipment, power sources and persons with which the device must interface. Inadequate compatibility results when a susceptible device fails to perform as intended due to interference from its environment or when the device produces unacceptable levels of emission to its environment. This interference is often referred to as radio-frequency or electromagnetic interference (RFI/EMI) and can be radiated through space or conducted over interconnecting power or signal cables. In addition to electromagnetic energy, EMC also includes possible effects from electrical fields, magnetic fields, electrostatic discharge and disturbances in the electrical power supply.

1-10-2 CE Compliance

Versana Premier conforms to all applicable conducted and radiated emission limits and to immunity from electrostatic discharge, radiated and conducted RF fields, magnetic fields and power line transient requirements.

For applicable standards, refer to the Safety Chapter of the Ultrasound system User's Manual.

NOTE: *For CE Compliance, it is critical that all covers, screws, shielding, gaskets, mesh, clamps, are in good condition, installed tightly without skew or stress. Proper installation following all comments noted in this service manual is required in order to achieve full EMC performance.*



1-10-3 Electrostatic discharge (ESD) prevention



DO NOT touch any boards with integrated circuits prior to taking the necessary ESD precautions.

Always connect yourself, via an arm-wrist strap, to the advised ESD connection point located on the rear of the Ultrasound system (near the power connector).



Follow general guidelines for handling of electrostatic sensitive equipment.



Risk of electrical shock, Ultrasound system must be turned off. Avoid all contact with electrical contacts, conductors and components. Always use non-conductive handles designed for the removal and replacement of ESD sensitive parts. All parts that have the potential for storing energy must be discharged or isolated before making contact.

1-11 Customer assistance

1-11-1 Contact information

If this equipment does not work as indicated in this service manual or in the basic user manual, or if you require additional assistance, please contact the local distributor or appropriate support resource, as listed below.

Before you call, identify the following information, and acquire log (Alt+D) to send to the Customer Care team:

1. System ID / serial number.
2. Software version.
3. Date and time of occurrence.
4. Sequence of events leading to issue.
5. Is the issue repeatable?
6. Imaging mode, probe, preset/application.
7. Media brand, speed, capacity, type.
8. Save secondary image capture, cine loop.

NOTE: *Restart the application before resuming clinical scanning.*

NOTE: *The serial number can be found at the rear of the system.*



1-11-2 Phone numbers for Customer Assistance

Table 1-6: Phone numbers for Customer Assistance

LOCATION	PHONE NUMBER	
USA GE Healthcare - GE Medical Systems Ultrasound Service Engineering 9900 Innovation Drive Wauwatosa, WI 53226	Service: On-site	1-800-437-1171
	Service Parts	1-800-558-2040
	Application Support	1-800-682-5327 or 1-262-524-5698
Canada	Phone:	1-800-668-0732
Latin America	Service Application Support	1-800-321-7937 1-262-524-5698
Europe (OLC-EMEA) GE Ultraschall Deutschland GmbH & Co. KG Beethovenstraße 239 Postfach 11 05 60, D-42655 Solingen Germany	OLC - EMEA Phone:	+49 (0) 212 2802 - 652 +33 1 3083 1300
	Fax:	+49 (0) 2122-8024-31
Online Services Ultrasound Asia	Phone: • Australia • China • India • Japan • Korea • Singapore	+ (61) 1-800-647-855 + (86) 800-810-8188 + (91) 1800-425-8025 + (81) 42-648-2940 + (82) 2620 13585 + (95) 6277-3444

1-11-3 System manufacturer

Table 1-7: System manufacturer

MANUFACTURER	PHONE NUMBER	FAX NUMBER
GE Medical Systems (China) Co., Ltd. No.19 Changjiang Road WuXi National Hi-Tech Dev.Zone 214028 Jiangsu China	+86 510 85225888	+86 510 85226688



1-11-4 Authorized Representative

Table 1-8: Authorized Representative

AUTHORIZED REPRESENTATIVE	TELEPHONE / FAX NUMBER
<p>The location of the CE marking is shown in the Safety chapter of the Basic User Manual.</p> <div data-bbox="149 424 323 496"> <div>EC</div> <div>REP</div> </div> <p>Authorized EU Representative: GE Medical Systems SCS 283 rue de la Minière 78530 BUC, France</p>	

1-11-5 Factory Site

Table 1-9: Factory Site

Factory Site	TELEPHONE / FAX NUMBER
GE Medical Systems (China) Co., Ltd. No.19, Changjiang Road, Wuxi National Hi-Tech Dev.Zone, 214028 Jiangsu, China	TEL: +86 510-85225888 FAX: +86 510-85226688



Chapter 2

Site Preparations

This chapter provides the information required to plan and prepare for the setup of an Ultrasound system. Included the descriptions of the facility and electrical needs to be met by the purchaser of the units.



2-1 Overview

2-1-1 Contents in this chapter

- [2-1 'Overview' on page 2-2](#)
- [2-2 'General Ultrasound system requirements' on page 2-3](#)
- [2-3 'Facility needs' on page 2-12](#)
- [2-4 'Environmental Dangers' on page 2-21](#)

2-2 General Ultrasound system requirements

2-2-1 Contents in this section

- 2-2-2 'Ultrasound system environmental requirements' on *page 2-3*
- 2-2-3 'Electrical requirements' on *page 2-6*
- 2-2-4 'EMI limitations' on *page 2-9*
- 2-2-5 'Probes environmental requirements' on *page 2-11*
- 2-2-6 'Time and manpower requirements' on *page 2-11*

2-2-2 Ultrasound system environmental requirements

2-2-2-1 If the Ultrasound system is very cold or hot

When unpacking the Ultrasound system, allow the temperature of the Ultrasound system to stabilize before powering up. The following table describes guidelines for reaching operational temperatures from storage or transport temperatures.



CAUTION

If the Ultrasound system is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.

Table 2-1: System Acclimation Time Chart

Degree C	-4.5	-2	0.5	3	40	42.5	45	47.5	50	55	60
Degree F	23.9	28.4	32.9	37.4	104	108.5	113	117.5	122	131	140
hours	3	2	1	0	0	1	2	3	4	6	8



2-2-2-2 Environmental specifications for Ultrasound system

The system should be operated, stored, or transported within the parameters outlined below. Either its operational environment must be constantly maintained or the unit must be turned off.

Table 2-2: System Environmental Requirements

	Operational (Versana Premier with probe)	Storage (Versana Premier)	Transport (Versana Premier)
Temperature	3- 40° C (without battery) 37.4 - 104° F	-5 - 50° C 23 - 122° F	-5 - 50° C 23 - 122° F
	10 - 30° C (with battery) 50 - 86° F		
Humidity	30 - 80% non-condensing	10 - 90% non-condensing	10 - 90% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa



Ensure that the probe face temperature does not exceed the normal operation temperature range.



The Versana Premier system and probe connector is not waterproof. Do not expose the device to water or any kind of liquid.

2-2-2-3 Cooling

The cooling requirement for a console Ultrasound system with monitor and on board peripherals, is up to 3800 BTU/h. This figure does not include cooling needed for lights, people, or other equipment in the room.

NOTE: *Each person in the room places an additional 300 BTU/h demand on the cooling system.*

2-2-2-4 Lighting

Bright light is needed for Ultrasound system installation, updates and repairs. However, operator and patient comfort may be optimized if the room light is subdued and indirect. Therefore a combination lighting system (dim/bright) is recommended. Keep in mind that lighting controls and dimmers can be a source of EMI which could degrade image quality. These controls should be selected to minimize possible interference.



2-2-3 Electrical requirements

2-2-3-1 General requirements

NOTE: GE requires a dedicated power and ground for the proper operation of its Ultrasound equipment. This dedicated power shall originate at the last distribution panel before the Ultrasound system.

Sites with a mains power system with defined Neutral and Live:

The dedicated line shall consist of one phase, a neutral (not shared with any other circuit), and a full size ground wire from the distribution panel to the Ultrasound outlet.

Sites with a mains power system without a defined Neutral:

The dedicated line shall consist of one phase (two lines), not shared with any other circuit, and a full size ground wire from the distribution panel to the Ultrasound outlet.

NOTE: Please note that image artifacts can occur, if at any time within the facility, the ground from the main facility's incoming power source to the Ultrasound system is only a conduit.

2-2-3-2 Electrical requirements for the Ultrasound system

In the table below, the electrical specifications for the Ultrasound system includes monitor and on board peripherals.

Table 2-3: Electrical Specifications for Versana Premier system

Voltage	Tolerance	Power Consumption	Frequency
100-240 VAC	±10%	Max. 450VA	50/ 60HZ

2-2-3-3 Site power outlets

A dedicated AC power outlet must be within reach of the Ultrasound system without extension cords. Other outlets adequate for the external peripherals, medical and test equipment needed to support this Ultrasound system must also be present within 1 m (3.2 ft.) of the Ultrasound system. Electrical installation must meet all current local, state, and national electrical codes.

2-2-3-4 Site circuit breaker

It is recommended that the branch circuit breaker for the Ultrasound system be readily accessible.



CAUTION

POWER OUTAGE MAY OCCURE.

The Versana Premier requires a dedicated single branch circuit. To avoid circuit overload and possible loss of critical care equipment, make sure you **DO NOT** have any other equipment operating on the same circuit.

2-2-3-5 Site power outlets

A dedicated AC power outlet must be within reach of the Ultrasound system without extension cords. Other outlets adequate for the external peripherals, medical and test equipment needed to support this Ultrasound system must also be present within 1 m (3.2 ft.) of the Ultrasound system. Electrical installation must meet all current local, state, and national electrical codes.

2-2-3-6 Unit power plug

If the Ultrasound system arrives without a power plug, or with the wrong plug, you must contact your GE dealer or the installation engineer must supply what is locally required.



2-2-3-7 Power stability requirement

Table 2-4: Power stability requirement

IEC 61000-4-11 Voltage dips, short interruptions and voltage variations on mains supply	< 5%T (> 95% dip) for 0.5 cycle;	< 5%T (> 95% dip) for 0.5 cycle;	Mains power quality should be that of a typical commercial or hospital environment.
	40%T (60% dip) for 5 cycles;	40%T (60% dip) for 5 cycles;	
	70%T (30 dip) for 25 cycles;	70%T (30 dip) for 25 cycles;	
	< 5%T (>95% dip) for 5 sec	< 5%T (>95% dip) for 5 sec	

2-2-4 EMI limitations

Ultrasound systems are susceptible to Electromagnetic Interference (EMI) from radio frequencies, magnetic fields, and transients in the air or wiring. They also generate EMI. The Ultrasound system complies with limits as stated on the EMC label. However there is no guarantee that interference will not occur in a particular installation.

Possible EMI sources should be identified before the Ultrasound system is installed.

Electrical and electronic equipment may produce EMI unintentionally as the result of a defect. Some of these sources include:

- medical lasers
- scanners
- cauterizing guns
- computers
- monitors
- fans
- gel warmers
- microwave ovens
- light dimmers
- mobile phones
- in-house wireless phones (DECT phones)
- wireless computer keyboard and mouse
- air conditioning system
- High Frequency (HF) surgery equipment
- general AC/DC adapters
- portable phones

The presence of a broadcast station or broadcast van may also cause interference.

See: [2-2-4-1 'EMI prevention/abatement' on page 2-10](#) for EMI prevention tips.



2-2-4-1 EMI prevention/abatement

Table 2-5: EMI prevention/abatement

EMI RULE	DETAILS
Be aware of Radio Frequency sources	<ul style="list-style-type: none">• Keep the Ultrasound system at least 5 meters (15 feet) away from other EMI sources.• Special shielding may be required to eliminate interference problems caused by high frequency, high powered radio or video broadcast signals.
Ground the Ultrasound system	Poor grounding is the most likely reason an Ultrasound system will have noisy images. Check grounding of the power cord and power outlet.
Replace all screws, Radio Frequency gaskets, covers, cores	<ul style="list-style-type: none">• After you finish repairing or updating the Ultrasound system, replace all covers and tighten all screws.• Any cable with an external connection requires a magnet wrap at each end.• Install all covers. Loose or missing covers or Radio Frequency gaskets allow radio frequencies to interfere with the ultrasound signals.
Replace broken Radio Frequency gaskets	If more than 20% or a pair of the fingers on an Radio Frequency gasket are broken, replace the gasket. Do not turn on the Ultrasound system until any loose metallic part is removed.
Do not place labels where Radio Frequency gaskets touch metal	Where applicable, never place a label where Radio Frequency gaskets meet the Ultrasound system. Otherwise, the gap created will permit Radio Frequency leakage. Or, if a label has been found in such a position, move the label.
Use GE specified harnesses and peripherals	The interconnect cables are grounded and require ferrite beads and other shielding. Also, cable length, material, and routing are all important; do not change from what is specified.
Take care with cellular phones	Cellular phones may transmit a 5 V/m signal; that could cause image artifacts.
Properly route peripheral cables	Where applicable, do not allow cables to lie across the top of the Card Rack or hang out of the peripheral bays. Loop the excess length for peripheral cables inside the peripheral bays. Attach the monitor cables to the frame.

2-2-5 Probes environmental requirements

2-2-5-1 Operation, storage and transport temperatures for probes

Probes should be operated, stored, or transported within the parameters outlined below.



CAUTION

Ensure that the probe face temperature does not exceed the normal operation temperature range.

Table 2-6: Probe Environmental Requirements

	Operational	Storage	Transport
Temperature	10° - 40° C 50° - 104° F	-5° - 50° C 23° - 122° F	-5° - 50° C 23° - 122° F
Humidity	30 - 80% non-condensing	10 - 90% non-condensing	10 - 90% non-condensing
Pressure	700 - 1060hPa	700 - 1060hPa	700 - 1060hPa



CAUTION

Check the room temperature before you use the probe.



CAUTION

Ensure that the probe face temperature does not exceed the normal operation temperature range.

NOTE: Refer to [Table 2-1 on page 2-3](#) to determine the needed settlement time.

2-2-6 Time and manpower requirements

Site preparation takes time. Begin site preparation checks as soon as possible, if possible, six weeks before delivery, to allow enough time to make any changes.



2-3 Facility needs

2-3-1 Contents in this section

- 2-3-2 'Purchaser responsibilities' on *page 2-13*
- 2-3-3 'Required facility needs' on *page 2-14*
- 2-3-4 'Desirable features' on *page 2-15*
- 2-3-5 'Minimal floor plan suggestion' on *page 2-16*
- 2-3-6 'Recommended floor plan suggestion' on *page 2-17*
- 2-3-7 'Suggested floor plan, Ultrasound system, and EchoPAC PC in same room' on *page 2-18*
- 2-3-8 'Networking setup requirements' on *page 2-18*



2-3-2 Purchaser responsibilities

The work and materials needed to prepare the site is the responsibility of the purchaser. Delay, confusion, and waste of manpower can be avoided by completing pre-installation work before delivery. Purchaser responsibility includes:

- Procuring the materials required
- Completing the preparations before delivery of the Ultrasound system
- Paying the costs for any alterations and modifications not specifically provided in the sales contract

NOTE: *All electrical installations that are preliminary to the positioning of the equipment at the site prepared for the equipment must be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations, and testing must also be performed by qualified personnel. The products involved (and the accompanying electrical installations) are highly sophisticated and special engineering competence is required. All electrical work on these products must comply with the requirements of applicable electrical codes. The purchaser of GE equipment must only utilize qualified personnel to perform electrical servicing on the equipment.*

The desire to use a non-listed or customer provided product or to place an approved product further from the Ultrasound system than the interface kit allows, presents challenges to the installation team. To avoid delays during installation, such variances should be made known to the individuals or group performing the installation at the earliest possible date (preferably prior to the purchase).

The ultrasound suite must be clean prior to delivery of the Ultrasound system. Carpet is not recommended because it collects dust and creates static. Potential sources of EMI (electromagnetic interference) should also be investigated before delivery. Dirt, static, and EMI can negatively impact Ultrasound system reliability.



2-3-3 Required facility needs

NOTE: GE requires a dedicated power and ground for the proper operation of its Ultrasound equipment. This dedicated power shall originate at the last distribution panel before the Ultrasound system.

Sites with a mains power system with defined Neutral and Live:

The dedicated line shall consist of one phase, a neutral (not shared with any other circuit), and a full size ground wire from the distribution panel to the Ultrasound outlet.

Sites with a mains power system without a defined Neutral:

The dedicated line shall consist of one phase (two lines), not shared with any other circuit, and a full size ground wire from the distribution panel to the Ultrasound outlet.



2-3-3 Required facility needs(continued)

NOTE: *Please note that image artifacts can occur, if at any time within the facility, the ground from the main facility's incoming power source to the Ultrasound unit is only a conduit.*

- Dedicated single branch power outlet of adequate amperage meeting all local and national codes which is located less than 2.5 m (8 ft.) from the unit's proposed location
- Door opening is at least 76 cm (30 in) wide
- Proposed location for unit is at least 0.5m (1.5 ft.) from the wall for cooling
- Power outlet and place for any external peripheral are within 2 m (6.5 ft.) of each other with peripheral within 1 m of the unit to connect cables.
- Power outlets for other medical equipment.
- Power outlets for test equipment within 1 m (3.2 ft.) of Ultrasound system.
- Clean and protected space to store probes (in their cases or on a rack)
- Material to safely clean probes (done with a plastic container, never metal)

For the amperage requirements, see: [2-2-3 'Electrical requirements' on page 2-6.](#)

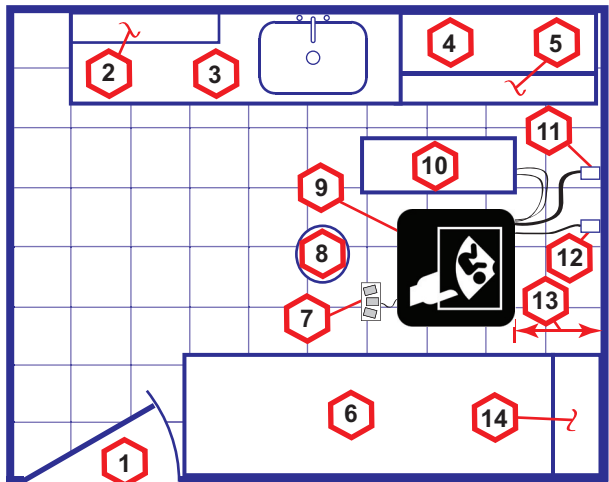
2-3-4 Desirable features

- Door is at least 92 cm (3 ft.) wide
- Circuit breaker for dedicated power outlet is easily accessible
- Sink with hot and cold water
- Receptacle for bio-hazardous waste, like used probe sheaths
- Emergency oxygen supply
- Storage for linens and equipment
- Nearby waiting room, lavatory, and dressing room
- Dual level lighting (bright and dim)
- Lockable cabinet ordered by GE for its software and proprietary manuals



2-3-5 Minimal floor plan suggestion

CSI 8x10



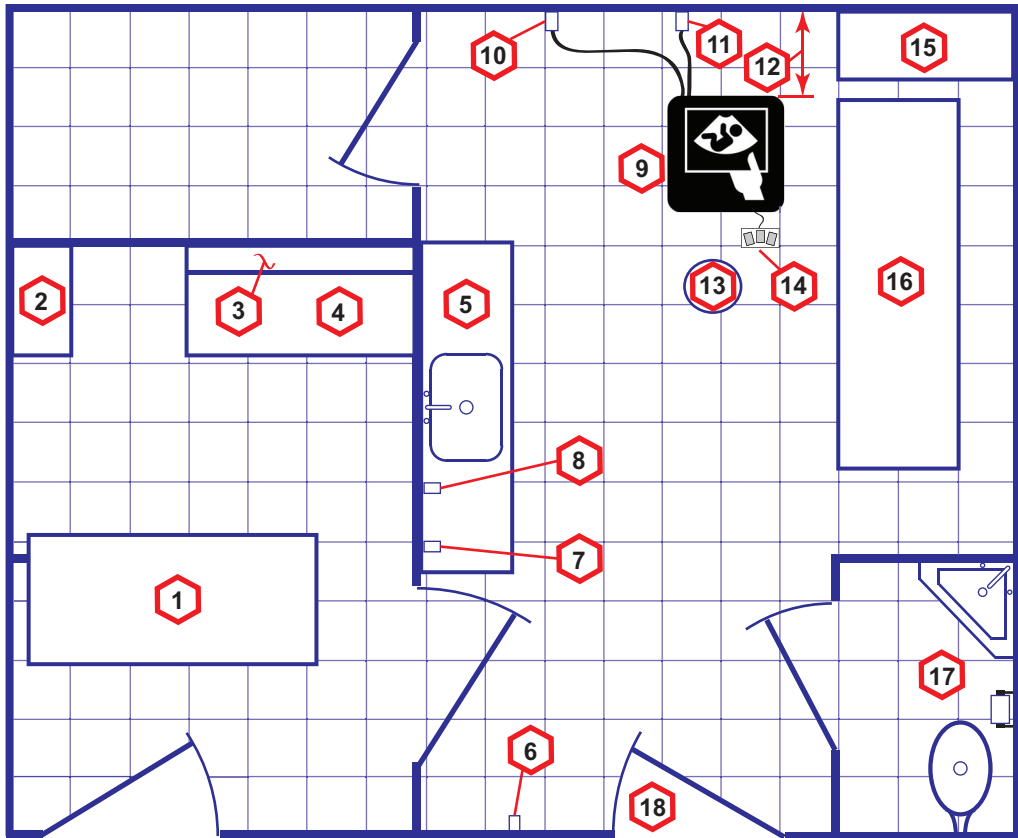
Scale:
Each square equals one square
foot (app. 31 x 31 cm)

- | | | |
|---|--|---|
| 1. Door – at least 762 mm (30 inches) | 6. Examination Table – 1930 x 610 mm (76 x 24 inches) | 12. Network Interface |
| 2. Film Viewer | 7. Footswitch | 13. 457 mm (18 inches) distance of Ultrasound system from wall or objects |
| 3. Counter Top, Sink with hot and cold water and Supplies Storage | 8. Stool | 14. GE Cabinet for Software and Manuals |
| 4. Linen Supply | 9. Ultrasound system | |
| 5. Probes/Supplies | 10. External Peripherals | |
| | 11. Dedicated Power Outlet - Circuit Breaker protected and easily accessible | |

Figure 2-1. Minimal floor plan, 2.5 m x 3 m (8 by 10 foot)

2-3-6 Recommended floor plan suggestion

CSI 14x17



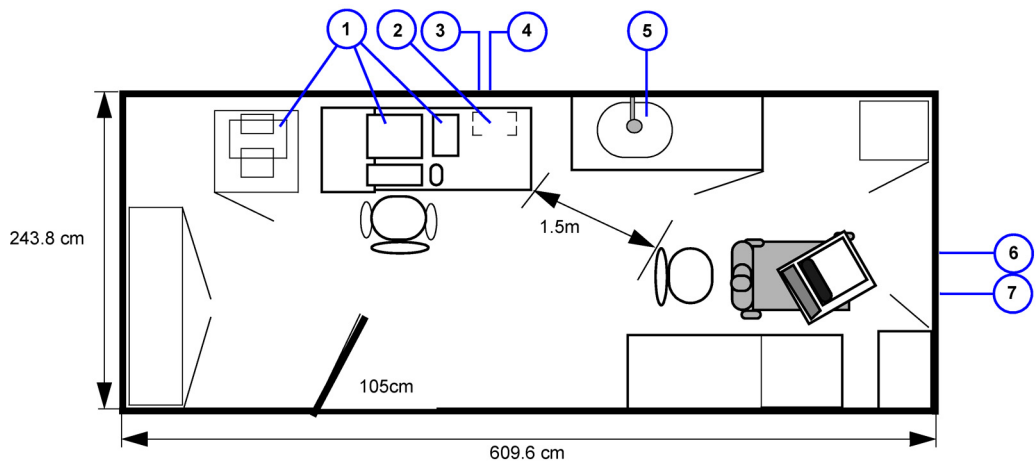
Scale: Each square equals one square foot (app. 31 x 31 cm)

- | | | |
|--|--|--|
| 1. Secretaries or Doctors Desk | 8. Suction Line | 14. Footswitch |
| 2. File Cabinet | 9. Ultrasound system | 15. Storage for Linens and Equipment |
| 3. Film Viewer | 10. Dedicated Power Outlet - Circuit Breaker protected and easily accessible | 16. Examination Table – 1930 x 610 mm (76 x 24 inches) |
| 4. Counter Top | 11. Network Interface | 17. Lavatory and Dressing Room |
| 5. Counter Top and Sink with hot and cold water | 12. 457 mm (18 inches) distance of Ultrasound system from wall or objects | 18. Door – at least 762 mm (30 inches) |
| 6. Overhead Lights Dimmer - Dual Level Lighting (bright and dim) | 13. Stool | |
| 7. Emergency Oxygen | | |

Figure 2-2. A 14 by 17 foot recommended floor plan



2-3-7 Suggested floor plan, Ultrasound system, and EchoPAC PC in same room



- | | | |
|---------------------------------|---------------------------------|---------------------------------|
| 1. EchoPAC PC workstation parts | 4. 3x mains power outlets | 7. Ethernet network wall outlet |
| 2. UPS | 5. Hot and Cold water | |
| 3. Ethernet network wall outlet | 6. Dedicated mains power outlet | |

Figure 2-3. Suggested Room with EchoPAC PC workstation and Ultrasound Scanner

2-3-8 Networking setup requirements

2-3-8-1 Stand alone Ultrasound system (without network connection)

None.

2-3-8-2 Scanner connected to hospital's network

Supported networks:

100/1000 Mbit Ethernet/DICOM network (option)

2-3-8-3 InSite requirements

InSite requires an Ethernet connection via:

- 100/1000 Mbit Interface

2-3-8-4 Purpose of the DICOM network function

DICOM services provide the operator with clinically useful features for moving images and patient information over a hospital network.

Examples of DICOM services include the transfer of images to workstations for viewing or transferring images to remote printers.

As an added benefit, transferring images in this manner frees up the on-board monitor and peripherals, enabling viewing to be done while scanning continues.

With DICOM, images can be archived, stored, and retrieved faster, easier, and at a lower cost.



2-3-8-5 DICOM option setup requirements

To configure the Ultrasound system to work with other network connections, the site's network administrator must provide information to complete the form "Worksheet for DICOM Network Information". Ensure that there are no spaces in any field of the form.

See:

Entries must include:

- A host name, local port number, AE Title, IP address and Net Mask for the Ultrasound system.
- The IP addresses for the default gateway and other routers at the site for ROUTING INFORMATION.
- The host name, IP address, port and AE Title for each device the site wants connected to the Ultrasound system for DICOM APPLICATION INFORMATION. A field for the make (manufacturer) and the revision of the device, is also included. This information may be useful for error solving.

The screenshot displays the GE Healthcare Ultrasound system's configuration interface. At the top, the 'Service' tab is selected among others like TCP/IP, Device, Dataflow, Button, Removable Media, Miscellaneous, Bluetooth, and Tricify. The interface is divided into several sections:

- Destination Device:** A dropdown menu showing 'NewDevice'.
- Dicom Worklist:** A section with a dropdown menu and an 'Add' button.
- Service:** A list of services including 'Dicom Image Storage', 'Dicom Storage Commitment', and 'Dicom Worklist' (which is highlighted). There are 'Remove' and 'Verify' buttons, along with a 'Verify Timeout (sec)' dropdown set to 10.
- Properties:** A table for configuring the selected service.
- Search Criteria:** A section for adding search criteria, showing tags like '00080060 Modality' and '00400002 Scheduled Procedure Step Start Date'.
- Properties Table:**

Value	US
Don't Use	<input type="checkbox"/>

Figure 2-4. Worksheet for DICOM Network Information



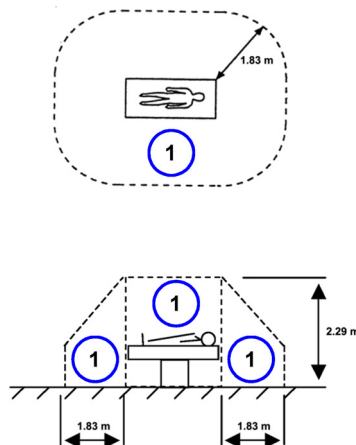
2-4 Environmental Dangers

Commercial devices such as laser cameras, printers, VCRs and external monitors, usually exceed allowable leakage current limits and, when plugged into separate AC outlets, are in violation of patient safety standards. Suitable electrical isolation of such external AC outlets, or providing the device with extra protective earth, will be required in order to meet UL60601-1 and IEC60601-1 / IEC60601-1-1 standards for electrical leakage.

2-4-1 Patient Vicinity UL60601-1 (USA)

2.12.20DV (UL60601-1:2003)

In area in which patients are normally cared for, the patient vicinity is the space with surfaces likely to be contacted by the patient or attendant who can touch the patient. This encloses a space within the room 1.83 m (6 ft.) beyond the perimeter of the bed (examination table, dental chair, treatment booth, and the like) in its intended location, and extending vertically 2.29 m (7.5 ft.) above the floor.



1. Patient environment



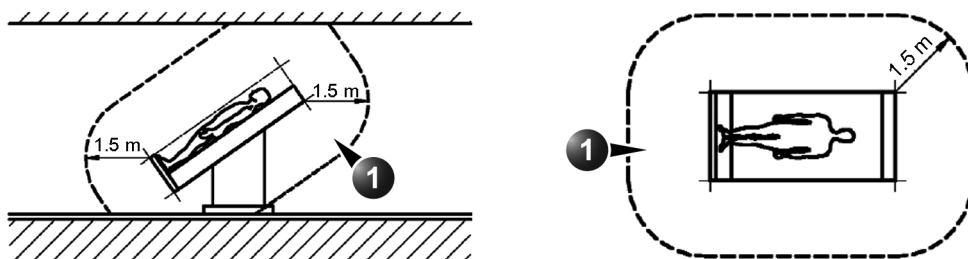
2-4-2 Patient Environment IEC60601-1 and ANSI AAMI ES60601-1

Sub Clause 3.79 and figure A.9 (IEC60601-1:2005 and ANSI AAMI ES60601-1:2005)

Such an area is an environment in which medical diagnosis, monitoring or treatment is carried out. It is very difficult to attach unique dimensions to the PATIENT ENVIRONMENT.

In practice a distance of 2,5 m (8.2 ft.) above the floor on which the medical personnel stand and a horizontal distance of 1,5 m (4.9 ft.) have justified themselves as indicative of the dimensions of the Patient Environment.

The patient environment/vicinity will be depicted as a dashed line in this procedure. See example below.



1. Patient environment

Figure 2-5. Patient environment



Chapter 3

System Setup

This chapter contains information needed to install Versana Premier system.

Included is a procedure that describes how to receive and unpack the equipment and how to file a damage or loss claim.

How to prepare the facility and unit of the actual installation, and how to check and test the unit, probes, and external peripherals for electrical safety are also included in this procedure.



3-1 Overview

3-1-1 Contents in this chapter

- 3-1 'Overview' on *page 3-2*
- 3-2 'Setup reminders' on *page 3-3*
- 3-3 'Receiving and unpacking the equipment' on *page 3-6*
- 3-5 'Preparing for setup' on *page 3-19*
- 3-6 'Completing the setup' on *page 3-20*
- 3-7 'System Configuration' on *page 3-25*
- 3-8-3 'Peripherals Installation Instructions' on *page 3-31*
- 3-9 'Connectivity setup' on *page 3-67*
- 3-11 'Paperwork after setup' on *page 3-99*



3-2 Setup reminders

3-2-1 Average setup time

- Unpacking the Versana Premier: 30 minutes
- Set up Versana Premier options: 30 minutes
- DICOM Network Configuration: 30 minutes or more, depending on the configuration
- Install Insite: 0.5 hour

The Versana Premier installation and functional checkout will take approximately 1 hour. Versana Premier consoles with optional equipment may take slightly longer.

3-2-2 Setup warnings



^d DANGER

WHEN USING ANY TEST INSTRUMENT THAT IS CAPABLE OF OPENING THE AC GROUND LINE (I.E., METER'S GROUND SWITCH IS OPEN), DON'T TOUCH THE ULTRASOUND SYSTEM!



^c CAUTION

To prevent electrical shock, connect the unit to a properly grounded power outlet. **DO NOT** use a three to two prong adapter. This defeats safety grounding.



^c CAUTION

DO NOT wear the ESD wrist strap when you work on live circuits and more than 30 V peak is present.



^c CAUTION

DO NOT operate this unit unless all board covers and frame panels are securely in place. System performance and cooling require this.



3-2-2 Setup warnings(continued)

- 1. There are no operator serviceable components. To prevent shock, do not remove any covers or panels. Should problems or malfunctions occur, unplug the power cord. Only qualified service personnel should carry out servicing.

NOTE: For information regarding packing labels, refer to LABELS ON PACKAGE.

- 2. After being transported, the unit may be very cold or hot. If this is the case, allow the unit to acclimate before you turn it on. It requires one hour for each 2.5°C increment it's temperature is below 3°C or above 40°C.



DANGER Equipment damage possibility. Turning the system on without acclimation after arriving at site may cause the system to be damaged.



CAUTION If the Ultrasound system is very cold or hot, do not turn on its power until it has had a chance to acclimate to its operating environment.

The following table describes guidelines for reaching operational temperatures from storage or transport temperatures.

Table 3-1: System Acclimation Time Chart

Degree C	50	45	40	35	30	25	20	15	10	5	0	-5
Degree F	122	113	104	95	86	77	68	59	50	41	23	23
hours	4	2	0	0	0	0	0	0	0	2	4	6

3-2-2 Setup warnings(continued)



CAUTION

Operator Manual(s)

The User Manual(s) should be fully read and understood before operating the Versana Premier and kept near the Ultrasound system for quick reference.



CAUTION

Acoustic Output Hazard

Although the ultrasound energy transmitted from the Versana Premier probe is within AIUM/NEMA standards, avoid unnecessary exposure. ultrasound energy can produce heat and mechanical damage.



3-3 Receiving and unpacking the equipment

3-3-1 Purpose of this section

This section describes how to receive and unpack Versana Premier.

3-3-2 Contents in this section

- [3-3-3 'Warnings for receiving and unpacking' on page 3-6](#)
- [3-3-4 'The Tilt indicator' on page 3-7](#)
- [3-3-5 'Receiving the Versana Premier' on page 3-8](#)
- [3-3-6 'Unpacking the Versana Premier' on page 3-14](#)

3-3-3 Warnings for receiving and unpacking



CAUTION

Two people are needed to unpack the Ultrasound system because of its weight. Attempts to move the Ultrasound system considerable distances or on an incline by one person could result in injury or damage or both.

Two people are required whenever a part weighing 16 KG (35 LBS) or more must be lifted.



CAUTION

Remember to use relevant personal protecting equipment (PPE) during packing and unpacking. Check with your local EHS representative.


3-3-4 The Tilt indicator

3-3-4-1 Overview

Improper handling during transportation may harm the equipment inside the package even if the package itself is undamaged.

To make it easier to detect if the handling during transportation has been improper, a set of Tilt indicator has been attached to the transportation box.

Table 3-2: Tilt Watch

Description	Illustration
Tilt Watch	





3-3-5 Receiving the Versana Premier

3-3-5-1 Examine all packages

Examine package closely at time of delivery, as described in the procedure below.

Table 3-3: Examine all packages

Step	Task	Illustrations
1.	Is damage apparent? <ul style="list-style-type: none">• If YES; continue with the instructions in 3-3-5-4 'Damage in transportation' on page 3-11.• If NO; continue with the next step.	
2.	Is the Tilt Indicator red colored inside the middle of the indicator? <ul style="list-style-type: none">• If YES: The Tilt Indicator has been activated. Continue with the instructions in 3-3-5-4 'Damage in transportation' on page 3-11 before you continue with the next step.• If NO: continue with the next step.	<div></div> <div>1 - Red Color</div>
3.	Continue with the instructions in 3-3-6 'Unpacking the Versana Premier' on page 3-14 .	

3-3-5-2 Position of the Tilt indicator

The Tilt indicator has been attached to the transportation box as illustrated in the figure below.

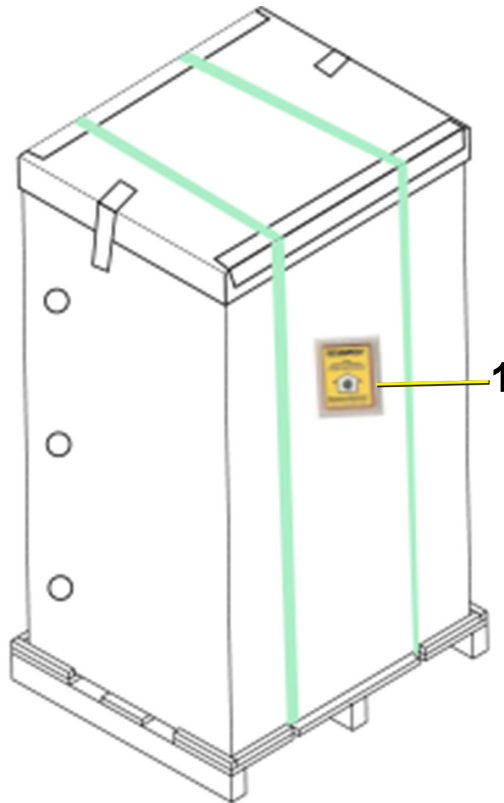


Figure 3-1. Tilt indicator

1. Tilt Indicator

NOTE: Before cutting the straps, check Tilt Tag to make sure it has not been triggered. If damaged, report it to the carrier. If not, then cut the straps around the crate.



3-3-5-3 If Tilt Indicator has triggered or is missing

The purpose of the tilt indicator label is to alert people handling a product that it is sensitive to tipping and it must remain upright at all times. It is basically an active "Up Arrow" that changes color if the package is tipped 89 degrees or more from horizontal. These labels can be false activated if tipped less than 89 degrees, and shocked or vibrated at the same time. This event does occur, but is considered uncommon. If a package is received with an activated tilt indicator label, there is high degree of certainty it tipped 89 degrees or more from horizontal during shipment.

An activated tilt indicator label does not indicate if the package was simply "Tipped" (laid down with no impact shock) or "Tipped Over" (free fall, with an impact shock). Using both shock indicator labels and tilt indicator labels will help identify if a Tip Over impact shock occurred.

Table 3-4: Tilt Indicator has triggered or is missing

Step	Task
1.	<p>If the Tilt Indicator is missing:</p> <p>Note on the shipping papers at the time of receipt that the Tilt Indicator label is missing.</p> <p>If the Tilt Indicator has triggered:</p> <p>Note on the shipping papers at the time of receipt that the Tilt Indicator label was activated.</p>
2.	Inspect the product for possible concealed damage.

3-3-5-4 Damage in transportation

Follow this procedure if damage is apparent:

1. Write “Damage In Shipment” on ALL copies of the freight or express bill **BEFORE** delivery is accepted or “signed for” by a GE representative or hospital receiving agent.
2. Report the damage to the carrier.
 - Whether noted or concealed, damage **MUST** be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier.
 - A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period.

3-3-5-5 Versana Premier transportation box label

The Versana Premier transportation box label is located at the front of the transportation box.



Figure 3-2. Versana Premier transportation box label 1

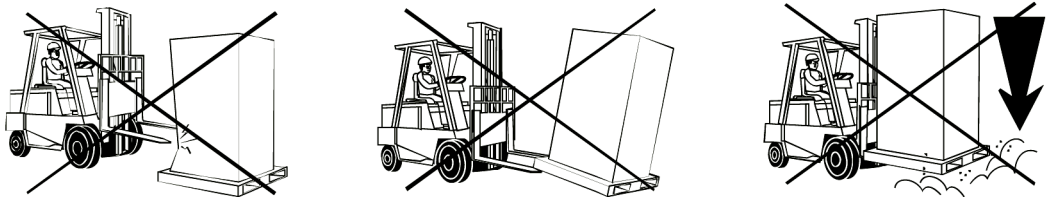


Figure 3-3. Versana Premier transportation box label 2



3-3-5-5 Versana Premier transportation box label(continued)

Table 3-5: Package Label Icons

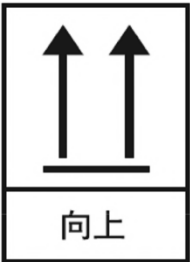



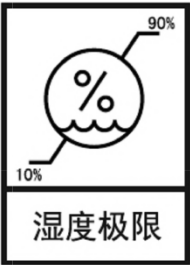
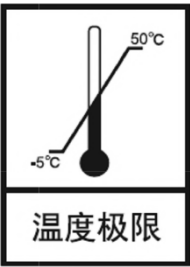
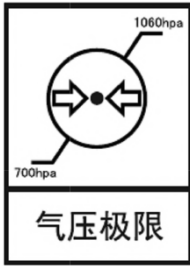
Label/Icon	Purpose/Meaning	Location
	Keep this way up.	Package
	Fragile.	Package
	Keep it away from rain.	Package
	2 levels at most.	Package

Table 3-5: Package Label Icons

Label/Icon	Purpose/Meaning	Location
	Humidity Limitation	Package
	Temperature Limitation	Package
	Pressure Limitation	Package



3-3-6 Unpacking the Versana Premier

When a new system arrives, check that any components are not damaged and are not in short supply. If shipping damage or shortage occurs, contact the address shown in Chapter 1.



Please carefully unpack the system, and do not dispose the package of Versana Premier, so that it can be reused for service.



Do not lift the unit by the Keyboard. Equipment damage may result.



The crate with the Versana Premier weighs approximately 50kg. Be prepared for a sudden shift of weight as the unit is removed from its base (pallet).

NOTE: Please check the Versana Premier console is well assembly after unpacking the system.

Table 3-6: Unpacking the Versana Premier


Step	Description	Corresponding Graphic
1	Tear off the "stop open" mark.	

Table 3-6: Unpacking the Versana Premier



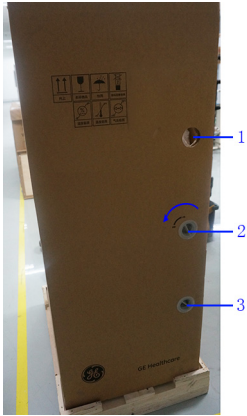

Step	Description	Corresponding Graphic
2	<p>Cut off the two packing straps around the crate.</p> <p><i>Note: To avoid injury, hold the strap clasp with one hand when cutting the strap.</i></p>	
3	<p>Remove the top cover.</p>	
4	<p>Remove the three plastic locks.</p> <p><i>Note: Rotate the inside plastic lock counterclockwise to remove it and then remove the outside lock.</i></p>	 
5	<p>Remove the outside shipping box.</p>	



Table 3-6: Unpacking the Versana Premier






Step	Description	Corresponding Graphic
6	<p>Remove the 2 foams beside the system.</p> <p><i>Note: There is no foam if the system is transported by air. Ignore this step if there is no foam.</i></p>	
7	<p>Remove the clear plastic (wrapped around the Versana Premier) from the unit.</p>	
8	<p>Cut the cable ties around the four wheels.</p>	

Table 3-6: Unpacking the Versana Premier

Step	Description	Corresponding Graphic
9	Remove the barrier bag from the unit. <i>Note: Remove the PE bag if the system is transported by air.</i>	
10	Remove the foams beside the monitor.	
11	Remove any additional packing material surrounding the system.	
12	Unlock the wheels, and then hold the control panel at the front side to move the system until the front two wheels on the ground and then slowly move the whole system on the ground.	

3-3-6-1 Moving into Position

Please refer to Basic User Manual on how to move the system.

3-3-7 Packing the Equipment

Please pack Versana Premier in the reverse order of unpacking.



3-4 Packing materials - recycling information

The packing materials for Versana Premier are recyclable:

- The Transportation Box is made of spruce or similar material. ("PHYTOSANITARY CERTIFICATE" included in all shipments to The People's Republic of China.)
- Lever lockings (hinges) are made of zinc plated steel.
- The inner reinforcements are made of Ethafoam (Polyethylene foam).
- The plastic foil is made of LDPE (Low Density Polyethylene).



3-5 Preparing for setup

3-5-1 Verify customer order

Compare items received by the customer to that which is listed on the delivery order. Report any items that are missing, back ordered, or damaged.

3-5-2 Physical inspection

Verify that the system arrived intact (visual inspection).

If the system has been damaged, please refer to '[Damage in transportation](#)' on [page i-14](#) in the beginning of this manual.

3-5-3 EMI protection

The Versana Premier has been designed to minimize the effects of Electro-Magnetic Interference (EMI). Many of the covers, shields, and screws are provided primarily to protect the system from image artifacts caused by this interference. For this reason, it is imperative that all covers and hardware are installed and secured before the unit is put into operation.

See [2-2-4 'EMI limitations'](#) on [page 2-9](#) for more information about EMI protection.



3-6 Completing the setup

3-6-1 Purpose of this section

This section describes how to complete the installation of Versana Premier.

3-6-2 Contents in this section

- [3-6-3 'System specifications' on page 3-20](#)
- [3-6-4 'Electrical specifications' on page 3-21](#)
- [3-6-6 'Connections on the I/O Rear Panel' on page 3-24](#)
- [3-6-7 'Connecting probes' on page 3-24](#)
- [3-6-8 'Powering the system' on page 3-24](#)

3-6-3 System specifications

3-6-3-1 System requirements verification

- Verify that the site meets the requirements listed in Chapter 2.
(See: [2-3 'Facility needs' on page 2-12.](#))
- Verify that the specifications below don't conflict with any on-site conditions.

3-6-3-2 Physical dimensions

Table 3-7: Physical dimensions of Versana Premier

Height	Width	Depth	Unit
less than 1780	less than 620	less than 810	mm
less than 70	less than 24.4	less than 31.8	Inches

3-6-3-3 Console Weight

- Weight: approx. 70 kg (154.3 lbs)

3-6-4 Electrical specifications



WARNING

Connecting a Versana Premier to the wrong voltage level will most likely destroy it.

3-6-4-1 Verification of the system’s voltage setting

Verify that the mains voltage specified for the Versana Premier is available on-site.

Refer to the latest revision of the Basic User Manual for a full list of product labels prior to serving the system.

3-6-4-2 Electrical specifications for Versana Premier

In the table below, the electrical specifications for Versana Premier includes monitor and on board peripherals.

Table 3-8: Electrical specifications for Versana Premier

Model Name	Voltage	Tolerances	Power consumption	Frequency
Versana Premier VA	100-240V	±10%	Max.450VA	50/60 Hz
Versana Premier VS				



3-6-5 Peripherals/Accessories Connector Panel

Versana Premier peripherals and accessories can be properly connected using the side connector panel.

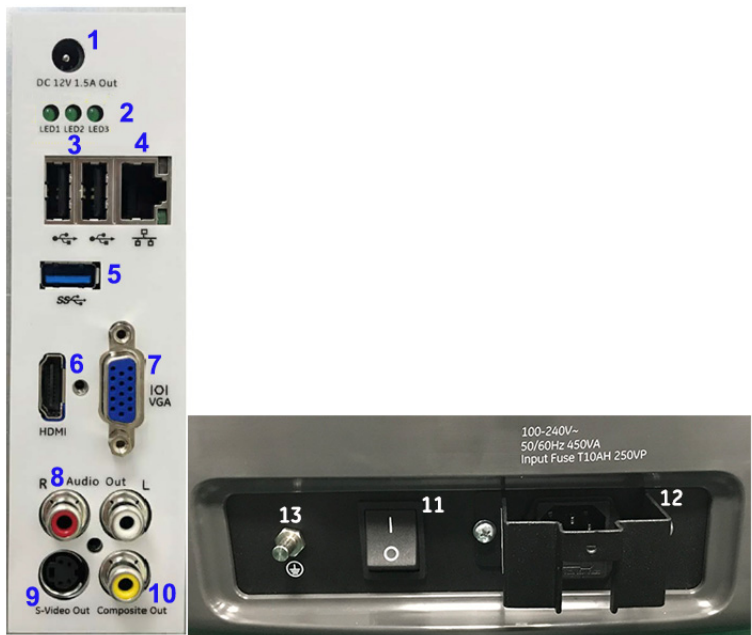


Figure 3-4. Rear Connector Panel

1.	Power out port	DC 12V 1.5A Out (Only for Digital Box in China)
2.	Diagnostic LED	Diagnostic LED 1, Diagnostic LED 2, Diagnostic LED 3
3.	Dual USB port	USB for use
4.	Ethernet	10/100MBase-T for LAN connectivity
5.	USB port	USB 3.0 Port for use
6.	HDMI port	For video port (Resolution 1920x1080)
7.	VGA	VGA Video Out
8.	Audio Line Out	Audio Line Out
9.	S-Video	S-Video Out
10.	Composite Out	Composited Video Out
11.	Circuit breaker	Circuit breaker
12.	AC Inlet	100-240V
13.	GND	Ground terminal

3-6-5-1 Pin assignment for each connector

Table 3-9: Pin Assignments of External VGA

Pin No.	Signal	Pin No.	Signal
1	RED	9	NC
2	GREEN	10	NC
3	BLUE	11	NC
4	NC	12	NC
5	NC	13	HSY
6	GND	14	VSX
7	GND	15	NC
8	GND		

Table 3-10: Pin Assignments of USB

Pin No.	Signal
1	+5 VDC
2	DATA
3	DATA
4	GND

Table 3-11: Pin Assignment of S-Video

Pin No.	Output Signal	Pin No.	Output Signal
1	GND	3	Y
2	GND	4	C

Table 3-12: Pin Assignment of Composite Video Out

Pin No.	Output Signal	Pin No.	Output Signal
1	Composite Out	2	GND



3-6-6 Connections on the I/O Rear Panel

NOTE: *Accessory equipment connected to the analog and digital interfaces must be certified according to the respective IEC standards (e.g. IEC60950 for data processing equipment and IEC60601-1 for medical equipment). Furthermore, all complete configurations shall comply with the valid version of the system standard IEC60601-1. Everybody who connects additional equipment to the signal input part or signal output part of Versana Premier, configures a medical system, and is therefore responsible that the Ultrasound system complies with the requirements of the valid version of IEC60601-1. If in doubt, consult the technical service department or your local representative for GE.*

3-6-6-1 Connect Ethernet

Connect the network cable to the Ethernet connector on the I/O Rear Panel.

The connector is located on the rear side of Versana Premier.

3-6-6-2 Connect USB Flash Drive

NOTE: *USB Flash Drive approved for Versana Premier are verified for EMC performance according to EN55011 class B. The use of any other USB Flash Drive will compromise this verification, and may cause interference on Versana Premier itself, or on other electronic devices.*

For approved models, please refer to Chapter 9.

Insert the USB Flash Drive in one of the USB ports on the Versana Premier.

3-6-7 Connecting probes

Please refer to Basic User Manual on how to connect/disconnect a probe.

3-6-8 Powering the system

Please refer to Basic User Manual on how to power the system.

3-7 System Configuration

3-7-1 Purpose of this section

This section describes how to configure the Versana Premier.

3-7-2 Versana Premier configuration

For complete instructions, refer to the latest revision of the Versana Premier Basic User Manual, Chapter 16.

Information includes Entering Location, Adjusting Date and Time, Selecting User interface Language, Selecting Online Manual Language, Selecting Unites of Measure.



3-7-2-1 User Configurable Key

When the system is received, please check the software option installed on the system.

- Power on the system.
- Enter **Utility -> Admin -> System Admin -> Option Information** to check the option status.

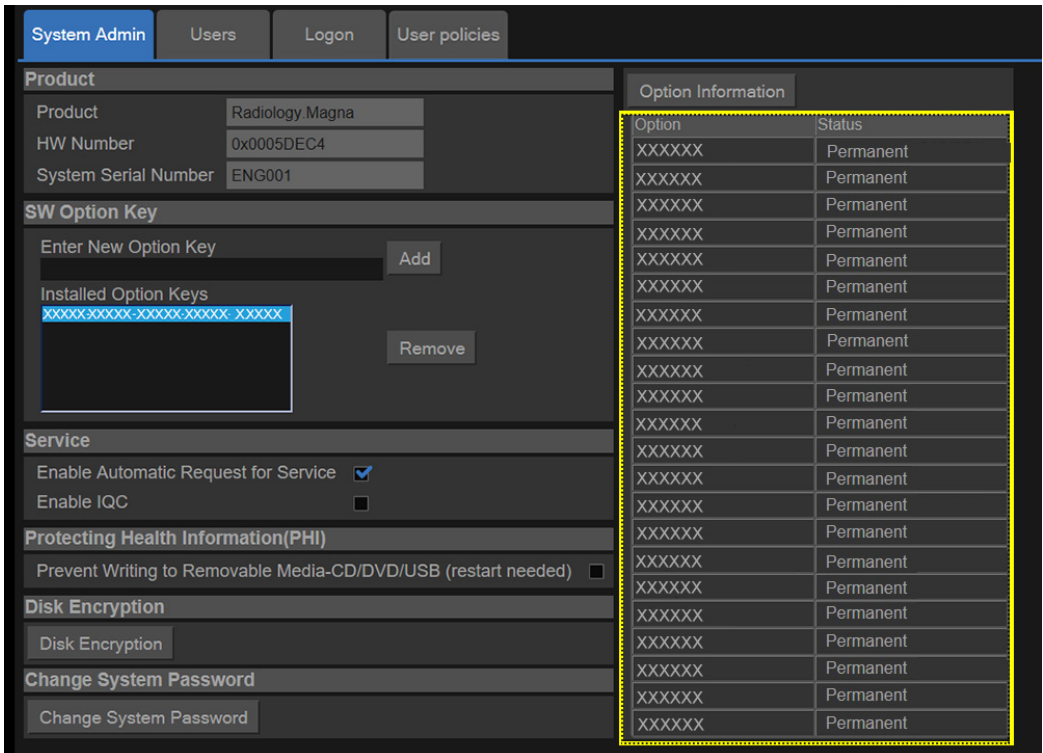


Figure 3-5. Check SW Option Status



3-7-2-1 User Configurable Key(continued)

To configure user configurable key, enter Utility-> System-> User Configurable Key and assign the user configurable key.

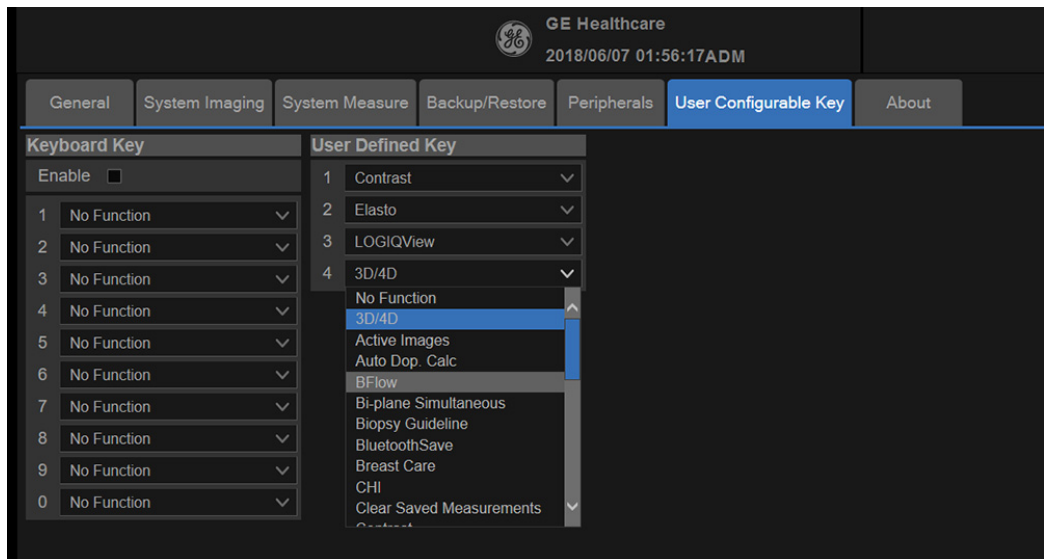


Figure 3-6. Assign User Configurable Key



3-8 Peripherals Installation

3-8-1 Overview

This section describes how to install and configure the peripherals validated for the Versana Premier.

About the operation check-out of peripherals, [See 4-4-33 'Peripheral checks' on page 4-65 for more information.](#)

Table 3-13: Versana Premier Peripherals

Description	Control	Model
B/W USB Printer	USB port	Sony UP-D898MD Printer
USB Printer	USB port	Sony UP-D898DC Printer
Color USB Printer	USB port	Sony UP-D25MD Printer
3-Pedal Footswitch	USB port	Footswitch MKF 2-MED USB GP26
1-Pedal Footswitch	USB port	Whanam FSU-1000
USB Stick	USB port	USB stick
USB HDD	USB port	1TB mobile USB HDD
ECG	ECG Port	USB ECG Module
Wireless Adaptor	USB port	Wireless Adaptor
Bluetooth Adaptor	USB port	Bluetooth Adaptor
DVD RW	USB port	DVDRW kit with SW

3-8-2 Furnished materials

This section describes the materials with the Peripherals and with the system.

Retain the original carton and packing materials in case transport is needed in the future.

- B/W USB Printer

Table 3-14: Materials furnished with B/W Printer

Item	Description	Quantity	Note
1	Sony UP-D898DC Printer	1	
2	Sony UP-D898MD Printer	1	
3	Paper Roll	1	
4	USB cable	1	

- Color USB Printer

Table 3-15: Materials furnished with Color USB Printer

Item	Description	Quantity	Note
1	Sony UP-D25MD Printer	1	
2	Paper Roll	1	
3	AC Power Cord (local purchase)	1	
4	USB cable	1	

- Printer Shelf

Table 3-16: Materials furnished with the Printer Shelf

Item	Description	Quantity	Note
1	898DC Printer Shelf	1	
2	898MD Printer Shelf	1	

- Printer USB Isolator

Table 3-17: Materials furnished with printer USB Isolator

Item	Description	Quantity	Note
1	Printer USB Isolator	1	

- USB Stick

Table 3-18: Materials furnished with USB Stick

Item	Description	Quantity	Note
1	USB Stick	1	



3-8-2 Furnished materials(continued)

- USB HDD

Table 3-19: Materials furnished with the USB HDD

Item	Description	Quantity	Note
1	USB HDD	1	
2	USB Cable	1	

- Wireless Adaptor

Table 3-20: Materials furnished with the Wireless Adaptor

Item	Description	Quantity	Note
1	1 Wireless Adaptor	1	

- Bluetooth Adaptor

Table 3-21: Materials furnished with the Bluetooth Adaptor

Item	Description	Quantity	Note
1	1 Bluetooth Adaptor	1	

- Footswitch

Table 3-22: Materials furnished with the Footswitch

Item	Description	Quantity	Note
1	1 Pedal Footswitch	1	
2	3 Pedal Footswitch	1	

- DVD RW

Table 3-23: Materials furnished with the DVD RW

Item	Description	Quantity	Note
1	DVD RW	1	
2	USB cable	1	



3-8-3 Peripherals Installation Instructions

3-8-3-1 Sony UP-D898MD Printer Installation

3-8-3-1-1 Tools

Common Phillips screwdrivers

3-8-3-1-2 Manpower

One person 20 minutes + travel.

3-8-3-1-3 Preparations

1. Unpack B/W Printer.
2. Ensure no physical damage.
3. Shut down the system and disconnect the power cord.

3-8-3-2 Installation Procedure

NOTE: *The printer driver is customized for the Versana Premier at the factory, you do not need to change the settings.*

1. Put the AC printer shelf on the bottom of the printer, and then screw 4 screws to fix the printer shelf.



Figure 3-7. Install printer to printer shelf



3-8-3-2 Installation Procedure(continued)

2. Remove the body left and right cover.

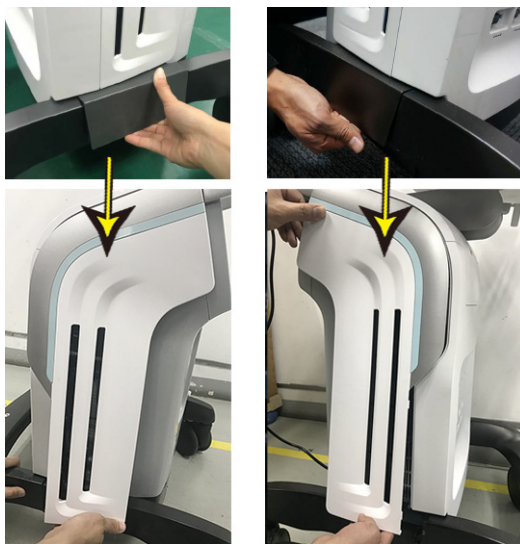


Figure 3-8. Remove body left and right cover

3. Remove both the printer cover and ECG cover.



Figure 3-9. Remove printer and ECG cover

3-8-3-2 Installation Procedure(continued)

4. Unscrew the 1 screw on each side, then remove the body 4PP/3PP cover assy.

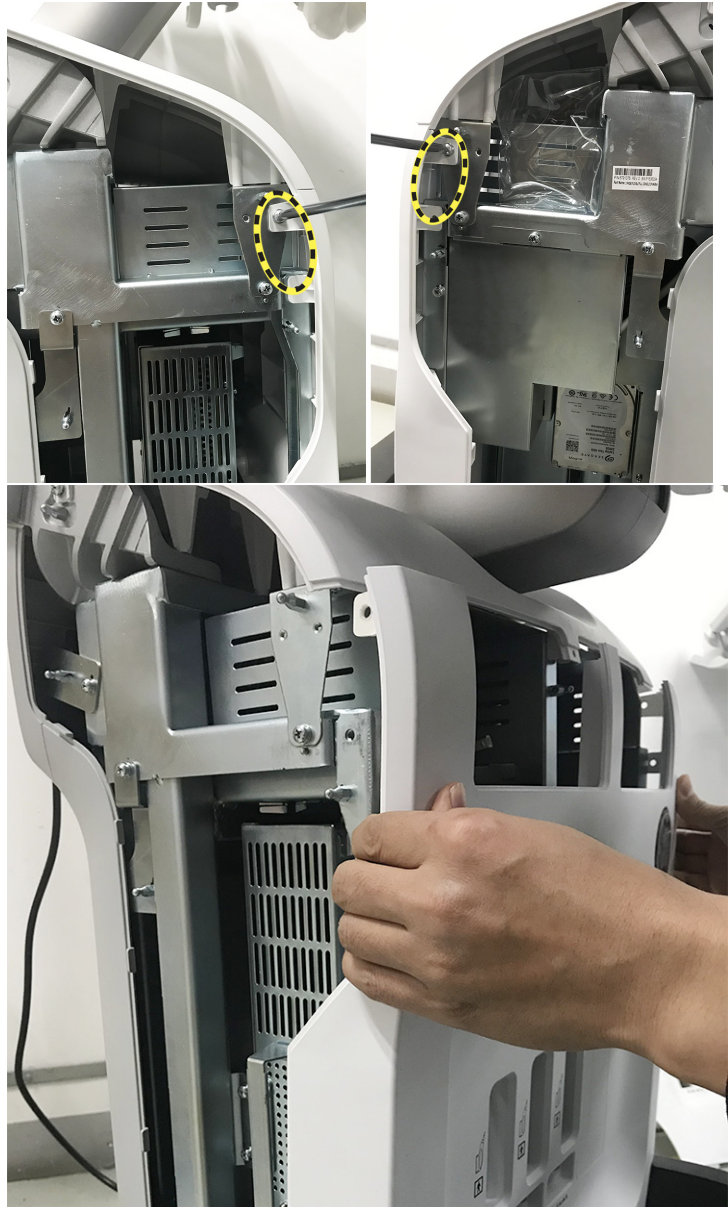


Figure 3-10. Remove body 4PP/3PP cover assy

3-8-3-2 Installation Procedure(continued)

5. Cut the cable clip and connect the USB cable connector and the AC power cable connector.

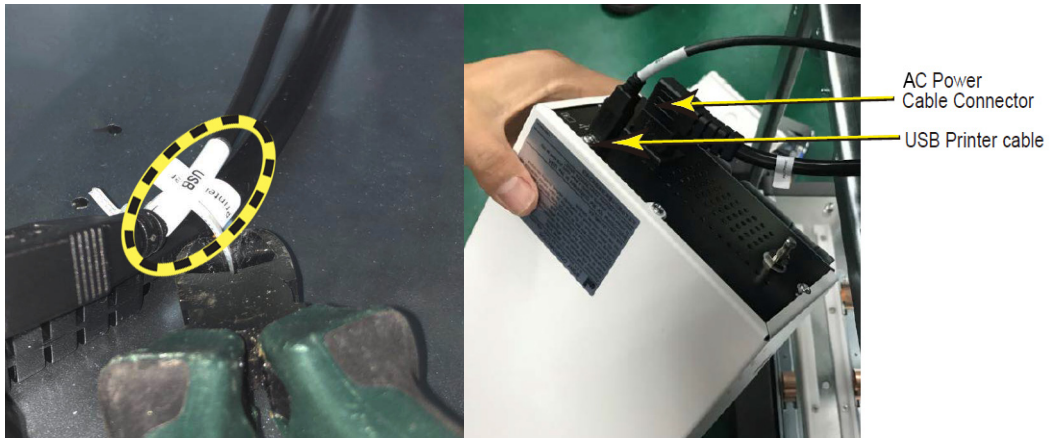


Figure 3-11. Connect printer power cable and USB cable

6. Put the AC printer into the printer box.



Figure 3-12. Insert AC printer

3-8-3-2 Installation Procedure(continued)

7. Screw the 2 screws to fix the printer.



Figure 3-13. Push the printer assembly

8. Mount the body covers and the ECG cover in the reverse order of step 2 - 4.



3-8-3-2 Installation Procedure(continued)

- 9. Power on the system.
- 10. Press **Utility** on the Control Panel.
- 11. Select **Connectivity-> Service**, add **Standard Print**.

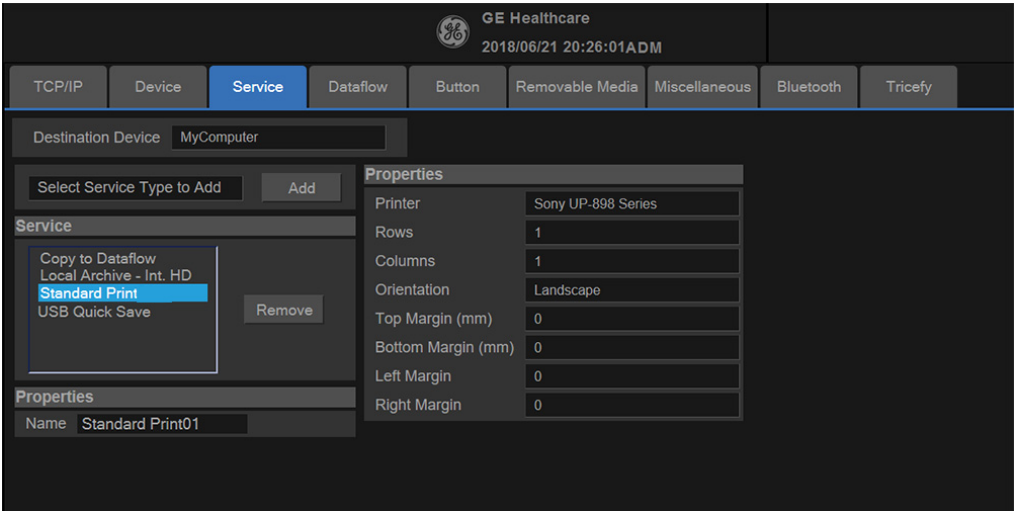


Figure 3-14. Connectivity->Service

- 12. Highlight **Standard Print** in the Service list. Select the printer from the Printer pull-down Properties menu. Type the printer name in the Name Filed. This name is used on the Button screen. Press **Save**.

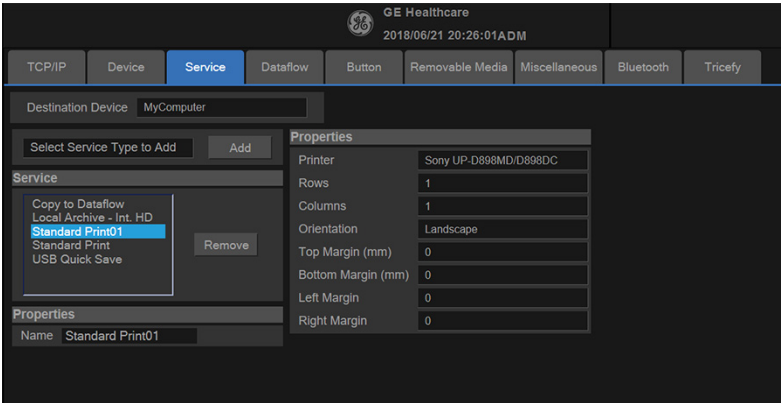


Figure 3-15. Select the Printer



3-8-3-2 Installation Procedure(continued)

13. Select **Button**. Select the appropriate print key (Print, Print3...) from the **Physical Print Buttons** selection. Select the printer from **MyComputer** column and press >> to move it to the Printflow View column. Press **Save**.

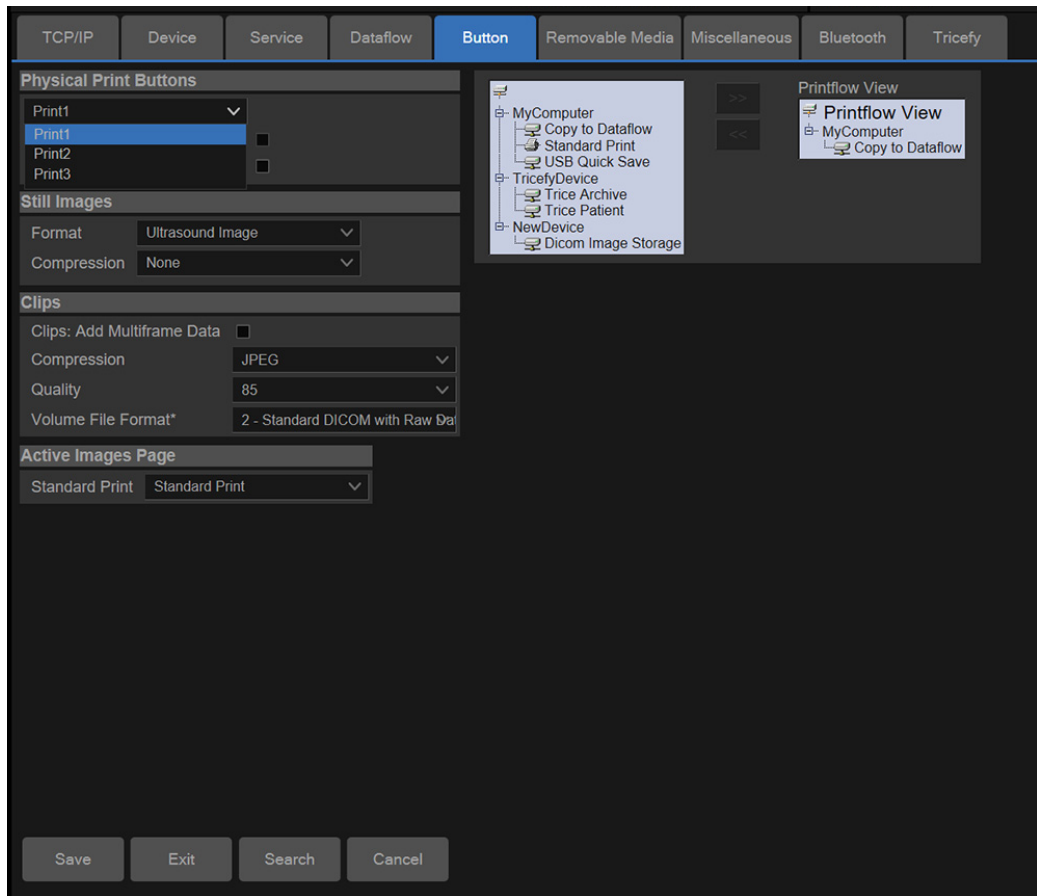


Figure 3-16. Select Button



3-8-3-3 Installation Procedure

Follow these steps to set up the paper size of the printer, take Sony UP-D898 as an example.

- Press Utility-->System-->Peripherals. Select the UP-D898 from the pull-down menu under. Then Click Properties.

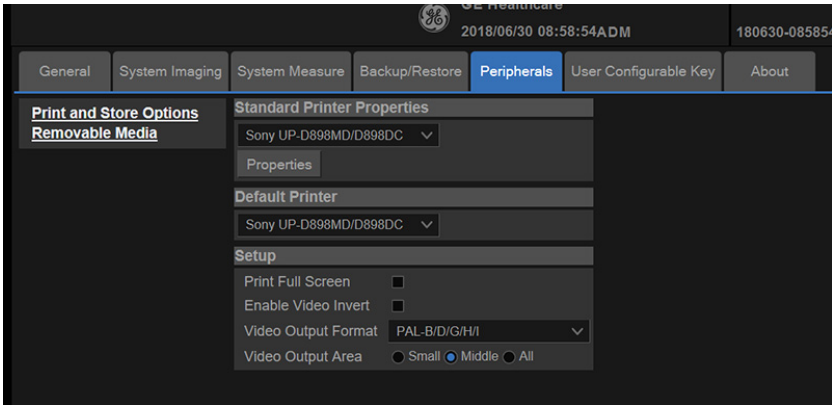


Figure 3-17. Properties

- Click Printer -> Printing Preferences at the menu of Properties Window.

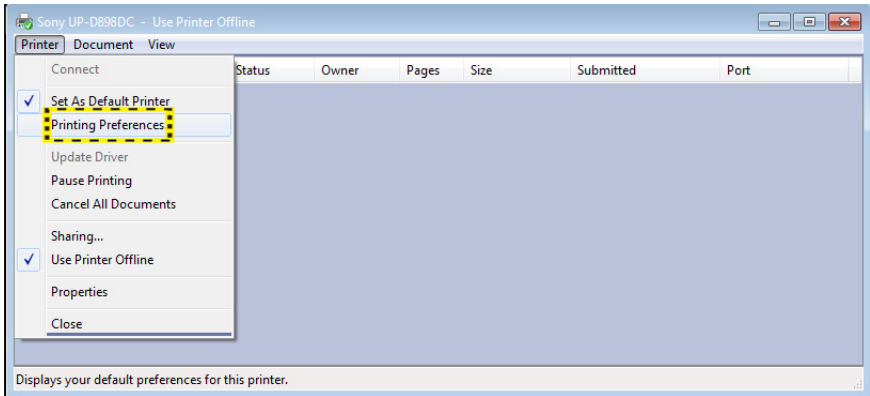


Figure 3-18. Properties



3-8-3-3 Installation Procedure(continued)

- Select Paper Size. Press Apply. Press OK.

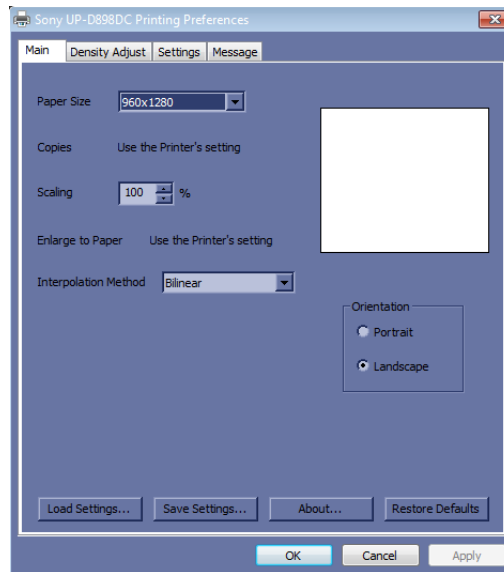


Figure 3-19. Printing Preferences

- Press Save, then Exit.



3-8-3-4 Sony UP-D898DC Printer Installation

3-8-3-4-1 Tools

Common Phillips screwdrivers

3-8-3-4-2 Manpower

One person 20 minutes + travel.

3-8-3-4-3 Preparations

1. Unpack B/W Printer.
2. Ensure no physical damage.
3. Shut down the system and disconnect the power cord.

3-8-3-5 Installation Procedure

NOTE: *The printer driver is customized for the Versana Premier at the factory, you do not need to change the settings.*

1. Put the DC printer shelf on the bottom of the printer, and then screw 4 screws to fix the printer shelf.

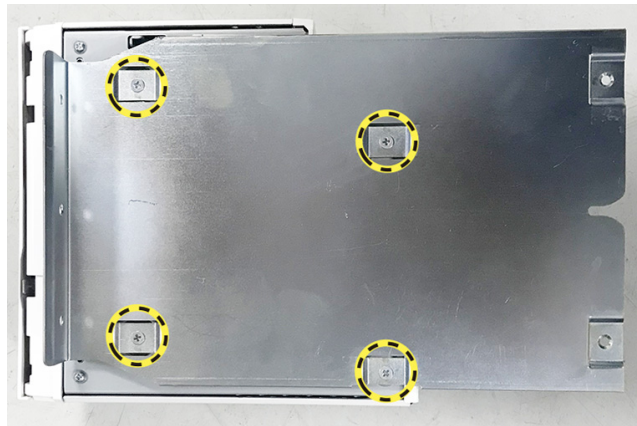


Figure 3-20. Install printer to printer shelf

3-8-3-2 Installation Procedure(continued)

2. Remove the body left and right cover.

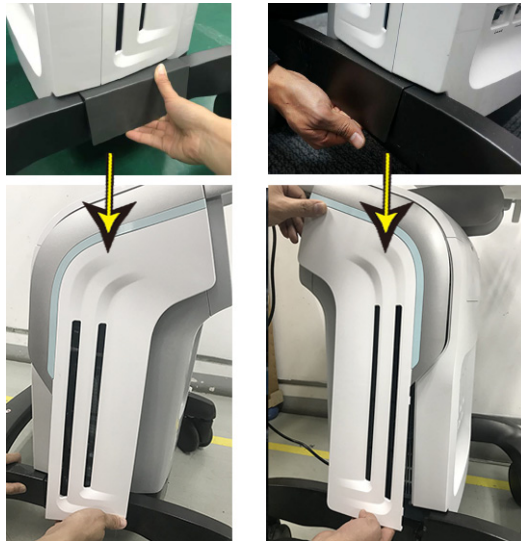


Figure 3-21. Remove body left and right cover

3. Remove both the printer cover and ECG cover.



Figure 3-22. Remove printer and ECG cover



3-8-3-2 Installation Procedure(continued)

4. Unscrew the 1 screw on each side, then remove the body 4PP/3PP cover assy.

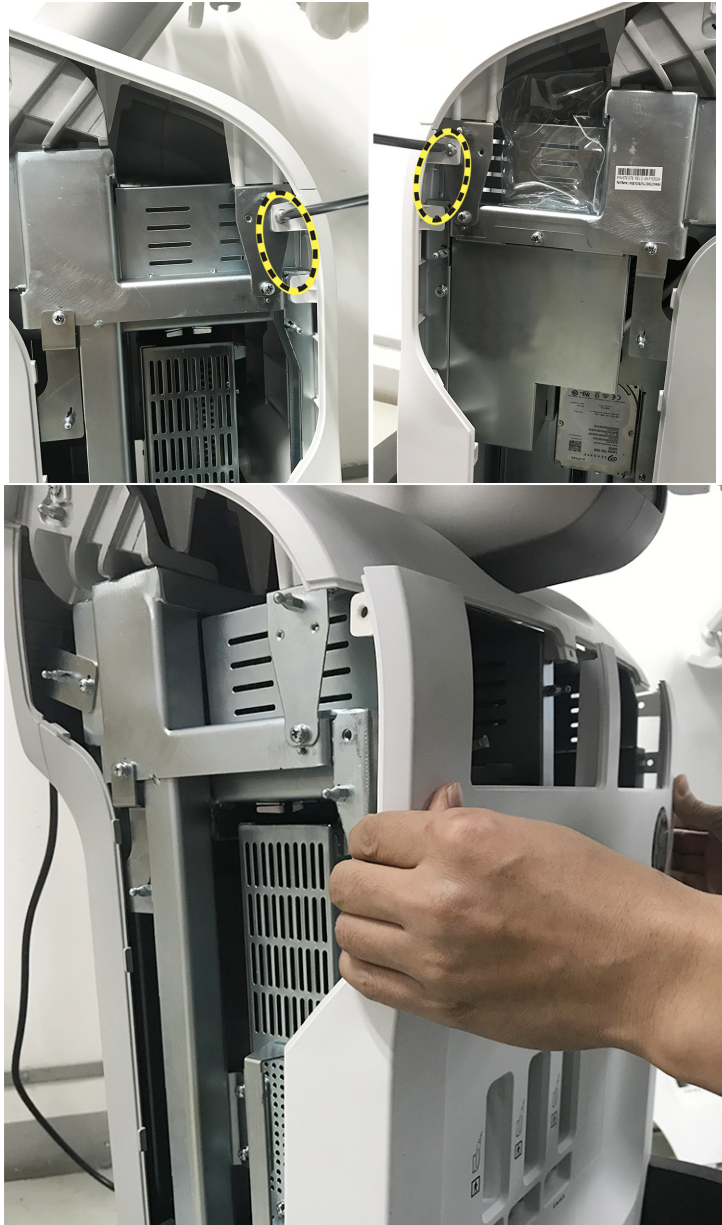


Figure 3-23. Remove body 4PP/3PP cover assy



3-8-3-2 Installation Procedure(continued)

5. Cut the cable clip and connect the connector of DC printer power extension cable.

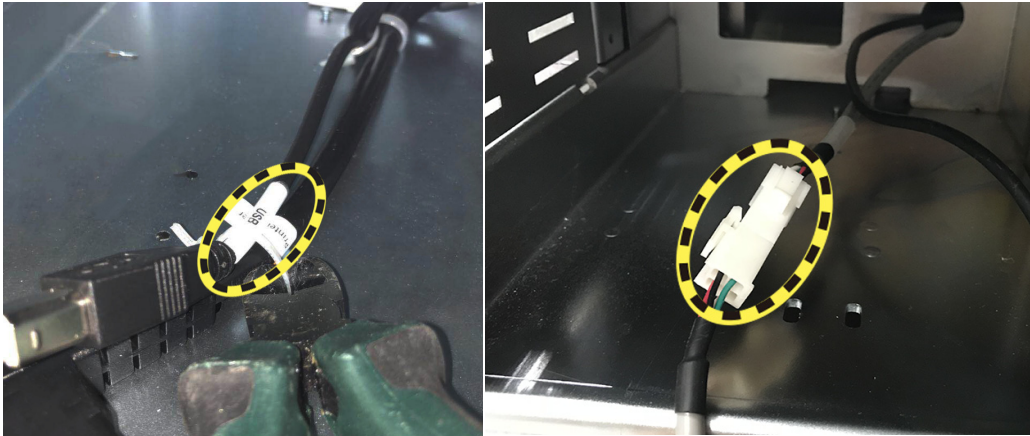


Figure 3-24. Connect DC printer power extension cable

6. Connect the DC power extension cable and USB cable to the printer, and then lock the ring.

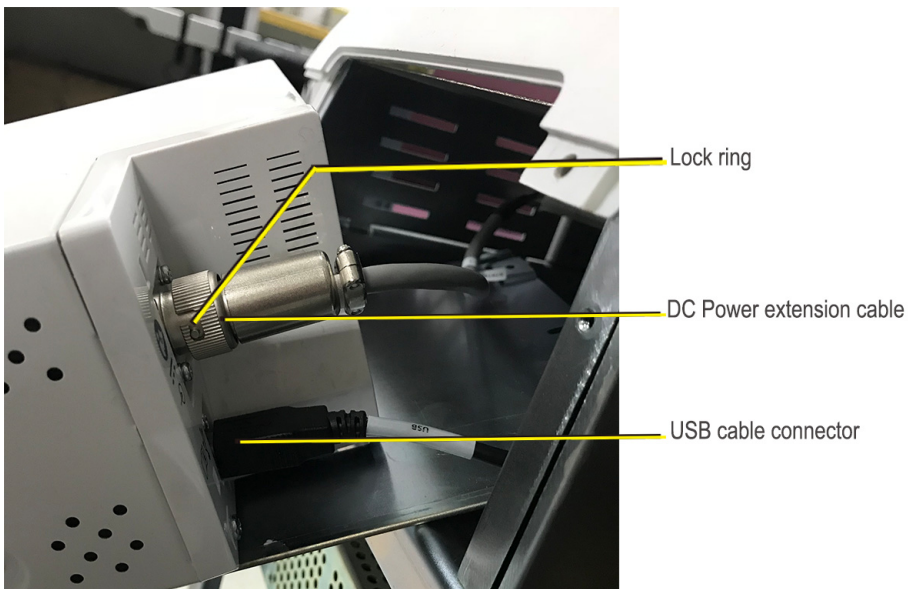


Figure 3-25. Connect printer power cable and USB cable

3-8-3-2 Installation Procedure(continued)

7. Put the DC printer into the printer box.



Figure 3-26. Insert DC printer

8. Screw the 2 screws to fix the printer.



Figure 3-27. Push the printer assembly

9. Mount the body covers and the ECG cover in the reverse order of step 2 - 4.
10. Refer to the Connectivity configure steps of [3-8-3-1 'Sony UP-D898MD Printer Installation'](#) on [page 3-31](#).



3-8-3-6 Sony UP-D25MD Printer Installation

3-8-3-6-1 Tools

No special tools needed.

3-8-3-6-2 Manpower

One person 5 min.

3-8-3-6-3 Preparations

1. Unpack the Sony UP-D25MD Printer.
2. Ensure no physical damage.



3-8-3-6-4 Installation Procedure

1. Place the device in a suitable place.
2. Connect the USB Cable on the Printer.
3. Connect the power cord with the AC output in the wall outlet, and then turn on the printer.
4. Connect USB cable to Versana Premier isolated USB port.



Figure 3-28. Color Printer connection

5. Refer to the Connectivity configure steps of [3-8-3-1 'Sony UP-D898MD Printer Installation' on page 3-31](#).



3-8-3-7 Footswitch Installation

3-8-3-7-1 Tools

No special tools needed.

3-8-3-7-2 Manpower

One person 2 min.

3-8-3-7-3 Preparations

1. Unpack the Footswitch.
2. Ensure no physical damage.

3-8-3-7-4 Installation Procedure

1. Connect the Footswitch to the USB port on the Versana Premier system.



Figure 3-29. Connect Footswitch to the system (1)



3-8-3-7 Footswitch Installation(continued)



Figure 3-30. Connect Footswitch to the system (2)

3-8-3-7-5 Configuring Footswitch

Footswitch supports these configurations: No Function, Freeze, Store, Print, Update, Next Step (Scan Coach), Previous Step (Scan Coach), Scan Coach Pause/Resume.

Enter **Utility** -> **Application**-> **Settings** to configure the Footswitch functions.

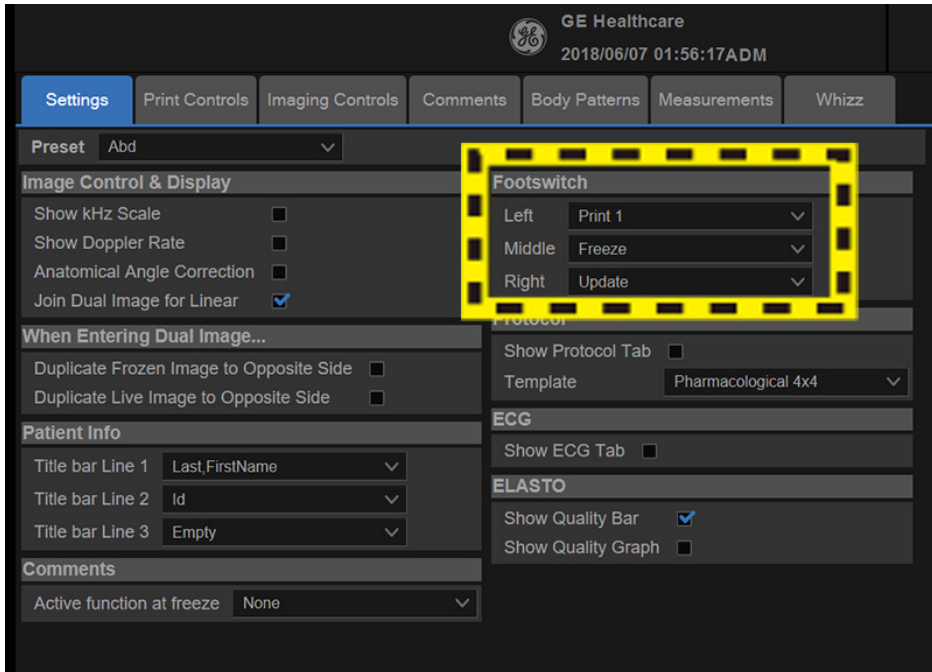


Figure 3-31. Configuring Footswitch Functions



3-8-3-8 USB HDD Installation

3-8-3-8-1 Tools

No special tools needed.

3-8-3-8-2 Manpower

One person 1 min.

3-8-3-8-3 Preparations

1. Unpack the USB HDD.
2. Ensure no physical damage.

3-8-3-8-4 Installation Procedure

1. Connect the USB HDD to the USB port on the Versana Premier system.



Figure 3-32. Connect HDD to the system

3-8-3-9 External ECG Installation

3-8-3-9-1 Tools

NA

3-8-3-9-2 Manpower

One person 8 minutes + travel.

3-8-3-9-3 Preparations

1. Unpack the ECG Assy.
2. Ensure no physical damage.

3-8-3-9-4 Installation Procedure

1. Insert the ECG USB connector into the USB port.



Figure 3-33. Connect the USB port



3-8-3-10 DVDRW Installation

3-8-3-10-1 Tools

No special tools needed.

3-8-3-10-2 Manpower

One person 1 min.

3-8-3-10-3 Preparations

1. Unpack the DVDRW.
2. Ensure no physical damage.

3-8-3-10-4 Installation Procedure

1. Take out the DVDRW assy.

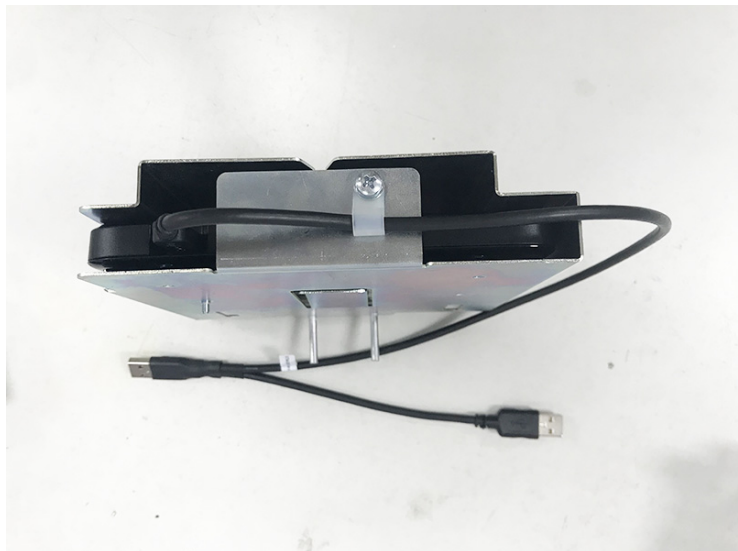


Figure 3-34. DVDRW assy

3-8-3-10 DVDRW Installation(continued)

2. Remove the body left and right cover.

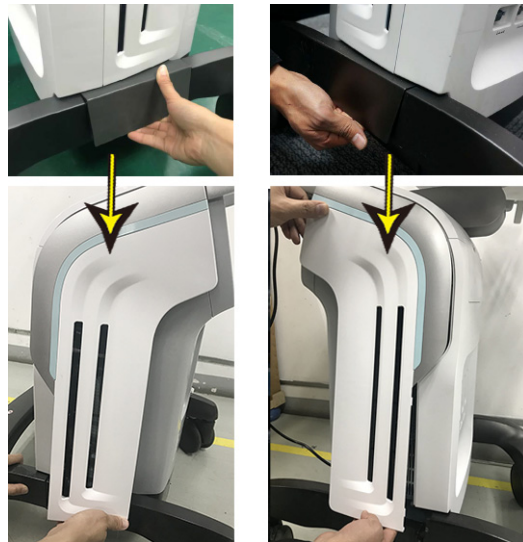


Figure 3-35. Remove body left and right cover

3. Remove both the printer cover and ECG cover.



Figure 3-36. Remove printer and ECG cover

3-8-3-10 DVDRW Installation(continued)

4. Unscrew the 1 screw on each side, then remove the body 4PP/3PP cover assy.

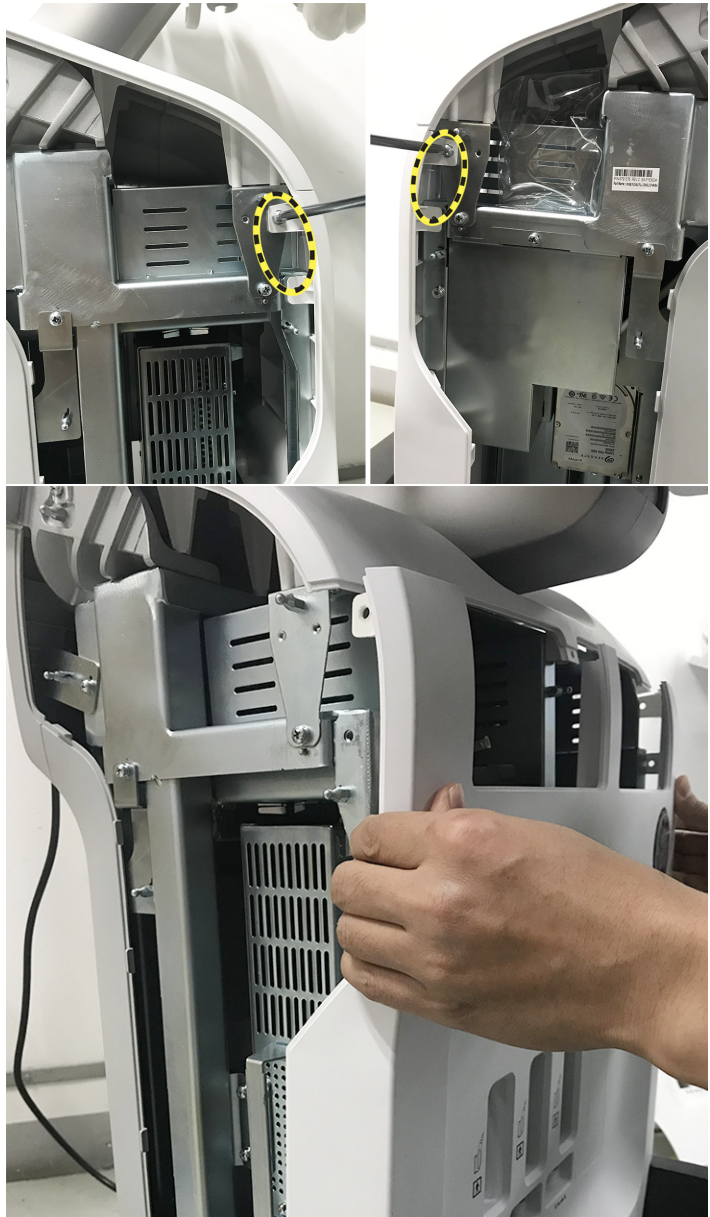


Figure 3-37. Remove body 4PP/3PP cover assy



3-8-3-10 DVDRW Installation(continued)

5. Put in the DVD Assy and screw the 2 screws.

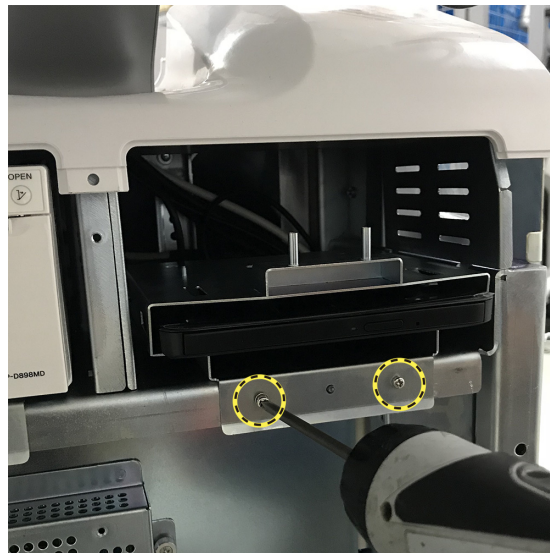


Figure 3-38. Put in the ECG Assy

6. Unscrew the screw and then remove the metal sheet.



Figure 3-39. Remove the metal sheet



3-8-3-10 DVDRW Installation(continued)

7. Connect both of the DVD USB cables to the docking.



Figure 3-40. Connect both of the DVD USB cables

8. Mount the body covers and the ECG cover in the reverse order of step 2 - 4.



3-8-3-11 Wireless Adapter

3-8-3-11-1 Tools

No special tools needed.

3-8-3-11-2 Manpower

One person 1 min.

3-8-3-11-3 Preparations

1. Unpack the wireless adapter
2. Ensure no physical damage.

3-8-3-11-4 Installation Procedure

1. Connect the wireless adapter to the USB port on the Versana Premier system.



Figure 3-41. Connect Wireless Adapter



3-8-3-12 Bluetooth Adapter

3-8-3-12-1 Tools

No special tools needed.

3-8-3-12-2 Manpower

One person 5 min.

3-8-3-12-3 Preparations

1. Unpack the bluetooth adaptor
2. Ensure no physical damage.

3-8-3-12-4 Installation Procedure

1. Connect the Bluetooth Adapter to the USB port on the Versana Premier system.



Figure 3-42. Connect Bluetooth Adapter

3-8-3-12-4 Installation Procedure(continued)

2. Reboot the system.
3. After the power-up sequence is complete, press **Utility** on the Control Panel. Select **Connectivity-> Bluetooth**, click **Add New Device**.

NOTE: For Bluetooth Adapter connection, the operator must login as Administrator.

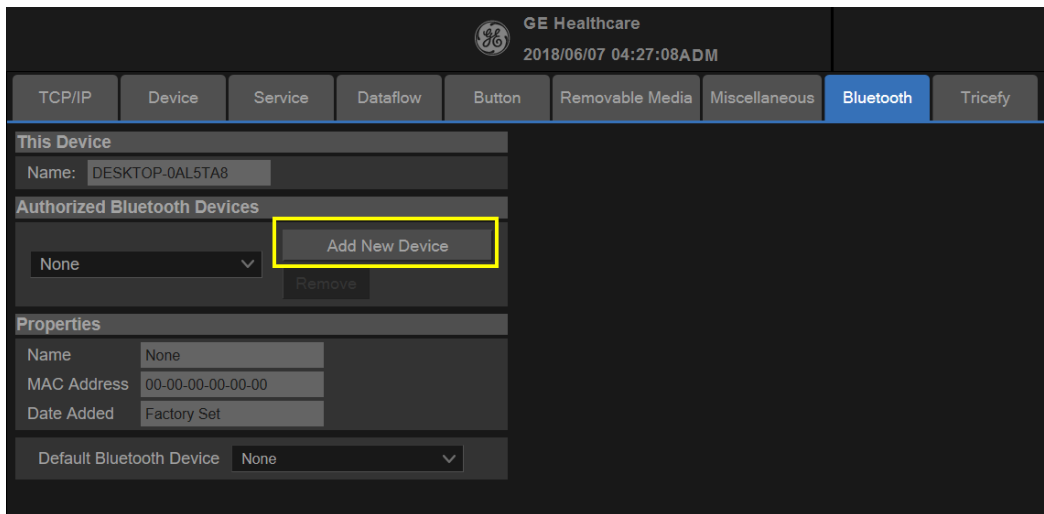


Figure 3-43. Add New Device

4. Follow the Bluetooth pairing wizard to turn on Bluetooth on your mobile device. Scan for surrounding devices. Then select the device name of the Versana Premier in your surrounding device list to pair.



3-8-3-12-4 Installation Procedure(continued)

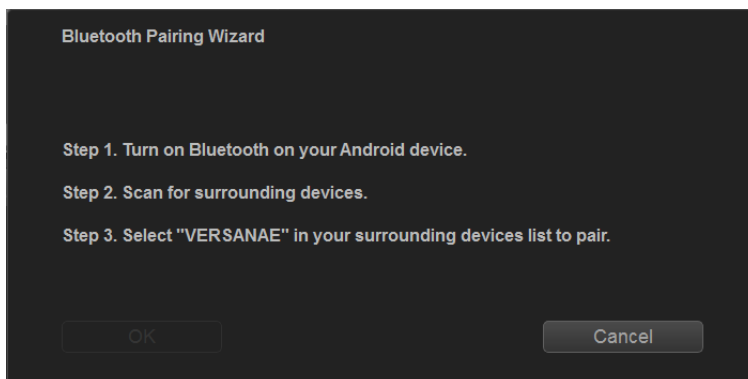


Figure 3-44. Bluetooth Pairing Wizard (1)

NOTE: *Versana Premier system does not support to pair with Apple device.*

5. The **Pincode** is shown in the dialogue, click **Accept** to continue.

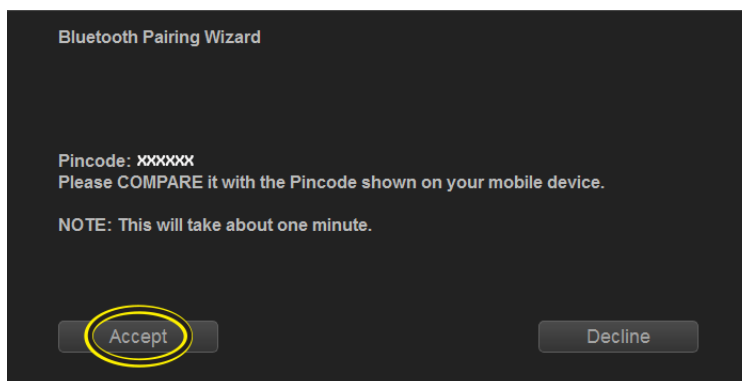


Figure 3-45. Bluetooth Pairing Wizard (2)

6. On your mobile device a dialogue box should appear asking for permission to connect to the Versana Premier system. Click **OK** and wait for the process to complete.



3-8-3-12-4 Installation Procedure(continued)

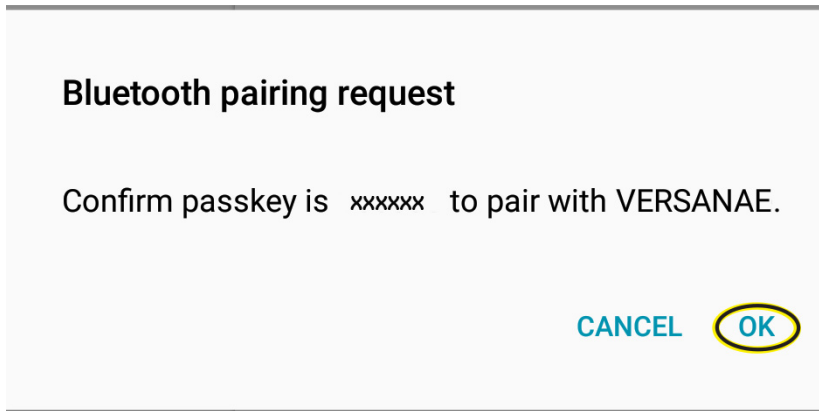


Figure 3-46. Bluetooth Pairing Request

7. After pairing is done, the mobile device name appears in the **Authorized Bluetooth Devices** field.

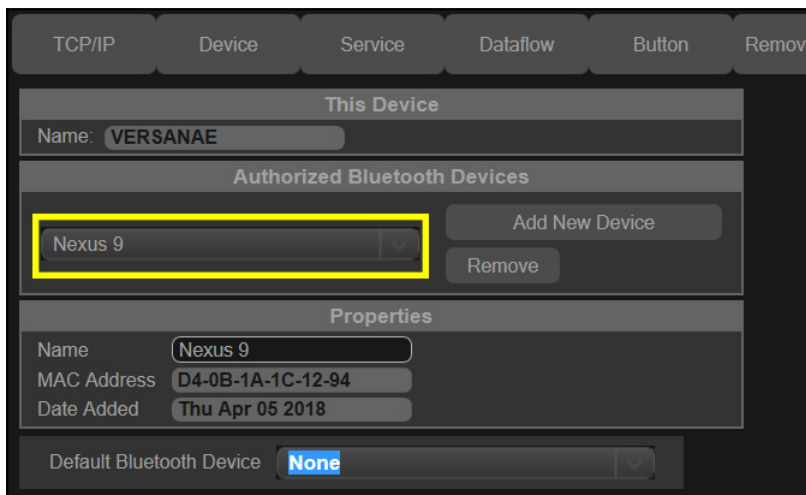


Figure 3-47. Connected Successfully



3-8-3-13 Printer USB Isolator

3-8-3-13-1 Tools

No special tools needed.

3-8-3-13-2 Manpower

One person 5 min.

3-8-3-13-3 Preparations

1. Unpack the AC isolation transformer.
2. Ensure no physical damage.

3-8-3-13-4 Installation Procedure

1. Insert the Mini USB side of the cable into the Printer USB Isolator.



Figure 3-48. Insert the USB connector into Printer USB Isolator

3-8-3-13 Printer USB Isolator(continued)

2. Insert the USB cable connector in one of the USB ports on the Ultrasound system.

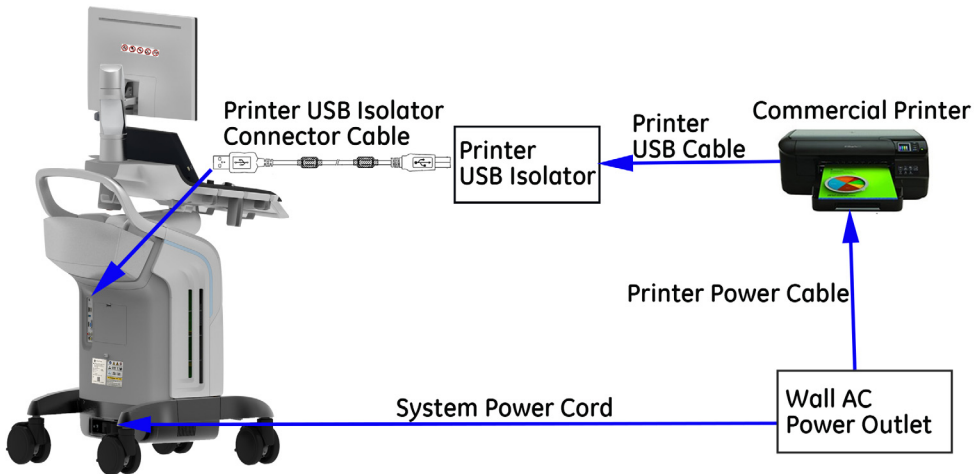


Figure 3-49. Insert the USB cable into the Ultrasound system

NOTE: *The Ultrasound system in above graphic is only for illustrational purposes. You can use the Printer USB Isolator on the desired Ultrasound system.*



3-8-3-14 EMI Filter

EMI filter can improve power grid environment.

3-8-3-14-1 Tools

No special tools needed.

3-8-3-14-2 Manpower

One person 5 min.

3-8-3-14-3 Preparations

1. Unpack the EMI Filter.
2. Ensure no physical damage.

3-8-3-14-4 Installation Procedure

1. Take out the EMI filter from the package. The EMI filter option includes the EMI filter and the cable.



Figure 3-50. EMI Filter

3-8-3-14 EMI Filter(continued)

2. Insert one side of the cable into the EMI Filter **OUTPUT** side.



Figure 3-51. Insert the cable into the EMI filter output side

3. Insert the Ultrasound system's main power cord into the EMI filter **INPUT** side.



Figure 3-52. Insert the system power cord into the EMI filter input side

3-8-3-14 EMI Filter(continued)

4. Connect the EMI filter cable to the Ultrasound system, and plug the system power cord into wall AC power outlet.

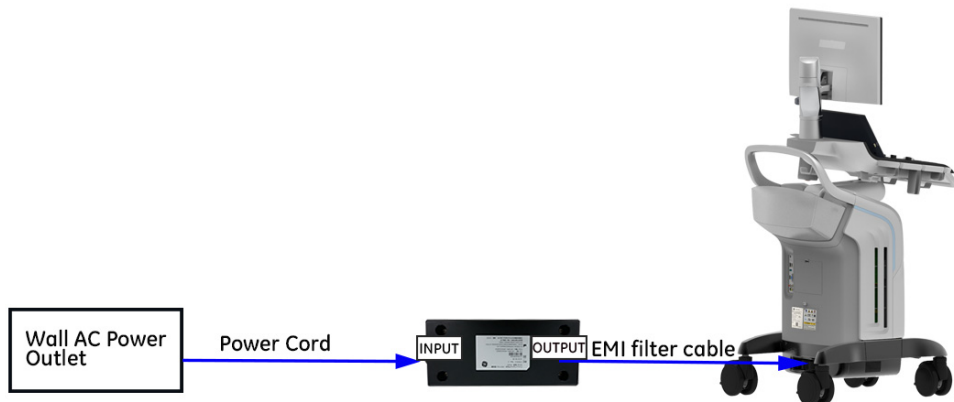


Figure 3-53. Connect successfully

3-9 Connectivity setup

3-9-1 EZ configuration Wizard

EZ configuration wizard is a function to enable the operator to configure some common system settings when turning on the system for the first time after the software installation.

NOTE: *Password setting is required when turning on the system for the first time after the software installation.*

For Versana Premier, you can also enter EZ Configuration Wizard by clicking the Insite icon at the top right of the screen.

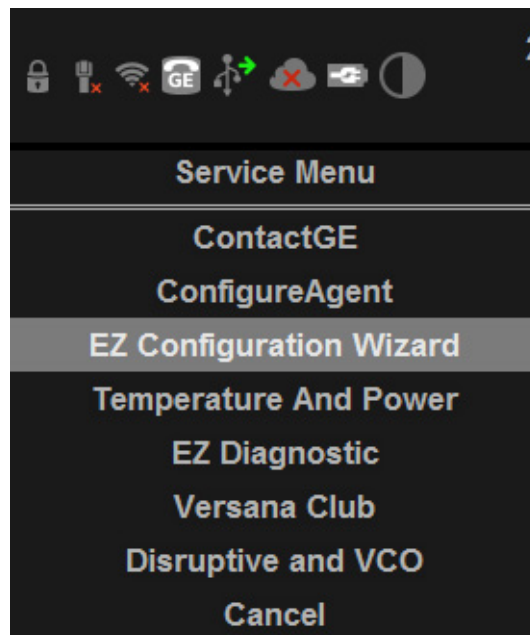


Figure 3-54. Enter EZ Configuration Wizard



3-9-1 EZ configuration Wizard(continued)

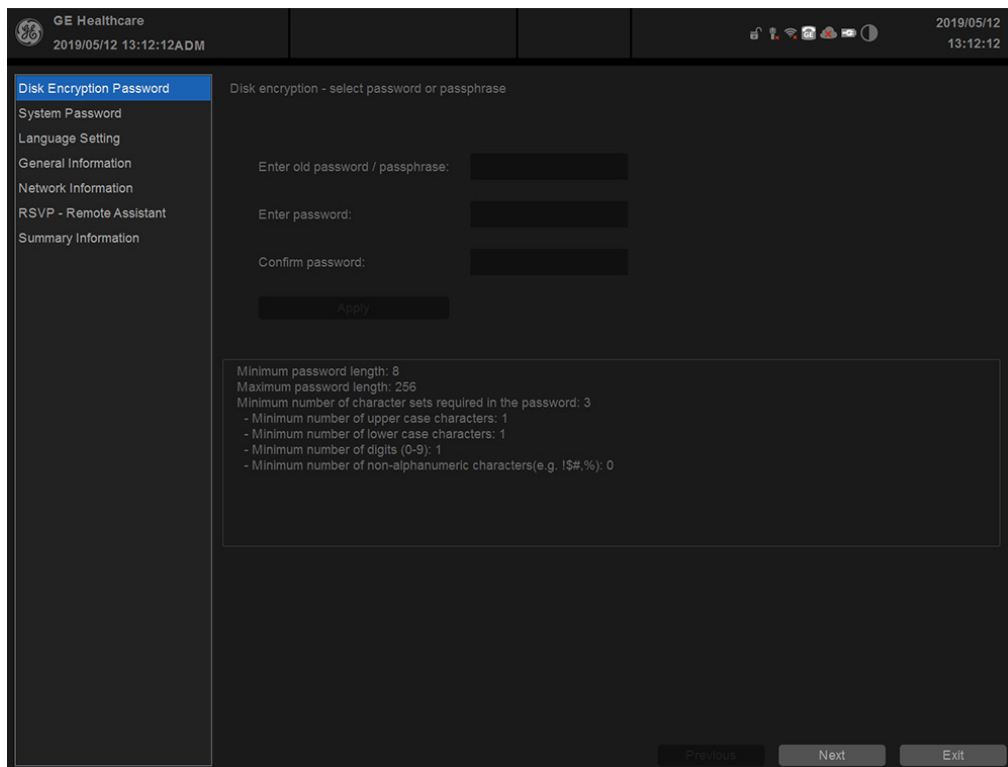
1. Set password for Drive D (includes Archive of patient information, temp files, user defines, logs).

Go to **Install wizard -> Disk Encryption Password to set password for Drive D.**

NOTE:

Drive D password setting is required when turning on the system for the first time or after the software installation.

System will remember the password automatically.



The screenshot shows the 'Disk Encryption Password' screen in the GE Healthcare EZ configuration Wizard. The top bar displays 'GE Healthcare' and the date/time '2019/05/12 13:12:12ADM'. The left sidebar lists navigation options: 'Disk Encryption Password' (selected), 'System Password', 'Language Setting', 'General Information', 'Network Information', 'RSVP - Remote Assistant', and 'Summary Information'. The main area is titled 'Disk encryption - select password or passphrase' and contains three input fields: 'Enter old password / passphrase:', 'Enter password:', and 'Confirm password:'. Below these fields is an 'Apply' button. A box at the bottom lists password requirements: 'Minimum password length: 8', 'Maximum password length: 256', 'Minimum number of character sets required in the password: 3', and a list of requirements: '- Minimum number of upper case characters: 1', '- Minimum number of lower case characters: 1', '- Minimum number of digits (0-9): 1', and '- Minimum number of non-alphanumeric characters(e.g. !\$#.%): 0'. At the bottom right are 'Previous', 'Next', and 'Exit' buttons.

Figure 3-55. Set password for Drive D

NOTE:

When the HDD is removed from the unit, it will need password to decode.



3-9-1 EZ configuration Wizard(continued)

2. Set system password by **Install wizard -> System Password OR Utility -> Admin -> System Admin -> Change System Password**.

NOTE: *System password setting is required when turning on the system for the first time or after the software installation.*

GE Healthcare
2019/05/12 13:24:12

2019/05/12
13:24:12

Disk Encryption Password
System Password
Language Setting
General Information
Network Information
RSVP - Remote Assistant
Summary Information

Change System Password

Enter old password:

Enter password:

Confirm password:

Apply

Minimum password length: 8
Maximum password length: 256
Minimum number of character sets required in the password: 3
- Minimum number of upper case characters: 1
- Minimum number of lower case characters: 1
- Minimum number of digits (0-9): 1
- Minimum number of non-alphanumeric characters(e.g. !\$,%): 0

Previous Next Exit

Figure 3-56. System password setting



3-9-1 EZ configuration Wizard(continued)

3. Select the appropriate language for system language and keyboard language from the drop-down list.

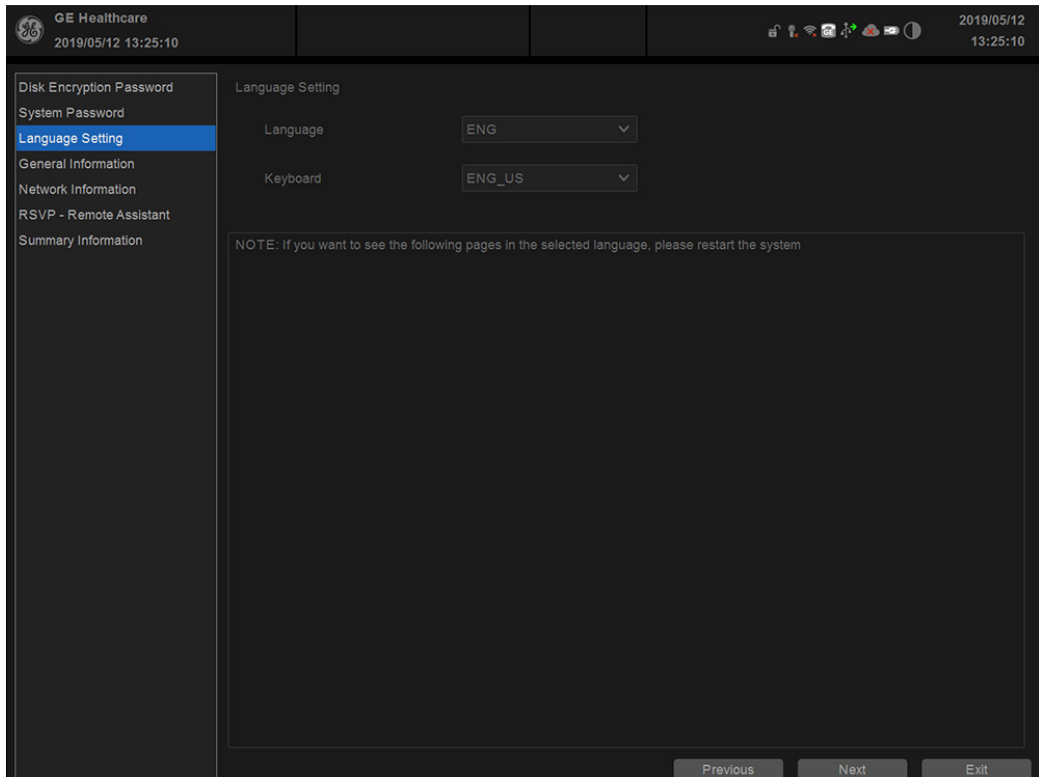


Figure 3-57. System Language settings (1)

NOTE: If you select **Exit**, you will exit the installation wizard.

- If you do not change the language, press **Next** to continue.
- If you change the language setting, press **OK** to restart the system.

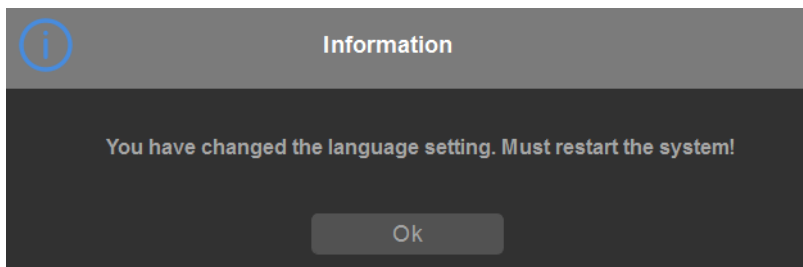


Figure 3-58. System Language settings (2)

NOTE: If you press **Previous**, you will go to the previous page.

3-9-1 EZ configuration Wizard(continued)

4. This screen shows the hospital and time information, and you can set the system date and time here.

GE Healthcare
2019/05/12 13:26:03

2019/05/12
13:26:03

Disk Encryption Password
System Password
Language Setting
General Information
Network Information
RSVP - Remote Assistant
Summary Information

Hospital Information

Hospital: GE Healthcare

Department: Development

Customer Name:

Address:

Continent: AFRICA

Country: ALGERIA

Time Information

Time Zone: (UTC-08:00) Pacific Time (US & Canada)

System Date:

May 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

System Time: 13:26:05 ☒ 24 Hour

Previous Next Exit

Figure 3-59. General Information

5. Press **Next** to continue.



3-9-1 EZ configuration Wizard(continued)

- 6. The **Network Information** screen shows the configuration of wireless and local network:

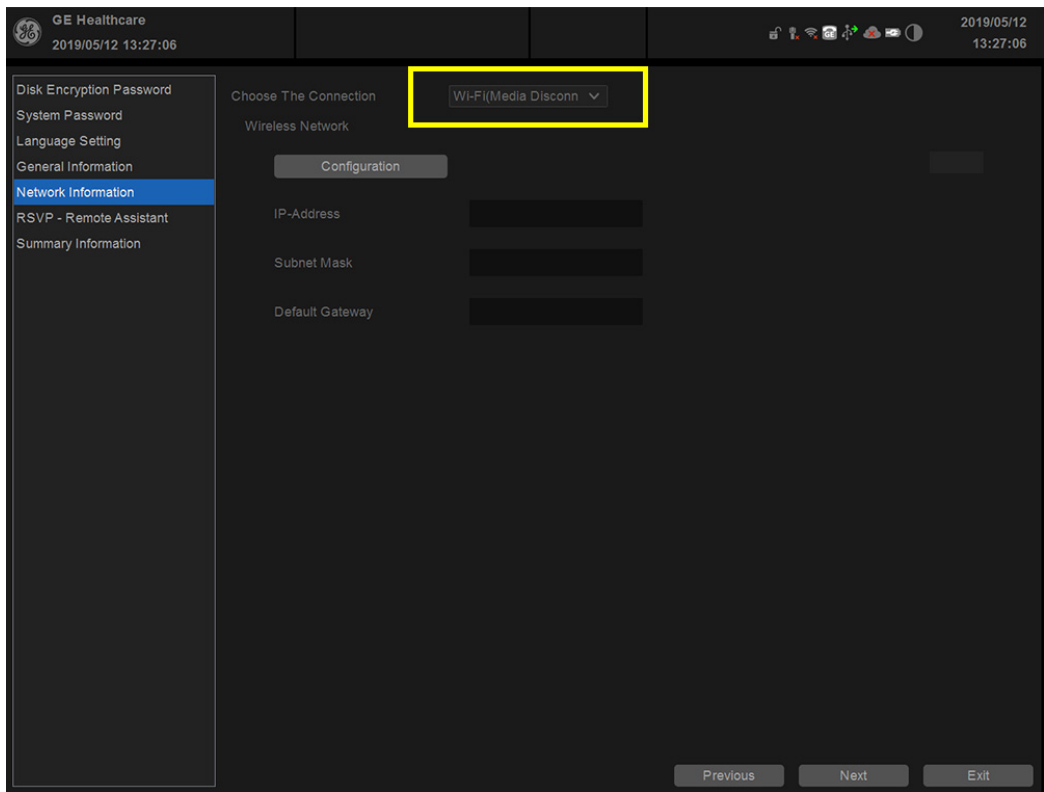


Figure 3-60. Wireless Network Information

3-9-1 EZ configuration Wizard(continued)

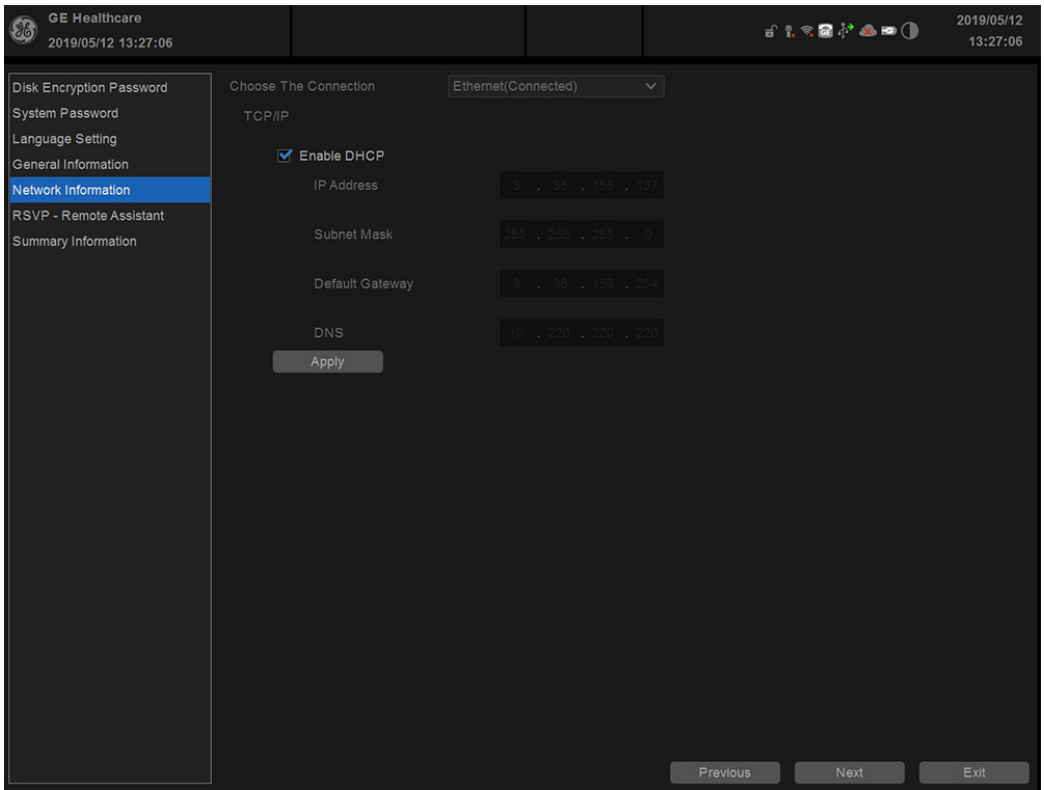


Figure 3-61. Local Network Information

Table 3-24: Network settings

Preset Parameter	Description
Enable DHCP	Select to set TCP/IP.

7. Press **Next** to continue.



3-9-1 EZ configuration Wizard(continued)

8. The **RSVP - Remote Assistant** screen shows the configuration of Agent and Proxy.

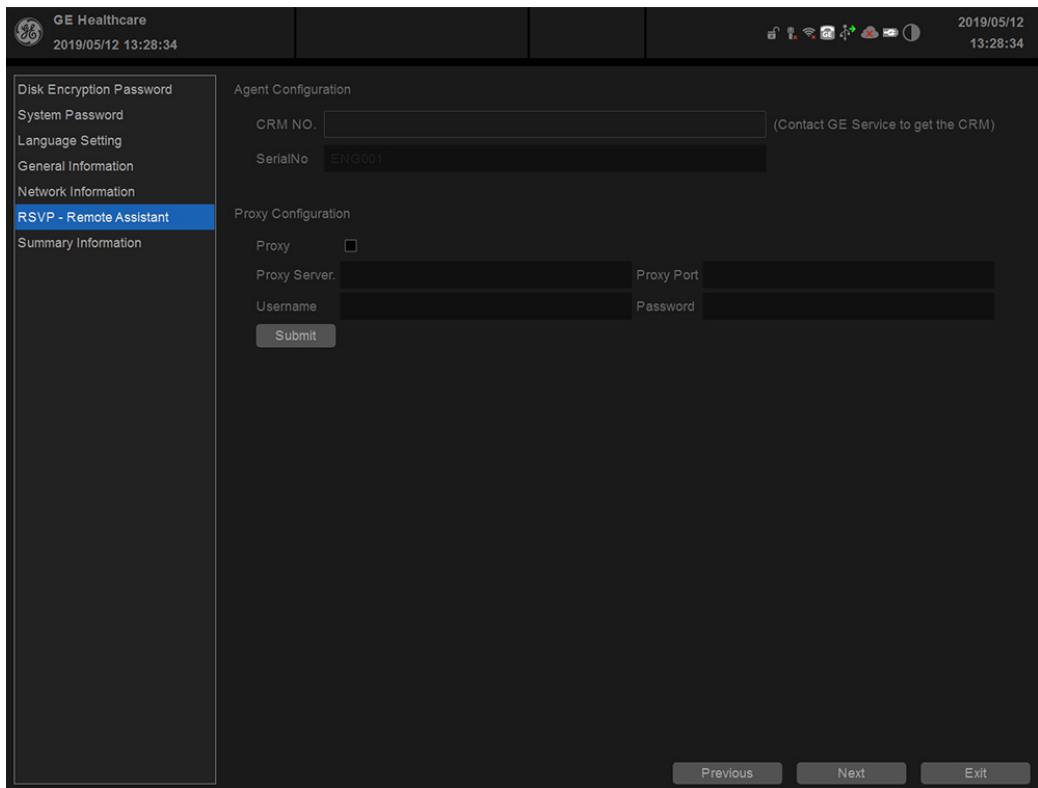


Figure 3-62. RSVP - Remote Assistant

Table 3-25: Agent and Proxy Configuration

Element	DESCRIPTION
CRM No	Customer Relationship Management (CRM) number. System identifier assigned to the customer unit by the service region. CRM is pre-populated by adding Versana Premier to the CRM number. The CRM number of the Versana Premier is editable.
Serial No	Serial number of the agent (read-only). If the agent is not registered with a serial number, this field is populated with the serial number of the Versana Premier. The serial number of the agent is tied to the serial number of the Versana Premier.
Proxy Server	When Enable Proxy is selected, name of the proxy server IP.
Proxy Port	When Enable Proxy is selected, number of the proxy server port.
Username	When Proxy is selected, name of the user.
Password	When Proxy is selected, password for the user.



3-9-1 EZ configuration Wizard(continued)

After RSVP - Remote Assistant has been successfully configured, these elements will have the corresponding values:

- **Agent Registered** will be **Yes**
- **Agent Quarantine** will be **No**
- **Agent CRM Verified** will be **Yes**

The information on **System Information** is available to all service class licenses.

To access **System Information**, navigate to **Utility > Service > Home**.

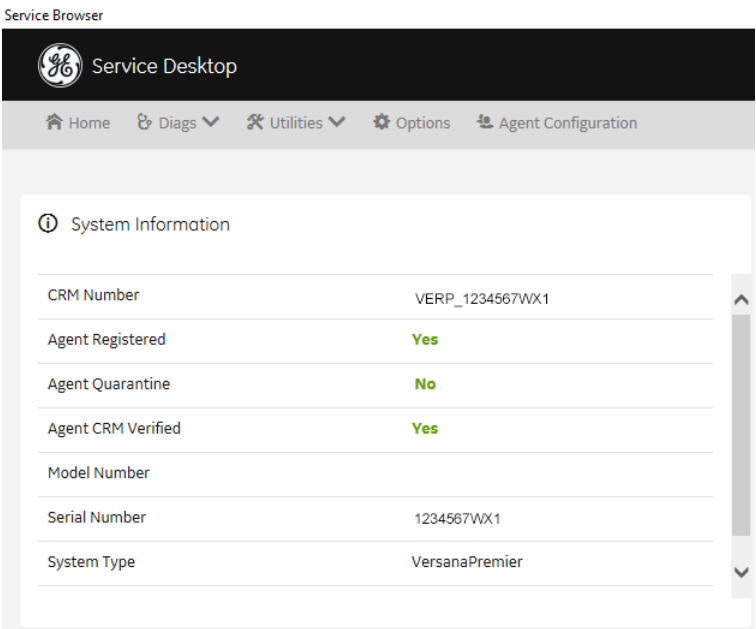


Figure 3-63. System Information

9. After having set the RSVP - Remote Assistant, press **Next** to continue.



3-9-1 EZ configuration Wizard(continued)

10. This screen shows the report of the previous settings. You can export it to the database.

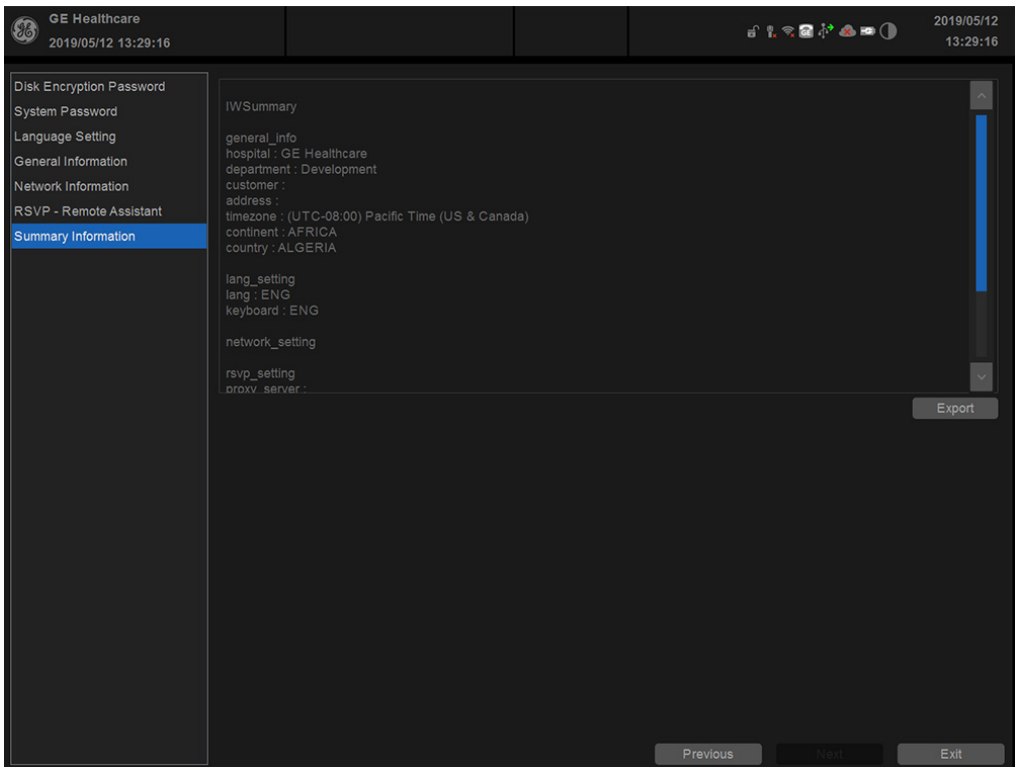


Figure 3-64. Summary Information

Press **Export** and select the location where you want to store the report.

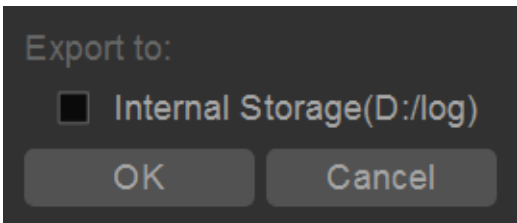


Figure 3-65. Export Summary

11. Press **Exit** to exit Installation Wizard.



3-9-2 TCP/IP Screen

1. Press **Utility** on the control panel and login as admin, refer to 'Logging on to Versana Premier as "ADM"' on *page 4-11*.
2. Select **Connectivity** on the screen.
3. Select **TCP/IP** tab, the screen gives an overview of the network settings for Versana Premier.

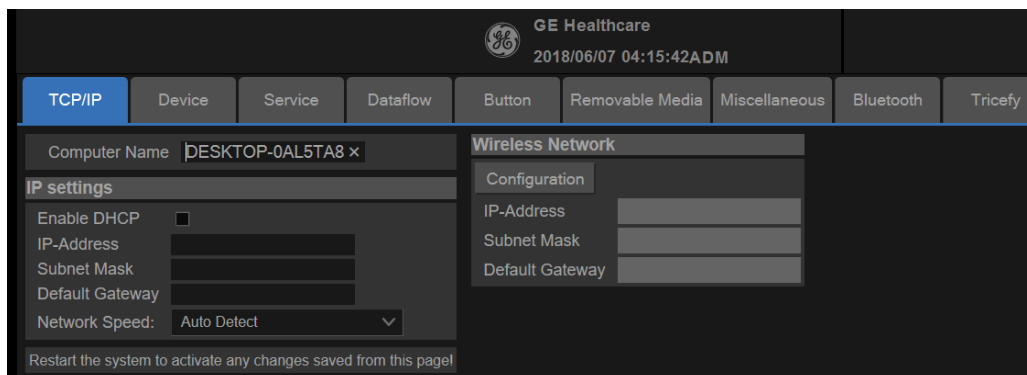


Figure 3-66. TCP/IP Screen



3-9-2-1 Changing the AE title and/or Port Number

- 1. To change **AE Title** and/or **Port No**, edit the respective fields.

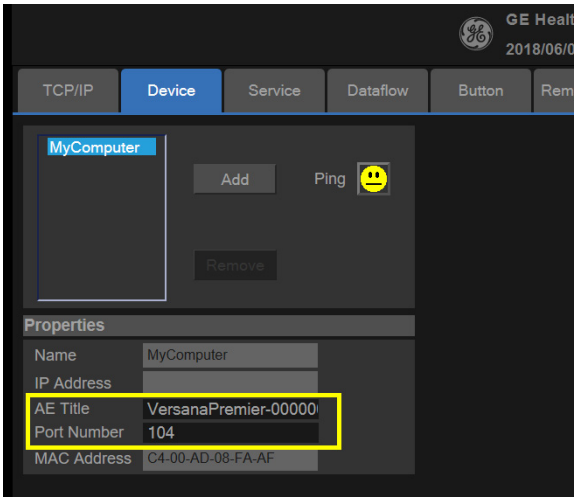


Figure 3-67. AE Title/Port No

NOTE: MAC Address will also be displayed on this page.

- 2. Select **Save** to store your changes. This will bring up a new warning screen.

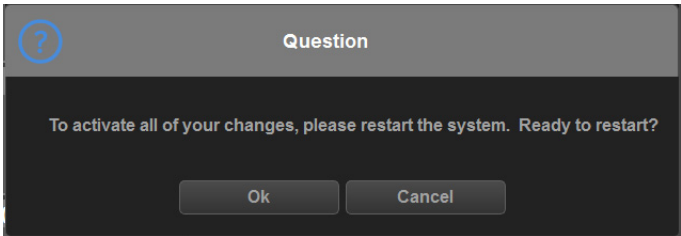


Figure 3-68. Warning Message

- 3. Select **OK** to save your changes or **Cancel** to return without saving any changes.
- 4. Reboot the system to activate the settings or continue with other TCPIP setup tasks.

3-9-3 Network setup

For network connection setup, [See 7-6-1 'Network Configuration' on page 7-37 for more information.](#)

3-9-4 Setup connection to a DICOM server

Versana Premier is configured to work with DICOM servers in a network environment. Images are first saved on the local image butter on the system. At the end of the examination the images are sent to the DICOM server via a DICOM spooler and to the local database, depending on dataflows.

To connect to the DICOM server, the following information has to be entered in the system.

- The DICOM server IP address
- The DICOM server port number
- The DICOM server AE title (the server application's name)

Table 3-26: Utility ->Connectivity ->TCP/IP screen

<div><div>GE Healthcare</div><div>2018/06/07 04:15:42ADM</div><div>TCP/IPDeviceServiceDataflowButtonRemovable MediaMiscellaneousBluetoothTricify</div><div><div>Computer NameDESKTOP-0AL5TA8 x1</div><div>Wireless Network</div><div>Configuration</div><div>IP-Address</div><div>Subnet Mask</div><div>Default Gateway</div><div>Enable DHCP2</div><div>IP-Address</div><div>Subnet Mask</div><div>Default Gateway</div><div>Network Speed:Auto Detect</div><div>Restart the system to activate any changes saved from this page!</div></div></div>	
1	Enter the Versana Premier computer name. This may be the same as the station name.
2	<div>Enter the Versana Premier IP address, subnet mask, default gateway and network speed. For automatic assignment of IP address, subnet mask and default gateway, select DHCP.</div> <div><i>Note: If possible, set the Versana Premier network Speed to match that of the Network switch. if in doubt, set it to AutoDetect. Otherwise, transfer times can be two or five times longer, during which the Versana Premier will appear to be locked up. (If the Hard Drive activity light on the front of the console is lit steady or blinks quickly, the Versana Premier is most likely not hung.)</i></div>



3-9-4 Setup connection to a DICOM server(continued)

Table 3-27: Utility ->Connectivity ->Device screen

<div><div>TCP/IPDeviceServiceDataflow</div><div><div>MyComputer1</div><div>AddPing☹️</div><div>Remove</div></div><div>Properties</div><div><div>NameMyComputer</div><div>IP Address</div><div>AE TitleVersanaPremier-0000023</div><div>Port Number104</div><div>MAC AddressC4-00-AD-08-FA-AF</div></div></div>	
1	Select MyComputer .
2	<p>Assign an AE title to the Versana Premier. (AE stands for Application Entity. DICOM services use this to identify the Versana Premier.) AE title is case-sensitive. This title may contain the Computer Name from the TCP/IP page, if desired.</p> <p><i>Note: It is NOT recommended to use the factory default. This is not prohibited, but more than one system with the same AE title can cause confusion.</i></p>
3	Edit Port Number if needed. 104 is typical. Save your changes and reboot the system.

3-9-5 How to get the Versana Premier to recognize another Device on the Network

Table 3-28: Utility ->Connectivity ->Device screen

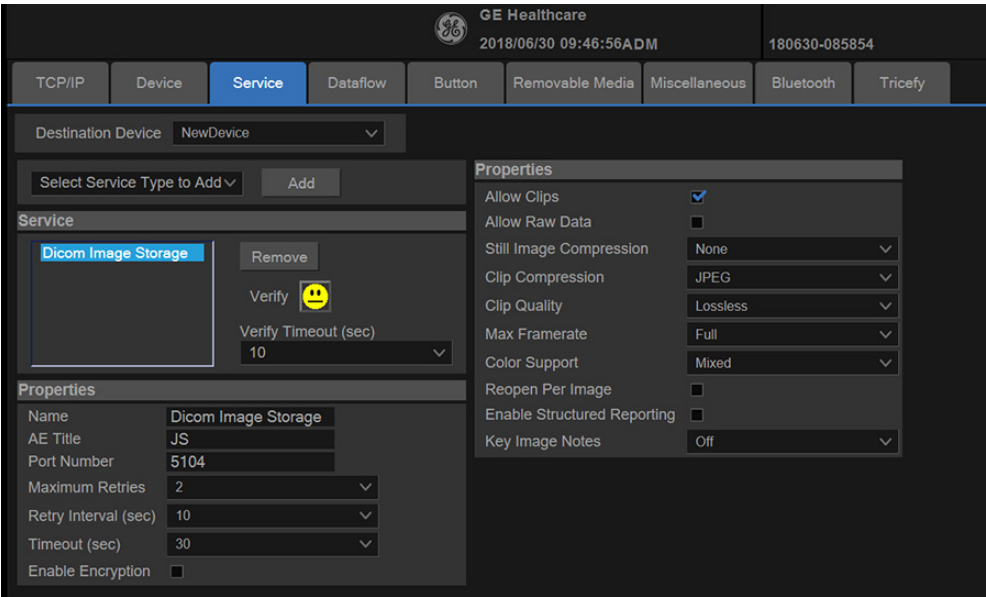
<div><div>TCP/IPDeviceServiceDataflow</div><div><div>MyComputerNewDevice</div><div>1</div><div>Add</div><div>Ping</div><div>😊</div><div>Remove</div></div><div>Properties</div><div><div>NameNewDevice</div><div>IP Address0.0.0.0</div></div></div>	
<div><div>TCP/IPDeviceServiceDataflow</div><div><div>MyComputerDICOM</div><div>4</div><div>Add</div><div>Ping</div><div>😊</div><div>Remove</div></div><div>Properties</div><div><div>NameDICOM2</div><div>IP Address3.35.88.1253</div></div></div>	
1	Select Add . The system creates a device called "NewDevice".
2	Change the name to one of your choosing.
3	Enter the IP address of the device.
4	<div><div>😊😊</div><div>Save your changes and then press Ping. A "Smiley Face" indicates successful communication between your Versana Premier and the device. A "Frown" indicates failed communication. Check the following:<ul style="list-style-type: none">• Is the device running?• Is it connected to the network?• Did you enter the right IP address?</div></div>



3-9-6 How to Setup and Use a DICOM Image Storage Service

An Image Storage Service provides a place to store patient and exam data from Versana Premier and corresponding images. The Image Storage Service, or the device that hosts it, is often called a Patient Archiving and Communication System (PACS).

Table 3-29: Setup an Image Storage Service

	
1	In Utility -> Connectivity -> Service , from the Destination Device drop-down menu, select the device on which the service resides. (This assumes you have already setup the device in the Device tab in 'How to Setup and Use a DICOM Image Storage Service' on <i>page 3-82</i> .
2	From the <i>Select Service Type to add</i> drop-down menu, select DICOM Image Storage and press Add .
3	Change the name of the service to one of your choosing.
4	Enter the AE Title and port Number of the service. AE Title is case-sensitive.
4	Save your changes and then press Verify . A “Smiley Face” indicates successful communication with the service. Note: If you get a successful Ping (Smiley Face) at the device level but not at the service level, it is possible that the AE Title or Port Number of the service settings are incorrect. Ensure that these are correct then re-verify. Be sure that the service type (Store, Print, etc) is correct and supported by the device.

3-9-7 Dataflow



CAUTION

DO NOT rename the factory default dataflow.

A dataflow is a set of pre-configured services. When you select a dataflow, the ultrasound system automatically works according to the services associated with the dataflow. The Dataflow tab allows you to select and review information about dataflows. You can also create, change, and remove dataflows.

Set up dataflows for the services.

NOTE: You must be logged on as Administrator to use the Dataflow tab.

Table 3-30: Setup an Image Storage Service

1	Select the dataflow from the list.
2	Select to store data directly to archive (no buffer storage).
3	Select so that this dataflow does not appear as a Dataflow on the Patient menu.
4	Select to use this dataflow as the default dataflow when you start the system.



3-9-8 Button

You can assign print buttons via the Utility --> Connectivity --> Button page.

Assigning print buttons. First select the print button to configure on the upper, left corner of the page. Then select the device you want to add in the middle part of the page, under Available Input/Outputs. Then click on the right arrow in the top right corner of the page.

- NOTE:

You can configure each print key to multiple output devices/dataflows.
- NOTE:

Only attach one DICOM service per print key (e.g., PACS and DICOM printer). Multiple DICOM devices should be configured via a dataflow.
- NOTE:

When using a print key to send an image directly to a DICOM device, this causes a single DICOM association per image. Most devices (all known printers) work fine with this. However, some storage devices, such as ALI, Kodak Access, and Cemax, assume that the end of each association is the end of the exam and can result in a new folder for each image. In the Utility menu, select a single association or open PR for the desired DICOM storage device.

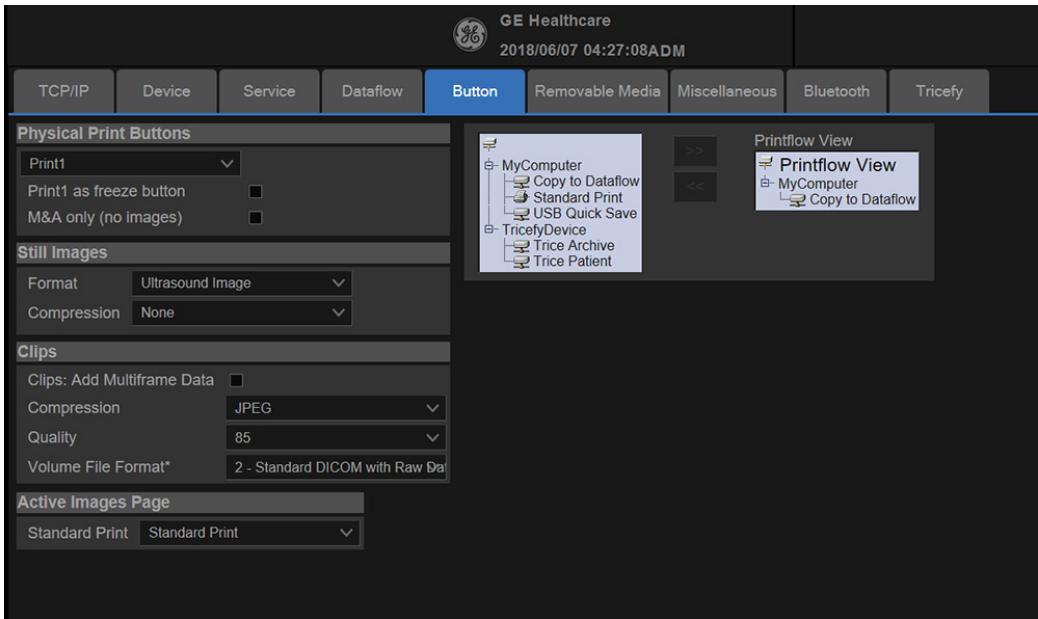


Figure 3-69. Botton Preset Menu



3-9-8 Button(continued)

Table 3-31: Physical Print Buttons

Preset Parameter	Description
M&A only (no images)	Configures the system to send a DICOM structured report only; no image is generated or sent.

Table 3-32: Still Images

Preset Parameter	Description
Format	RawDICOM, DICOM, or M&A.
Compression	Always set to None.

Table 3-33: Clips/Volumes

Preset Parameter	Description
Clips: Add Multiframe Data	Checkbox
Compression	None, Rle, Jpeg, Jpeg2000
Quality	Lossless, 99, 98, 97, ... 50 Note: The default Compression for Clips is JPEG85. It is strongly recommended to keep the Compression set to JPEG85.

Table 3-34: Active Images Page

Preset Parameter	Description
Standard Print	Lets you send to a Windows-based printer.



3-9-9 Removable Media

The Removable Media tab allows you to:

- Verify the DICOM directory on removable media.
- Verify the free space of the media.
- Verify that the media is finalized or unfinalized.
- Verify that the media is formatted or unformatted.
- Format removable media (rewritable CD/DVD or USB device).

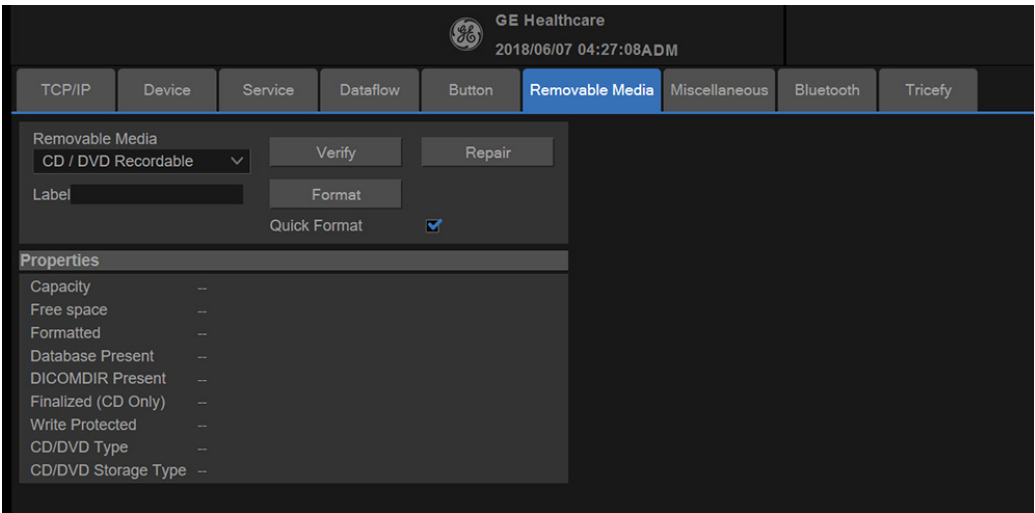


Figure 3-70. Removable Media Preset Menu

Table 3-35: Tools

Preset Parameter	Description
Removable Media	Select the removable media to format or verify.
Label	Type a label for a new removable media (free text).
Verify	<ul style="list-style-type: none">• Select to verify DICOM directory on removable DICOM disk.• Verify the free space of the media.• Verify that the media is finalized or unfinalized.• Verify that the media is formatted or unformatted.
Format	Select to format removable media.
Quick Format	To format the media quickly, check this box. If you uncheck this box, the media is formatted with a full format. New media should always be formatted with a full format.

The bottom of the screen lists properties of the selected media.



3-9-9 Removable Media(continued)

3-9-9-1 Formatting removable media

1. Select the removable media from the Media list.
2. Type a name for the removable media in the Label field.

NOTE: *Do not use the following characters for labelling:*

`\ / : ; . , * < > | + = []`

3. Select **Format**. Confirm **OK** or **Cancel**.
4. An information window confirms when the format has been completed. Select **OK** to exit.

Verifying removable media

1. Select the removable media from the Media list.
2. Select **Verify**.



3-9-10 Miscellaneous

The Miscellaneous tab allows you to configure tools related to patient management and print and store options. You can specify default system functionality, such as whether patient ID is required when you archive data, or if you want the system to automatically search the archive for a patient when you enter patient data.

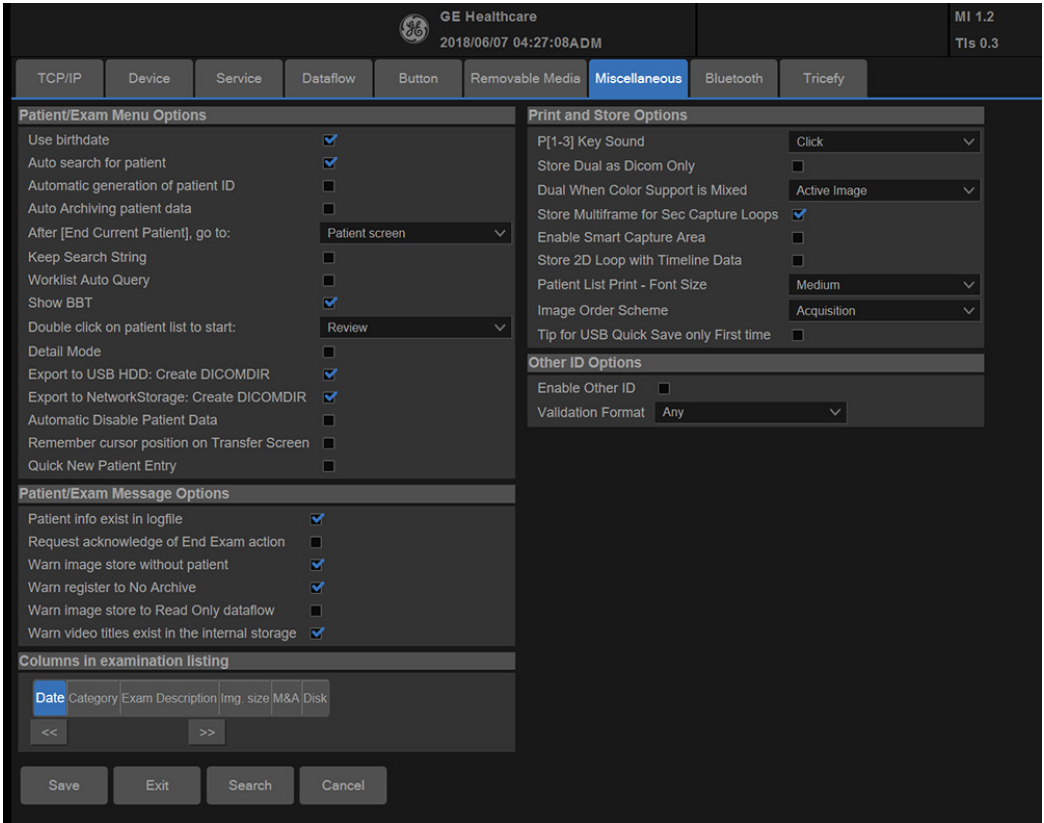


Figure 3-71. Miscellaneous Preset Menu

Table 3-36: Patient/Exam Menu Options

Preset Parameter	Description
Use birthdate	In the Patient information window, enter either the patient age or the birthdate:When selected, enter birth date, then the age is calculated.Whencleared, enter age (birth date field not available).
Auto search for patient	In the Search/Create Patient window: When selected, the system automatically searches through the selected patient archive, while the user enters patient information.When cleared, the automatic search tool is turned off. If you are trying to keep the past patient data confidential, DO NOT use this feature.

Table 3-36: Patient/Exam Menu Options (Continued)

Preset Parameter	Description
Automatic generation of patient ID	In the Search/Create Patient window: When selected, the Patient ID is not required when entering a new patient in the archive. The system automatically generates an ID number. When cleared, the Patient ID is required when entering a new patient in the archive.
Auto Archiving patient data	Archives patient data automatically.
After [End Current Patient], go to	Select go to Worklist screen or Patient screen when ending the current patient.
Keep Search String	Search string is kept rather than cleared.
Worklist Auto Query	Automatically queries the worklist server.
Show BBT	Show BBT field on the OB patient screen to input the basal body temperature.
Double click on patient list to start	Select Review or New Exam to display each time you double click on the patient name in the patient list on the Patient menu.
Detail Mode	Select to display Detail Mode, rather than Exam View, when you select the patient name in the patient list on the Patient menu. You can also type comments while in Detail Mode.
Export to USB HDD: Create DICOMDIR	Create DICOMDIR is a DICOM file format which contains how the directory and DICOM files structured for diagnostic portable media behave. It is important for portability between the Versana Premier to PACS. If you want to save exams to the USB Hard drive and look at it on the PACS, the DICOMDIR is a must.
Export to Network storage: Create DICOMDIR	
Automatic Disable Patient Data	Select to automatically disable patient data. If selected, locks the patient name, date of birth and gender (like Patient ID). The Factory Default for this preset is unchecked.
Remember Cursor Position on the Transfer Screen	To set a default cursor location on the Data Transfer screen: 1. Select the "Remember cursor position in the Transfer screen" preset and press Save. 2. On the Data Transfer screen, move the cursor to the desired field. 3. Exit out of the Data Transfer screen. When returning to the Data Transfer screen, the cursor location is in the position you selected.
Quick New Patient Entry	Select to store new patient automatically by pressing the Patient key.

Table 3-37: Patient/Exam Message Options

Preset Parameter	Description
Patient info exist in logfile	Check box to select.
Request acknowledge of End Exam action	When selected, the user is asked to confirm action when ending an examination.
Warn Image Store without Patient	Select to receive a warning when you press the Print key without an active patient.



Table 3-37: Patient/Exam Message Options

Preset Parameter	Description
Warn Register to No Archive	Select to receive a warning when you register a patient to the "No Archive" data flow. Select a different data flow for permanent storage of patient data.
Warn image store to Read Only dataflow	The system posts a warning message if you attempt to store images to a read-only Dataflow.
Warn video titles exist in the internal storage	The system posts a warning if the video titles exist on the internal DVR flash memory.

Table 3-38: Print and Store Options

Preset Parameter	Description
P[1-3] Key Sound	Select None, Click, Chimes, Ding, Ding-Dong, or Whoosh.
Store Dual as Dicom Only	Select to always store dual images as a DICOM (secondary capture) store, rather than Raw DICOM.
Dual When Color Support is Mixed	Dataflow Mixed is not available. While transferring dual images to the PACS, send black and white images as gray; send color images as color. Set up 2 services (one gray and one color), set up 2 dataflows, and set up 2 buttons. Each button needs to be tied to a different service. Select if you want to keep the user preset for Color Photometric Interpretation while in Dual mode.
Store Multiframe for Sec Capture Loops	Select if you want the CINE loop stored as secondary capture.
Enable Whizz Capture Area	Check box to select.
Store 2D Loop with Timeline Data	Check box to select.
Patient List Print-Font Size	Select font size.
Image Order Scheme	<p>Select to Direct Store images in Acquisition Order, Scan Coach/Assistant Order, or Off.</p> <ul style="list-style-type: none"> • Off. The clipboard on the Ultrasound system shows the image in the order it was acquired. Therefore, re-stored images appear where you'd expect. However, on the PACS system, images appear in arrival order or in image number order. • Acquisition Order. From the Ultrasound system perspective, the same as "Off." But on the PACS system (if based on image number order), images are displayed consistently with the way they are stored on the Ultrasound system. • Scan Coach/Assistant Order. You can define the storage order (reading order) via Scan Coach/Assistant Creator. Therefore, based on the order defined in Scan Coach/Assistant, images are re-ordered and displayed in this manner both on the Clipboard and on the PACS system.



Table 3-39: Other ID Options

Preset Parameter	Description
Enable Other ID	Not selected is the Default. If selected, allow entering Other ID, such as Citizen Service Number, Burger Service Number (BSN), National Health System (NHS) number, along with patient ID information on the Patient Screen.
Validation Format	If the Enable Other ID preset is selected, the system validates the format of "Other ID" when an ID is entered. Choose: NHS Number *** ** ****, Letters and Numbers, Numbers, or Any (no restriction)



3-9-11 Bluetooth

- To add a new bluetooth device,
- 1. Press **Add New Device**.
 - 2. Type the device name in the Name field.

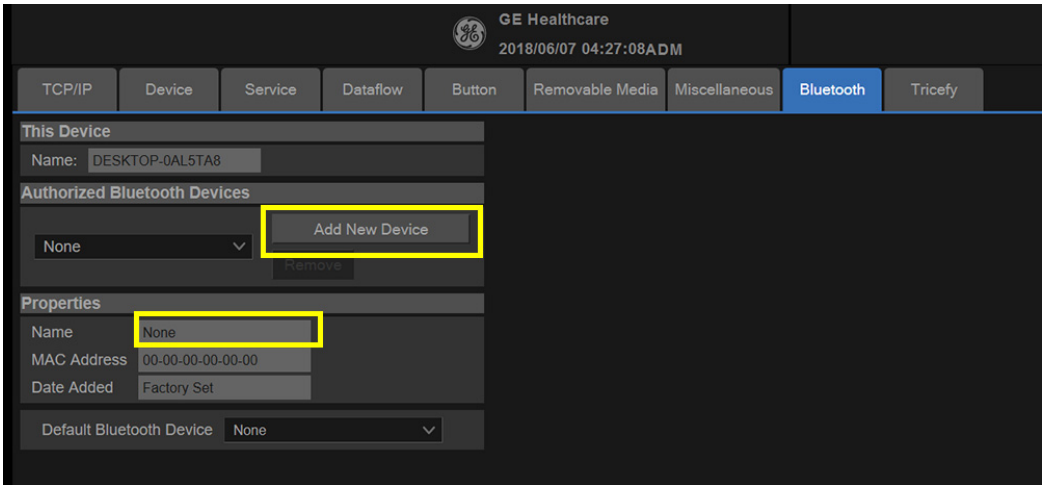


Figure 3-72. Connectivity Bluetooth Preset Menu

Table 3-40: Device

Preset Parameter	Description
Add New Device/Remove	Press Add new device to add a new device; press Remove to delete a device.
Properties: Name	Type the name of the device.
Properties: MAC Address	Unique network card address. NOTE: Only available for MyComputer.
Properties: Enabled	Select to enable bluetooth device.
Properties: Image Transfer Support	Select to enable image transfer.
Properties: Date Added	Display the new device added date.

3-9-12 Tricefy

New GE Versana ultrasound systems have Tricefy pre-installed. Additional software is not necessary for using Tricefy; simply activate your account using the following steps.

- 1. Press **Utility -> Connectivity -> Tricefy**.

NOTE: The Tricefy tab is only available on machines that have Tricefy option.

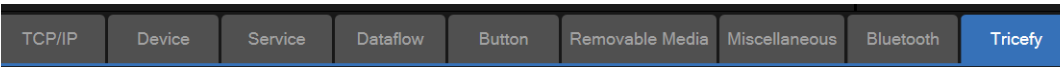


Figure 3-73. Tricefy Menu

- 2. Enable **Tricefy** checkbox, and enter the **email address** to authorize the account. Press “**Activate account**” to activate your account, this process may take up to 30 seconds, and a dialog will pop up if succeeded. And you will receive a notification email, click the link to complete the whole activating process.

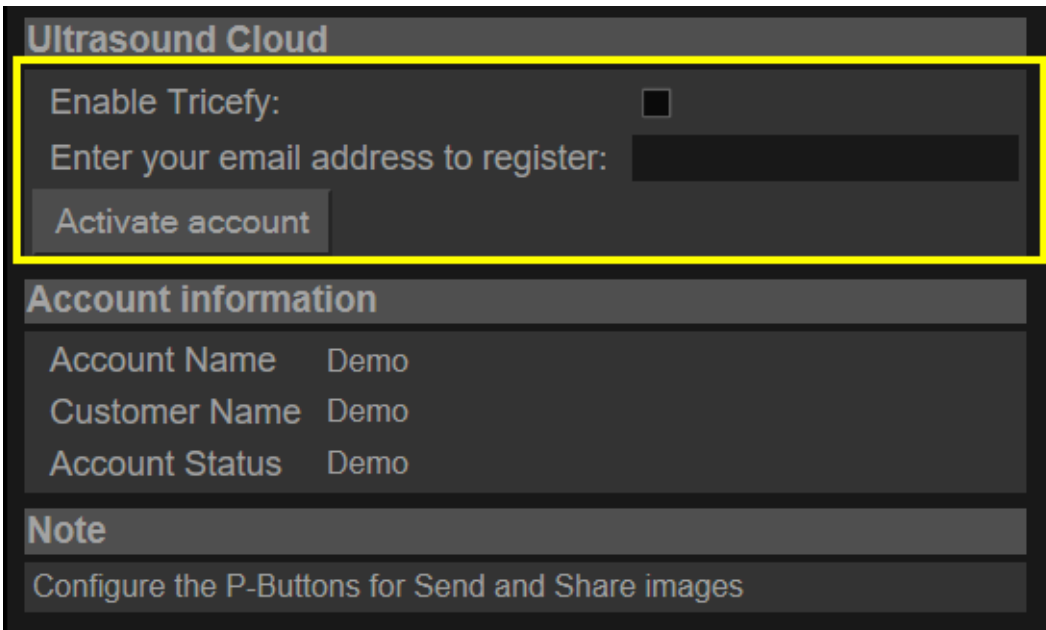


Figure 3-74. Activate Tricefy Account



3-9-12 Tricefy(continued)

- 3. Add Tricefy to Print workflow.
 - Click **Button** to configure the P- Buttons for sending and sharing images.

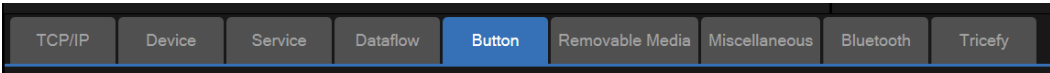


Figure 3-75. Button Menu

- Select **Print1** (or **Print2**, **Print3**) which you would like to use. Then Select **Trice Archive** and press >> button to add it to **Printflow View**, press **Save**. Now when you press the **P1** button, the image will be sent to your Tricefy cloud.

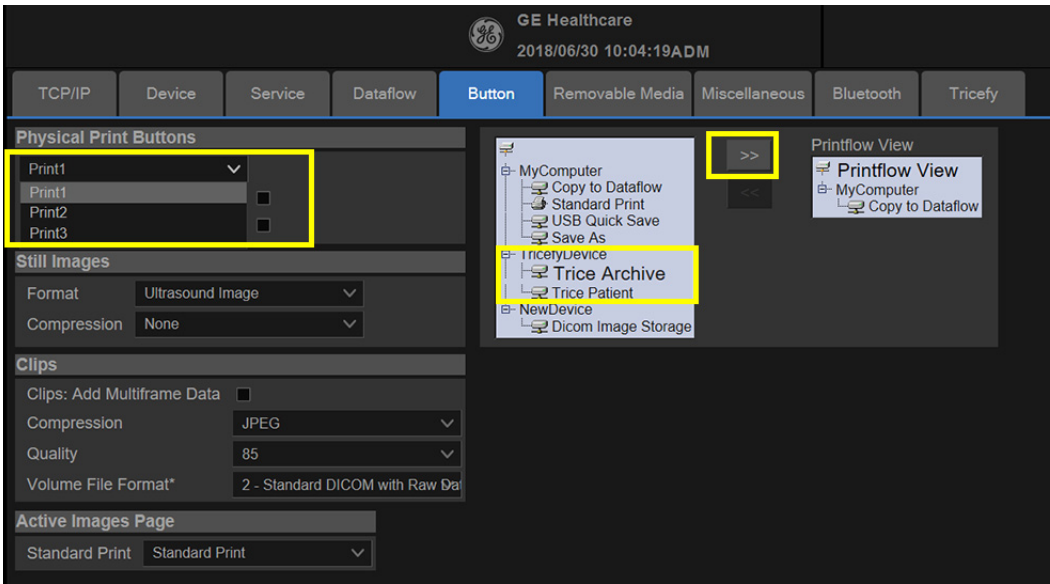


Figure 3-76. Configure the P-Button for Tricefy

3-9-12 Tricefy(continued)

4. If you want to share the images to patient, please add **Trice Patient** to **Printflow View**. And also remember input the patient's Phone number or email address.

The screenshot displays the GE Healthcare Tricefy interface. On the left is a sidebar with navigation options: Patient (selected), Image History, Active Images, and Data Transfer. Below these are buttons for New Patient, Register, and Details. Further down are EZMove and EZBackup buttons, a Dataflow section with a dropdown menu set to 'Local Archive - Int. HC', and a Scan button. The main area on the right is the Patient Details form. It contains input fields for Patient ID, Last Name, First Name, Middle Name, and DOB. There are radio buttons for Gender (Male and Female) and an Age input field. A large text area is provided for the Address. Below the address is a large text area for Comments. At the bottom of the form, the Patient Phone # and Email fields are highlighted with a yellow border.

Figure 3-77. Share Images to Patient

NOTE: If you has any problem with Tricefy settings, please contact your GE service/sales representative.



3-10 Option Setup

3-10-1 Software Option Installation Procedure

NOTE: Not all features described in this section may be available or cleared for sale in all markets. Please contact with your local GE Ultrasound representative to get the latest information.

- 1. Power on the system.

NOTE: Keep the power cord connection during the installation.

- 2. After the power-up sequence is complete, press **Utility** on the control panel, and then select **Admin-> System Admin**.



For software Option Installation, the operator must login as Administrator.

- 3. Enter the new SW Option key and then select **Add**.

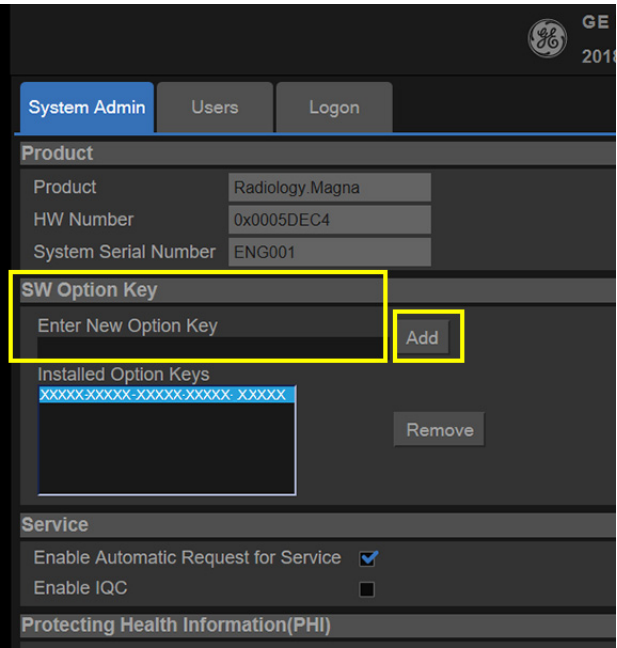


Figure 3-78. New Option Key



3-10-1 Software Option Installation Procedure(continued)

4. To activate the changes, press **OK** to restart the system.

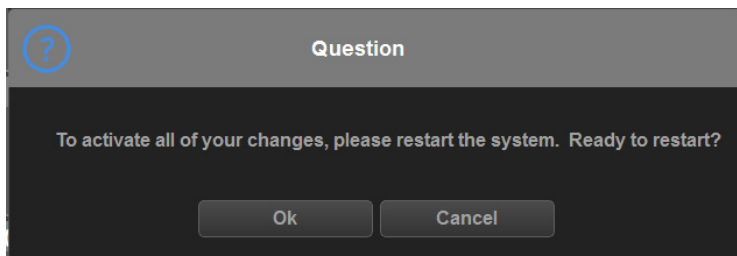


Figure 3-79. Dialog Window

NOTE: *There is no need to restart the system after each installation, if several option keys are installed at one time. Select Cancel for the first several times, and select OK after the last installation to activate all the changes.*

5. After the system is powered on, check the option status.

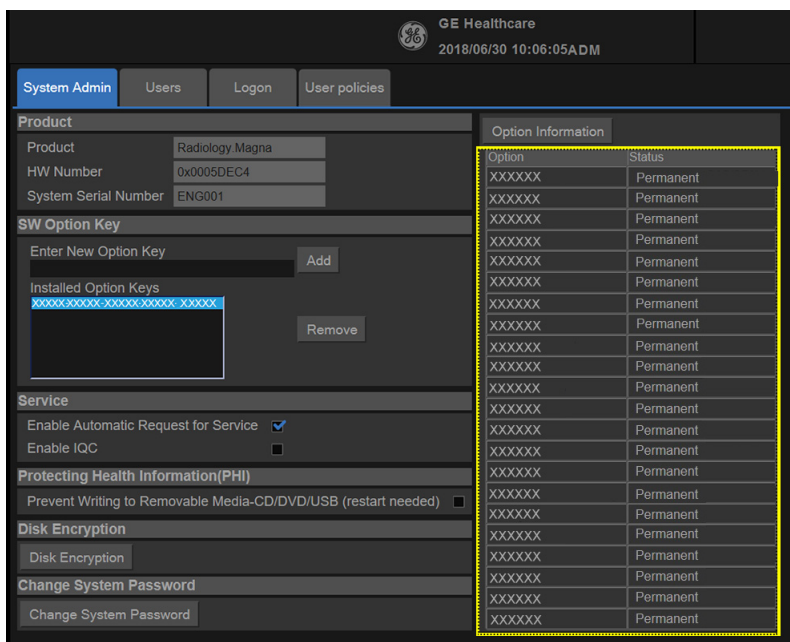


Figure 3-80. Check Option Status

The option status explanation:

- Permanent: This option is enabled in the system.
- Disabled: This option is disabled in the system.



3-10-1 Software Option Installation Procedure(continued)

- 6. Configure the user define key in utility. On the screen, the user defined key name will be displayed.

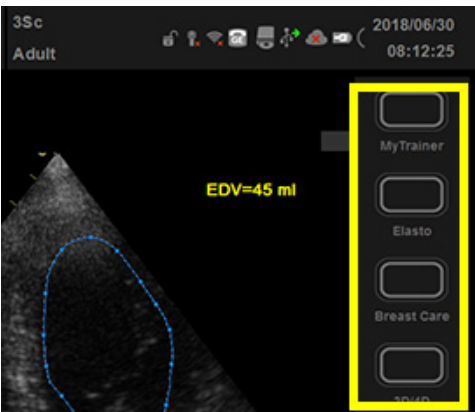


Figure 3-81. User define key display on the screen

- 7. This completes the option installation of Versana Premier.

NOTE: *Installing corresponding hardware is a prerequisite of loading software option successfully. Please check below table for correspondence.*

Table 3-41: Software Corresponding Hardware

Software Option	Hardware
4PP	4PP Front Cover Assy
DVDROM	DVD Writer Kit
3D_4D	4D Box Assy

3-11 Paperwork after setup

NOTE: *During and after setup, the documentation (i.e. CDs with documentation, User Manuals, Installation Manuals, etc.) for the Versana Premier and the peripherals must be kept as part of the original Ultrasound system documentation. This ensures that all relevant safety and user information is available during the operation and service of the complete Ultrasound system.*

3-11-1 Contents in this Section

- [3-11-2 'User's Manual\(s\)' on page 3-99](#)
- [3-11-3 'Product Locator Installation Card' on page 3-100](#)

3-11-2 User's Manual(s)

User Check that the correct User Manual(s) for the system and software revision, is included with the installation. Specific language versions of the User Manual may also be available. Check with your GE Sales Representative for availability.



3-11-3 Product Locator Installation Card

NOTE: The Product Locator Installation Card shown may not be the same as the provided Product Locator card.


		GE Medical Systems Product Locator File P.O. Box 414 Milwaukee, WI 53201-0414		General Electric CGR Product Locator Adm. - DSE/SM 283 Route de la Miniere 78530 Buc, FRANCE		Yokogawa Medical Systems Ltd. GEMSA Service Administration 4-7-127 Asahigaoka Hino-shi Tokyo 191, JAPAN	
DESCRIPTION		FDA	MODEL		REV	SERIAL	
SYSTEM LTD.		OCP		BS	ORD		EMPLOYEE NO.
		DISTRICT		ROOM		DATE (MO - DA - YR)	
<h1>INSTALLATION</h1>		CUSTOMER NO.					
		DESTINATION NAME AND ADDRESS					
46-303268 Rev 5		ZIP CODE					

Figure 3-82. Product Locator Installation Card (Example)



Chapter 4

General Procedures and Functional Checks

This chapter provides procedures for quickly checking major functions of the Versana Premier and diagnostics instructions using the built-in service software.



4-1 Overview

4-1-1 Purpose of this chapter

This chapter provides procedures for quickly checking major functions of the scanner and diagnostics instructions using the built-in service software.

4-1-2 Contents in this chapter

- [4-1 'Overview' on page 4-2](#)
- [4-2 'General procedures' on page 4-3](#)
- [4-4 'Functional checks' on page 4-41](#)
- [4-5 'Power supply test & adjustments' on page 4-65](#)

4-1-3 Special Equipment required

To perform these tests, you'll need any of the sector, linear, or convex probes. (Normally you should check all the probes used on the system).

4-2 General procedures



Ultrasound system requires all covers.

Operate this Ultrasound system only when all board covers and frame panels are securely in place. The covers are required for safe operation, good Ultrasound system performance and cooling purposes.



Energy Control and Power Lockout for Versana Premier.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.



Ultrasound System components may be energized.



4-2-1 Overview

Some procedures are used more often than other. The intention with this section is to keep the most used procedures in one place.

4-2-1-1 Contents in this section

- [4-2-2 'Power ON/Boot Up' on page 4-5](#)
- [4-2-3 'Power off' on page 4-8](#)
- [4-2-5 'Logging on to Versana Premier as "ADM"' on page 4-11](#)
- [4-2-6 'Service Key \(SSA\)' on page 4-12](#)
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- [4-2-9 'Backup and Restore Database, Preset Configurations and Images' on page 4-13](#)
- [4-2-10 'Data Management' on page 4-22](#)
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4-2-2 Power ON/Boot Up

4-2-2-1 Warnings



DANGER

ALWAYS CONNECT THE ULTRASOUND SYSTEM TO A FIXED POWER SOCKET WHICH HAS THE PROTECTIVE GROUNDING CONNECTOR.



DANGER

NEVER USE A THREE-TO-TWO PRONG ADAPTER; THIS DEFEATS THE SAFETY GROUND.



DANGER

ENSURE THAT THE POWER CORD AND PLUG ARE INTACT AND THAT THE POWER PLUG IS THE PROPER HOSPITAL-GRADE TYPE (WHERE REQUIRED).



CAUTION

Ultrasound system requires all covers.

Operate this Ultrasound system only when all board covers and frame panels are securely in place. The covers are required for safe operation, good Ultrasound system performance and cooling purposes.



CAUTION

Use only power supply cords, cables and plugs provided by or designated by GE.

NOTE: *Do not cycle the Circuit Breaker ON-OFF-ON in less than five (5) seconds. When turning OFF the Circuit Breaker, the Ultrasound system should de-energize completely before turning the circuit breaker ON.*



4-2-2-2 Connect AC (mains) Power to Versana Premier

Connecting AC Power to the Versana Premier ultrasound unit, involves preliminary checks of the power cord, voltage level and compliance with electrical safety requirements.

1. Ensure that the wall outlet is of appropriate type, and that the Circuit Breaker is turned off.
2. Uncoil the power cable, allowing sufficient slack so that the unit can be moved slightly.
3. Verify that the power cable is without any visible scratches or any sign of damage.
4. Verify that the on-site mains voltage is within the limits indicated on the rating label near the Circuit Breaker on the rear of the unit.
5. Connect the Power Cable's female plug to the Power Inlet at the rear of the unit.
6. Lock the plug in position with the Retaining Clamp (ACC Clamp).
7. Verify that the Mains Power Circuit Breaker is in OFF position, if not, switch it OFF.
8. Connect the Power Cable's other end (male plug) to a hospital grade mains power outlet with the proper rated voltage, and the unit is ready for Power ON/Boot Up.

4-2-2-3 Switch ON the AC Power to Versana Premier

1. Switch ON the Mains Power Circuit Breaker at the rear of the unit.

You should hear a “click” from the relays in the AC Power and the unit is ready to boot.

2. Press once on the **On/Off** key on the Operator Panel to boot the unit.

During a normal boot, you may observe that:

- a. The unit's ventilation fan starts on full speed, but slows down after a few seconds (listen to the fan sound).
- b. Power is distributed to the peripherals, Operator Panel (Console), Monitor, Front End Processor and Back End Processor.
- c. Back End Processor and rest of scanner starts with the sequence listed in the next steps:
- d. Back End Processor is turned ON and starts to load the software.
- e. The Start Screen is displayed on the monitor.
- f. A start-up bar indicating the time used for software loading, is displayed on the monitor.
- g. The software initiates and sets up the Front End electronics and the rest of the instrument.
- h. The backlight in the keyboard is lit.
- i. As soon as the software has been loaded, either a 2D screen is displayed on the screen, indicating that a probe has been connected, or a No Mode screen is displayed, indicating that no probe has been connected.

NOTE: *Total time used for start-up is typical one and a half minutes or less. If starting after a power loss or a lock-up, the start-up time may be up to four minutes.*

NOTE: *Diagnostic LEDs on the rear panel indicate the boot up status, refer to “Normal Status” in [Table 7-10 on page 7-51](#).*



4-2-3 Power off

When you switch off the unit, the system performs an automatic shutdown sequence.

The SYSTEM - EXIT menu, used when switching off the unit, gives you these choices:

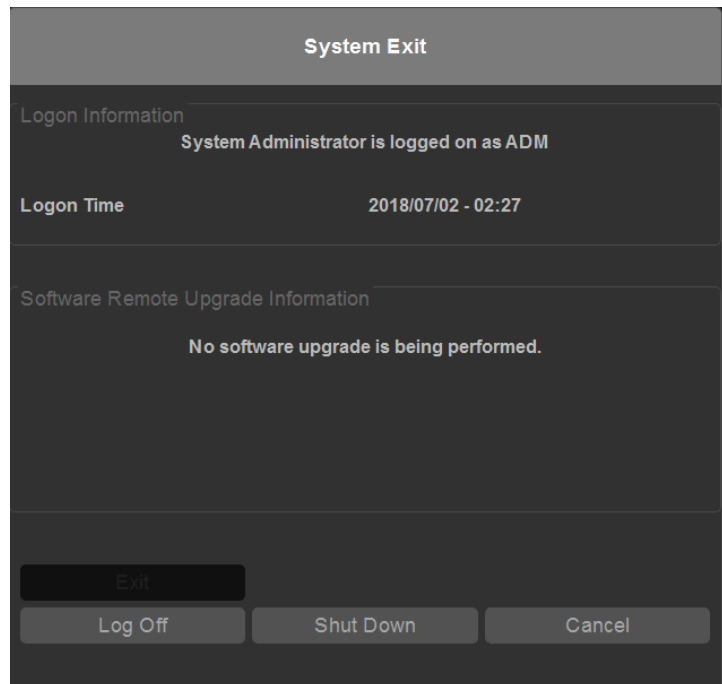


Figure 4-1. System Exit Window

- **Logoff**
Use this button to log off the current user.
The system remains ON and ready for a new user to log on.
If the Logoff button is dimmed, it indicates that no user is logged on to the unit at the moment.
- **Shutdown**
Use this button to shut down the system. The entire system will shut down. It is recommended to perform a full shutdown at least once a week.
If the Shutdown button is dimmed, use the key-combination <Ctrl+Alt+Delete> to shut down the unit.

4-2-3 Power off(continued)

NOTE: To enable the key-combination <Ctrl+Alt+Delete>, the dongle should be connected to the system.

- **Cancel**

Use this button to exit from the System-Exit menu and return to the previous operation.

4-2-3-1 System shutdown

Disconnect the Mains Power Cable is necessary. *For example:* Relocating the scanner.



CAUTION

DO NOT unplug and/or transport the unit until after the power off sequence has been completed. Failure to do so may result in corrupted patient files.



4-2-4 Check System Date and Time

A warning message "Please check the system date and time are correct" appears on the screen when the system is powered on. This warning message appears for the possible reasons:

- The system is not boot up for over 14 days.
- The system time has been changed by 24 hours earlier than the current system time of last boot-up.
- The BIOS time is changed by 24 hours earlier than the current system by resetting BIOS time, replacing BIOS module or changing BIOS time.

This warning message is to remind the user to check the system date in case the system date and time is incorrect.

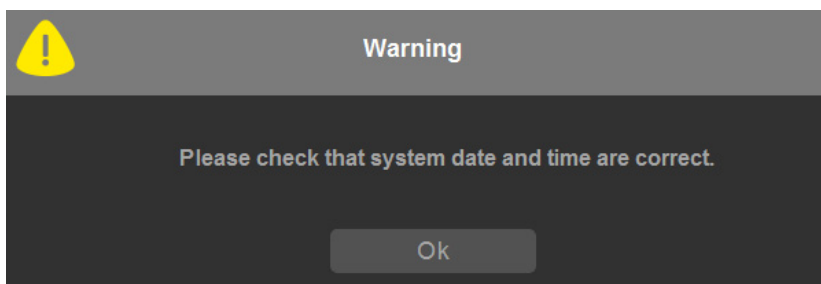


Figure 4-2. Check system date and time message

Move the cursor to OK and press Cursor key on the control panel to select OK. The system enters.

Check the system date and time. If it is incorrect, follow below steps to reset the system date and time.

- Enter Utility -> System -> General -> Date/Time.
- Reset the system date and time.
- Select Apply and then select OK.
- Select Save.



4-2-5 Logging on to Versana Premier as “ADM”

Select **Utility** on the control panel, then select **Admin**.

It will bring up the **Operator Login** dialog where you must log on.

NOTE: When User Operator Login Window pop up for the first time, it's required to set the ADM password forcefully.

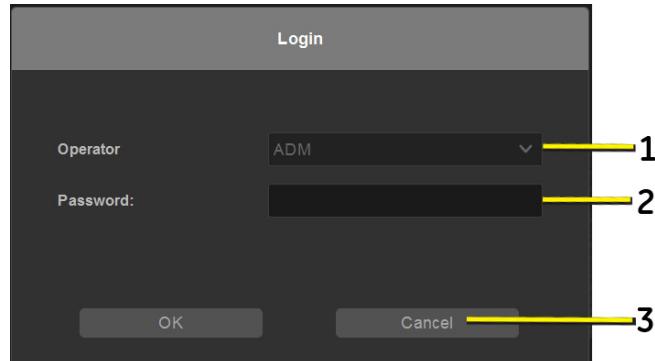


Figure 4-3. Operator Login Window

1. **Operator:** Select the operator.
2. **Password:** Enter Operator's password (optional).
3. Select the type of Login or Cancel.
 - **OK:** Standard login.
 - **Cancel:** Cancel login.

As default, ADM is defined.

- ADM

If you log on as **ADM**, you will have access to do general set-up, service adjustments, adjust network and connectivity settings.

Select the name **ADM**, the password as default and select **Login**.

It is possible for the administrator (**ADM**) to establish new users (**USR**) and set unique passwords for each user, including a new password for **ADM**. If the login as **ADM** fails, contact the responsible person in the hospital to get access.

- USR

If you log on as **USR**, you will have access to do set-up tasks that a user may need to do during daily use.



4-2-6 Service Key (SSA)

A Service Key and a proprietary GE Service password are necessary for use by GE Service when performing proprietary level diagnostics like accessing the desktop on the BEP. The password used with the GE service key changes at specific intervals.

The SSA key provides secure access for GE service personnel to advanced tools to service the system.

SSA is a class M key with the following characteristics:

- Access to all service features
- Access to Windows Desktop
- Key must be renewed every 30 days
- Tied to SSO
- Password locked via key pad

Please complete the course on GE Learning before using SSA:

Course name: Secure Service Access Training

Course ID: GEHC-SVCS-63061025

NOTE: *Press I Agree to enter the Maintenance Access Screen when below Information dialogue window appears. Press OK before the status bar completes, otherwise the system may enter scanning screen.*

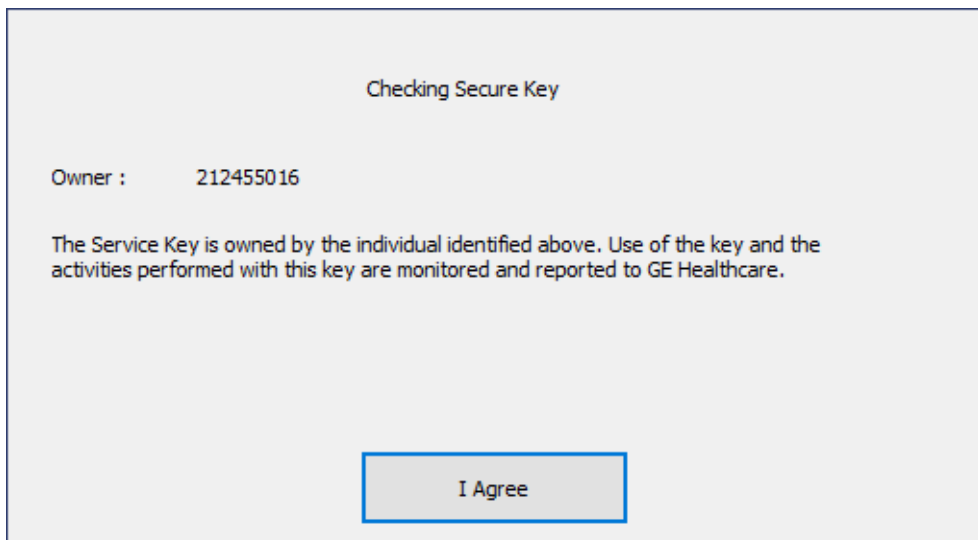


Figure 4-4. Service Key Information

4-2-7 Exit to Windows Desktop from the Versana Premier application software

If you want to exit to the Windows Desktop when the application software is running, please refer to Proprietary Service Manual.

4-2-8 Removable media

Refer to the latest revision of the User Manual to perform the following tasks:

- Using Removable Media
- Labeling Removable Media
- Formatting Removable Media
- Verifying Removable Media

4-2-9 Backup and Restore Database, Preset Configurations and Images

NOTE: *Always save presets before any software reload. This ensures the presets loaded after the software reload are as up-to-date as possible.*

All user presets except changes to Summary, Anatomy, and Biometry pages, can be saved on an DVD-R disk (or USB memory device) for reloading on the system.

NOTE: *Presets should NOT be saved on the same USB memory device (or DVD-R disk) as images. The Archive Menu lists the images but does NOT list the presets stored on a USB memory device (or DVD-R disk).*



4-2-9-1 Formatting Media

1. Select **Utility -> Connectivity -> Removable Media**.
2. Select the media type from the drop down menu.
3. Enter the label for the media. It is best to use all capital letters with no spaces or punctuation marks. Select Format.

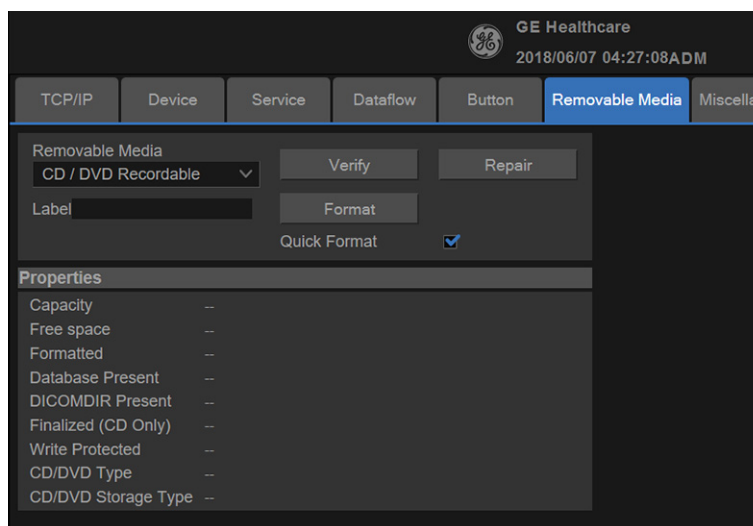


Figure 4-5. Format and Verify Media

4. The system displays a pop-up menu, as shown in [Figure 4-6](#), select OK to continue.

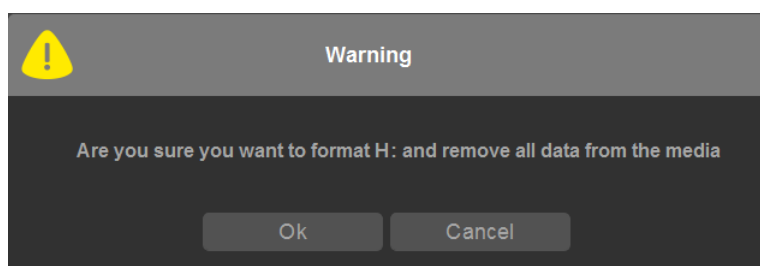


Figure 4-6. Format Warning Pop-up Window

5. If desired, verify that the format was successful by returning to Utility-> Connectivity->Removable Media and selecting Verify.



4-2-9-2 Backup System Presets and Configurations

NOTE: Always backup any preset configurations before a software reload. This ensures that if the presets need to be reloaded, after the software update, they will be the same ones the customer was using prior service.

1. Insert a formatted media into the drive.
2. Enter Utility-> System-> Backup/Restore.

NOTE: If you are not logged in as GE Service or with administrator privileges, the Operator Login window is displayed. Log on with administrator privileges.

3. In the Backup list, select Patient Archive, User Defined Configuration and Service.
4. In the Media field, select CD/DVD (or USB memory device).
5. Select Backup.

The system performs the backup. As it proceeds, status information is displayed on the Backup/Restore screen.

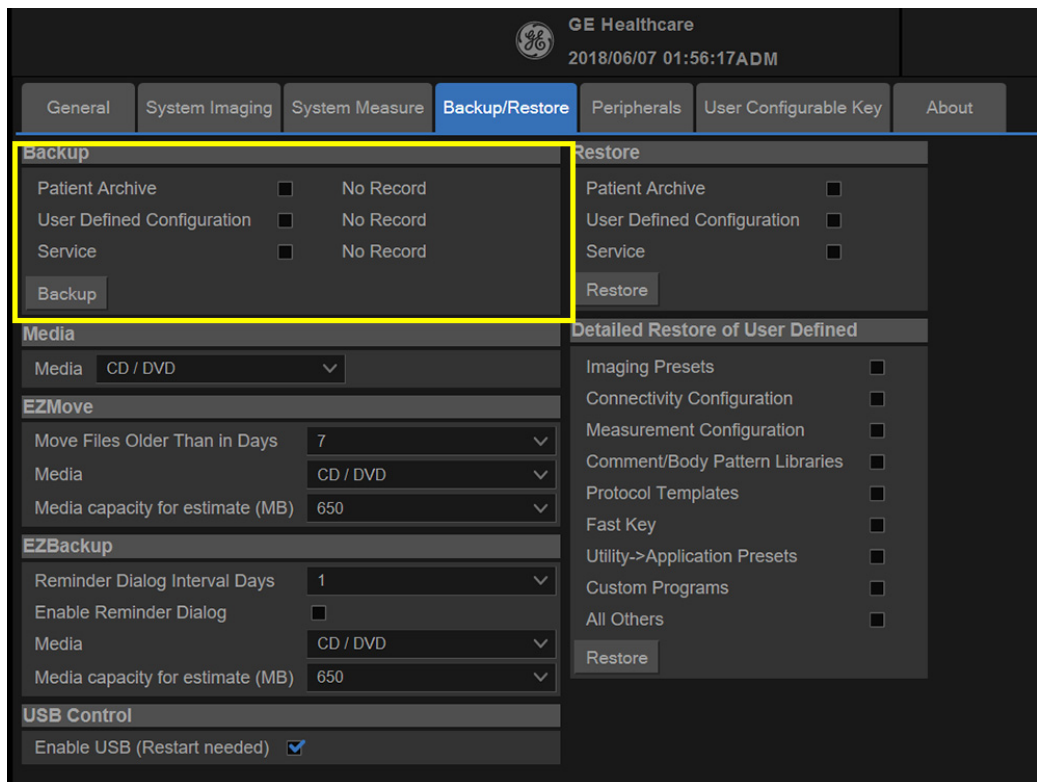


Figure 4-7. Backup/Restore Menu



4-2-9-3 Restore System Presets and Configurations



CAUTION

The restore procedure overwrites the existing database on the local hard drive. Make sure to insert the correct CD (or USB memory device).

NOTE: *If you are not logged in with administrator privileges, the Operator Login window is displayed. Log on with administrator privileges.*

- 1. Insert the Backup/Restore CD/DVD (or USB memory device) into the drive.
- 2. Enter Utility-> System-> Backup/Restore.
- 3. In the Restore list, select Patient Archive, User Defined Configuration and Service.
- 4. In the Media field, select the Backup/Restore CD/DVD (or USB memory device).
- 5. Select Restore.

The system performs the restore. As it proceeds, status information is displayed on the Backup/Restore screen.

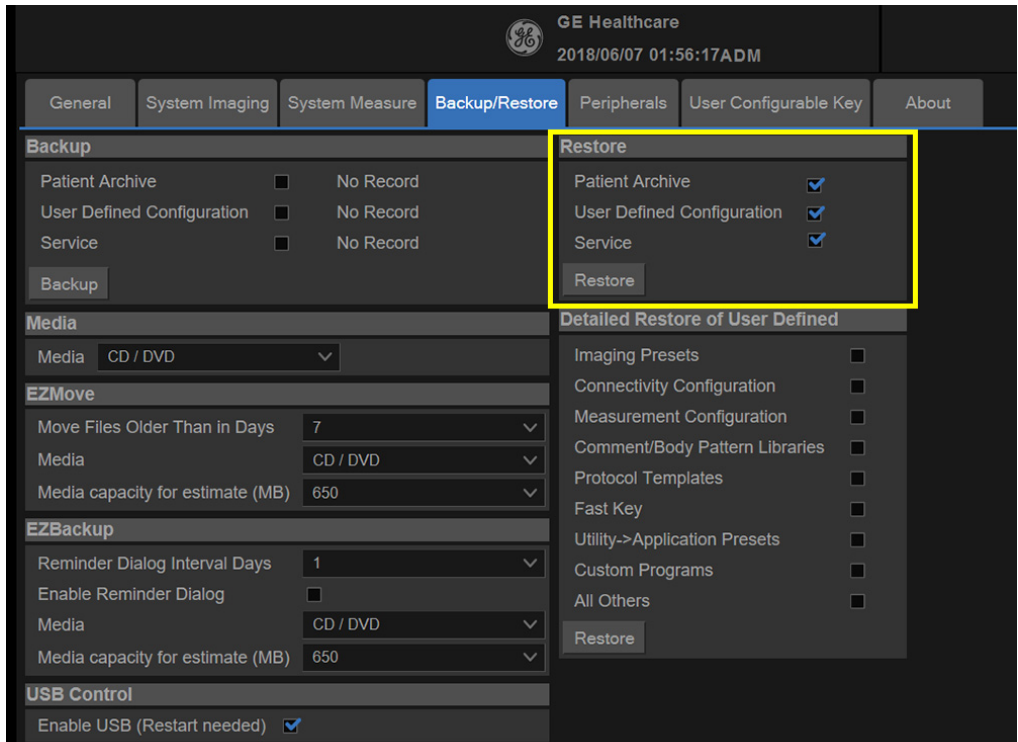


Figure 4-8. Restore message



4-2-9-4 Archiving Images

1. Insert the archive media.
2. To format the archive media, enter Utility-> Connectivity-> Removable Media.
3. Format the CD. Verify the format if desired.
4. Images will be moved from the hard drive by date. Therefore, the best way is to label media by date.

NOTE: *Images will be moved from the hard drive by date. Therefore, the best way to label media is by date. When images are moved to the archive media, they will be deleted from the system hard drive. However, the patient database (backed up earlier) maintains pointers to the location of the images on the archive media.*

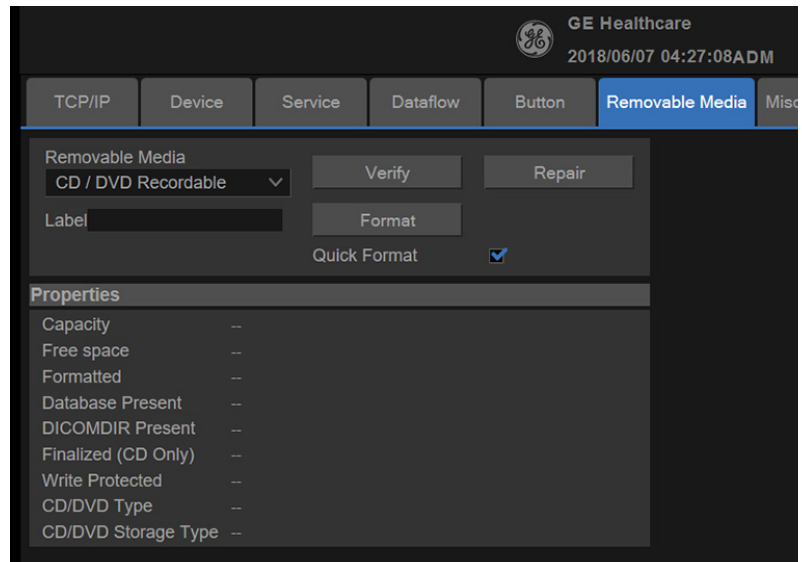


Figure 4-9. Format Media Screen

5. Enter Utility-> System-> Backup/Restore.



4-2-9-4 Archiving Images(continued)

6. Select “Move File Older Than in Days”.

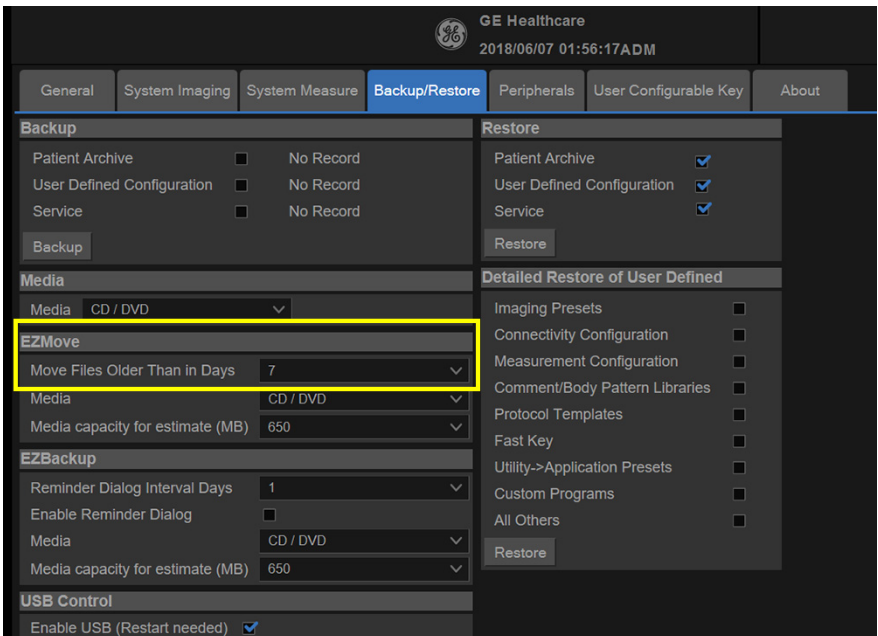


Figure 4-10. EZBackup/Move

7. Press **EZBackup/EZMove**.

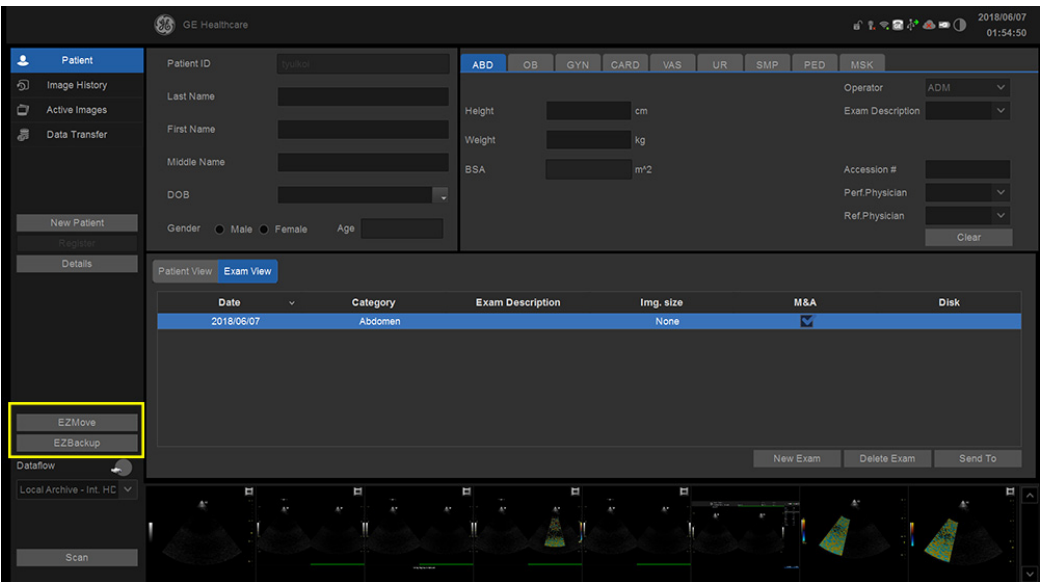


Figure 4-11. EZBackup Wizard 1



4-2-9-4 Archiving Images(continued)

8. Verify the information on the first page of EZBack/EZMove wizard, then select Next. If you want to backup all of the exams in the range (even if the exam was previously backed up), check this option. If you uncheck this option, the system only backs up exams which have not yet been backed up.

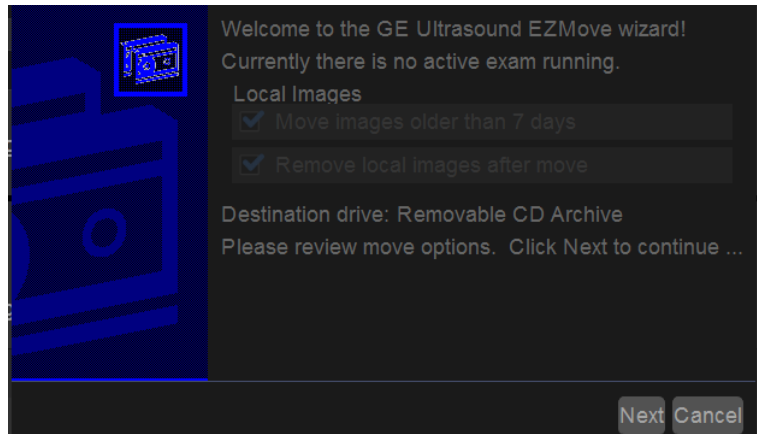


Figure 4-12. EZBackup Wizard 1

9. It indicates the size of the data and the storage. Select Next to continue.

NOTE:

The calculation for the number of backup CD is only an estimate. Allow for one additional CD when performing an EZBack/EZMove.

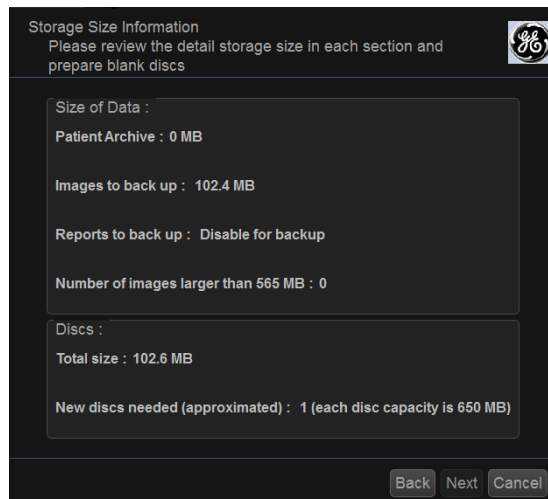


Figure 4-13. EZBackup Wizard 2



4-2-9-4 Archiving Images(continued)

NOTE: This message “Please insert a blank media...” appears if you press Next without inserting the backup media. Insert the media and continue.

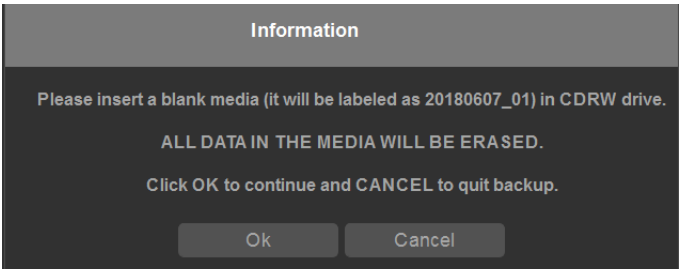


Figure 4-14. Insert Media Message

- 10. The status menu appears. When the backup/move has been complete, press Next.

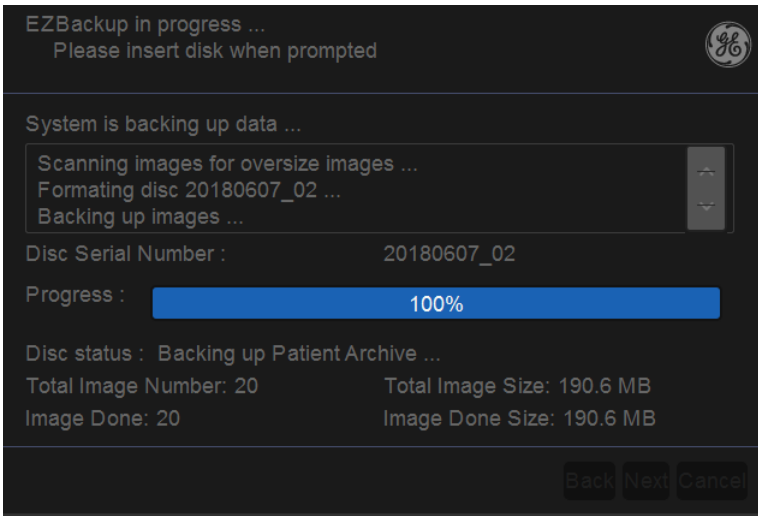


Figure 4-15. EZBackup Wizard 3

NOTE: If you need to insert the next media, a message appears providing you with the media label.

4-2-9-4 Archiving Images(continued)

11. When the backup is complete, the completion wizard page appears. Press Finish.

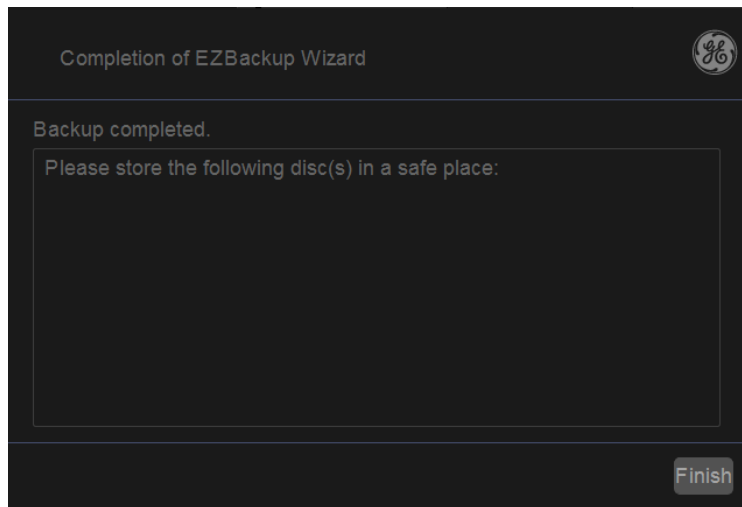


Figure 4-16. EZBackup Completion Window

All databases, presets and images should now be saved to removable media.



4-2-10 Data Management

Refer to the latest revision of the Versana Premier Basic User Manual to perform the following tasks:

- Configuring the Disk Management Function
- Setting the Disk Management Schedule
- Configuring Data Management Settings
- Configuring destination Device Setting
- Running the Disk Management Function
- Starting Disk Management Manually

4-2-11 Backup

For more information, refer to the latest revision of the Versana Premier Basic User Manual.

4-2-12 Restore the factory defaults

For instructions, please see “Data Backup and Restore” in the Basic User Manual/User Guide.



To avoid not being able to connect to Local Archive, connectivity.res and IPSave in *D:\ldunn\target\resources\ldunn\userdefs* could not be deleted. If they are deleted, please rewrite the serial number.

4-2-13 Installation and Setup Procedure for Peripherals

Please refer to [3-8-3 'Peripherals Installation Instructions' on page 3-31](#).

4-2-14 Where are the User Manuals and the Service Manual?

Online versions of the User Manuals are available via the help function.

Both the User Manuals and the Service Manual are delivered as PDF files on a CD-ROM. Paper copies may be ordered from GE.

4-2-15 How to display or print the PDF files from the Manual CD?

1. Insert the CD-R disk (CD-ROM) into the CD-drive on a PC or Laptop with Adobe Acrobat Reader.



CAUTION

Do not try to use the Versana Premier to read these files, it will not work!

2. Follow the instructions on the screen to display the manual of choice.
3. Before printing the complete manual, or pages from the manual, select **File > Print**.
4. Select the **paper size** and choose **Portrait**.
5. Select **Print** to start printing. In the pop up window, you may choose which pages to print and the number of copies you want to print (usually 1 copy).



4-2-16 Cleaning the Trackball



DO NOT touch any boards with integrated circuits prior to taking the necessary ESD precautions.

Always connect yourself, via an arm-wrist strap, to the advised ESD connection point located on the rear of the Ultrasound system (near the power connector).



Follow general guidelines for handling of electrostatic sensitive equipment.

4-2-16-1 Manpower

One person, 10 minutes,

4-2-16-2 Tools

- Antistatic brush and/or antistatic vacuum cleaner

4-2-16-3 Preparations

To get access to the trackball for cleaning, you must perform the following steps:

1. Power down the system.
2. Disconnect the mains power cable from the wall outlet.

Follow these links if you need more information: [See 4-2-3 'Power off' on page 4-8 for more information.](#)

4-2-16-4 Clean the Trackball

Dust is often building up behind the ball, so it interferes with the ball rotation and for optical trackballs the light used for sensing. To get access for cleaning, you need to remove the ball.

The ball is held in position by the Dust Gasket.

1. Power off the system.
2. Rotate the dust gasket counterclockwise until it can be removed from the keyboard.

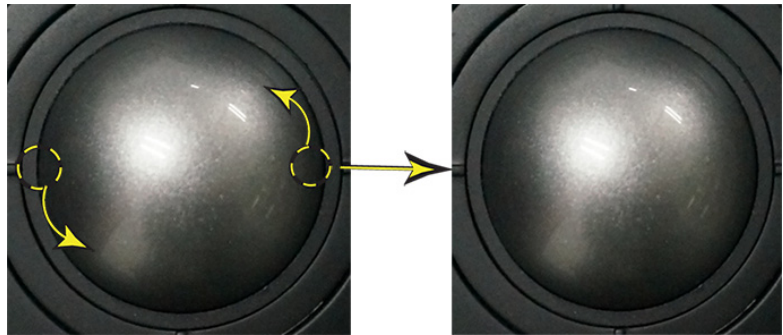


Figure 4-17. Remove the retainer

3. Separate the trackball and the gasket. Wipe off any oil or dust from the trackball, gasket and the trackball housing using a cleaner or cotton swab.
4. Assemble the trackball and gasket, then put it into the housing and rotate it clockwise until its notches are set in the position.



CAUTION

When cleaning, make sure not to spill or spray any liquid into the trackball housing (keyboard or system).

4-2-16-5 Test the Trackball

Power up the system and test that the trackball now works as intended.



4-2-17 Cleaning the air filters

Clean the system's air filters to ensure that a clogged filter does not cause the system to overheat and reduce system performance and reliability. It is recommended the filters be cleaned every two weeks, but the requirements will vary due to your system use.



CAUTION

Be sure to lock the wheels before cleaning the air filters to avoid injury by any unexpected movement of the system.

DO NOT operate the unit without the air filters in place.

Allow the air filters to dry thoroughly before re-installing them on the unit.

4-2-17-1 Cleaning

1. Power off the system.
2. Remove the body left and right cover on both sides.

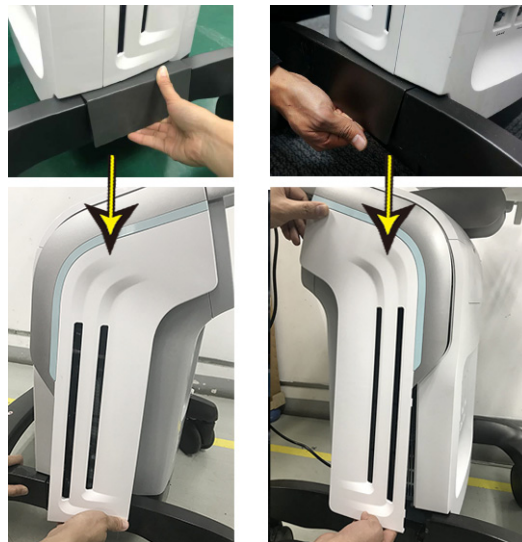


Figure 4-18. Remove the body left cover

4-2-17 Cleaning the air filters(continued)

3. Remove the air filters on both side panels.

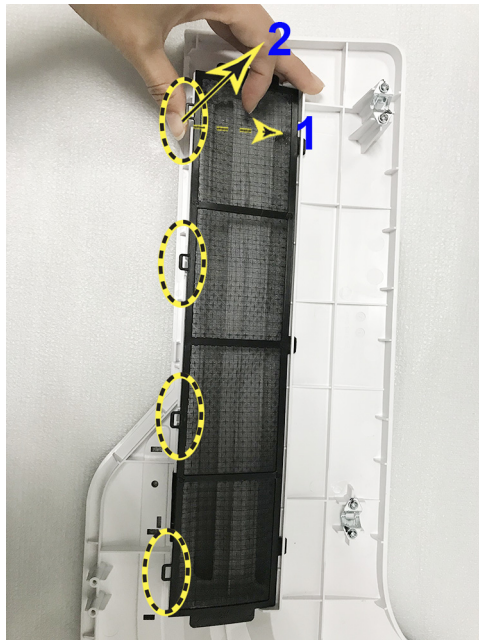


Figure 4-19. Remove the Filters

4. Dust the filters with a vacuum cleaner and/or wash it with a mild soapy solution.

If washed, rinse and dry the filters before re-installation.

5. Re-install the clean filter in the reverse order of removal.

Please align the 3 Pins with the 3 holes on the body left cover

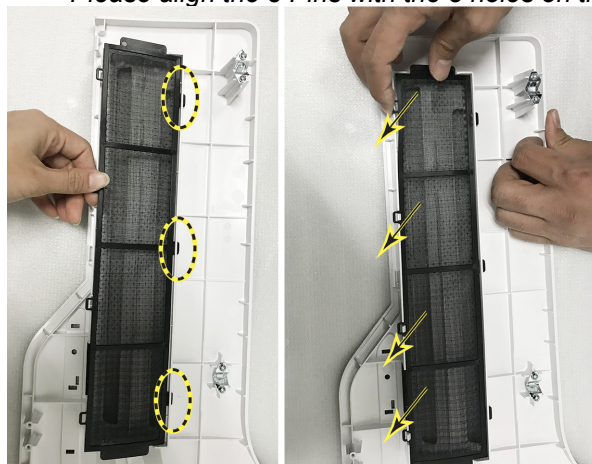


Figure 4-20. Install the Air Filter



4-2-18 Monitor

To clean the monitor face:

Use a soft, folded cloth. Gently wipe the monitor face.

DO NOT use a glass cleaner that has a hydrocarbon base (such as Benzene, Methyl Alcohol or Methyl Ethyl Ketone) on monitors with the filter (anti-glare shield). Hard rubbing will also damage the filter.

NOTE: *When cleaning the screen, make sure not to scratch the monitor.*

4-2-19 Operator Control Panel

To clean the operator control panel:

1. Moisten a soft, non-abrasive folded cloth with a mild, general purpose, non-abrasive soap and water solution.
2. Wipe down operator control panel.
3. Use a cotton swab to clean around keys or controls. Use a toothpick to remove solids from between keys and controls.

NOTE: *When cleaning the operator control panel, make sure not to spill or spray any liquid on the controls, into the system cabinet, or in the probe connection receptacle.*

NOTE: *In case of SARS, use bleach, alcohol, or Cidex in a normal diluted form for cleaning/disinfecting the operator panel.*

NOTE: *DO NOT use T-spray or Sani Wipes on the control panel.*



CAUTION

Before cleaning the control panel, make sure the key cap is firmly in place.



4-3 Disk Encryption/Decryption

4-3-1 Overview

Disk Encryption is a function to protect the patient information on the device and prevent unauthorized access to PI/PHI, especially when the device is stolen. The encryption AES is 256 bit.

NOTE: *Disk Encryption can also protect the user data stored on removable device.*

NOTE: *The steps for Removable Media Encryption and Local Patient Data Drive Encryption are the same.*



CAUTION

The user must make backups and take care of the encryption keys. It is the customer's responsibility for storing the keys. GE will have no back door or any responsibility or possibility of recovering the data.



4-3-2 Disk Encryption

- 1. Login as administrator. Press **Utility -> Admin -> System Admin -> Disk Encryption**.

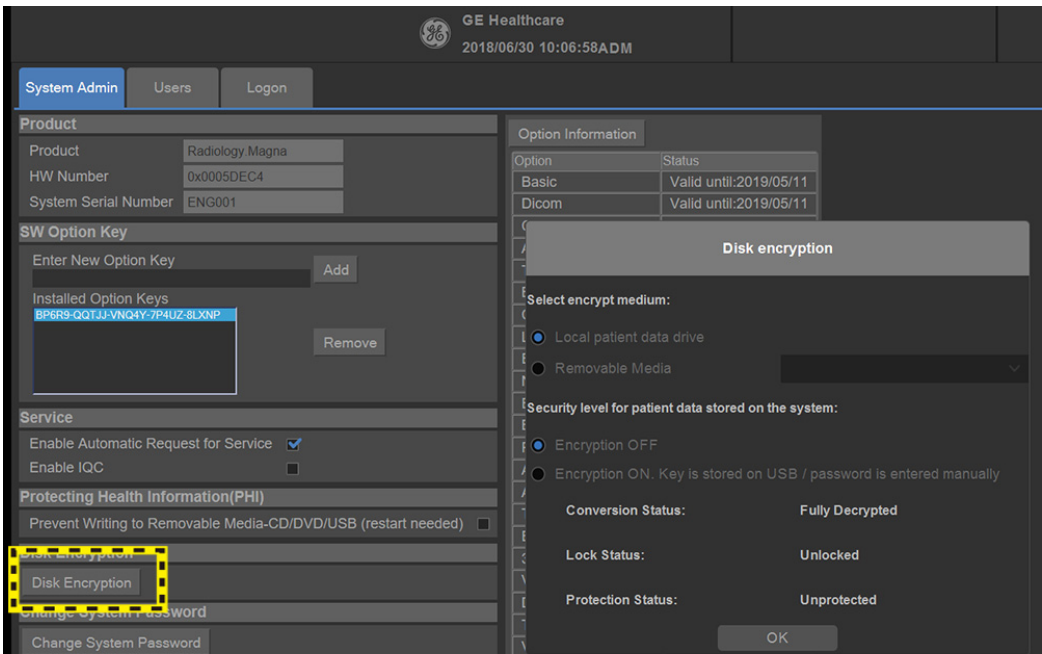


Figure 4-21. Disk Encryption 1

- 2. Select **Encryption ON**. A confirmation message pops up, press **Continue** to continue the encryption process.



Figure 4-22. Disk Encryption



4-3-2 Disk Encryption(continued)

3. Enter a password or a passphrase and re-enter to confirm. Press **Continue**.

NOTE: *A valid password must be at least 8 characters long and has a maximum length of 256 characters.*

Figure 4-23. Disk Encryption 3

4. Insert a USB and select it to record the recovery key. You can also press **Print recovery key** to print the recovery key, or you can press **Hide recovery key** to hide the recovery key.

Press **Continue**.

Figure 4-24. Disk Encryption 4



4-3-2 Disk Encryption(continued)

- 5. When the recording process is completed, a confirmation dialog pops up, press **OK**.

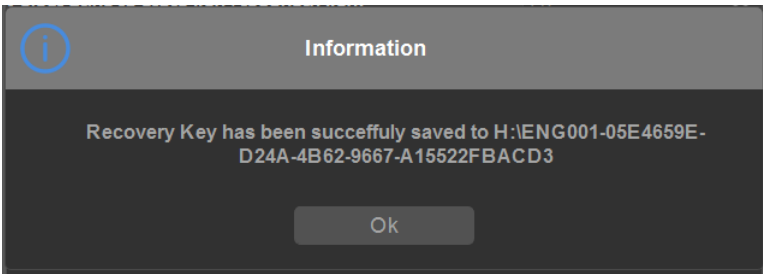


Figure 4-25. Disk Encryption 5

- 6. Encryption process begins.
You can press **Pause** to pause the encryption process.



Figure 4-26. Disk Encryption 6

- 7. When the encryption process completes, press **Finish**.

NOTE: *The encryption process for patient data drive may take thirty minutes or more.*



Make sure to keep the password/passphrase, recovery key and any back up of these in secure place, not accessible for unintended audience.

4-3-3 Pause Encryption

1. During encryption process, you can press Pause to stop the encryption process.

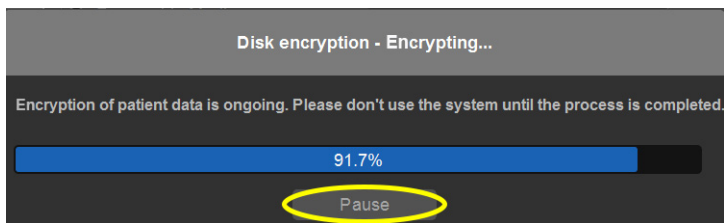


Figure 4-27. Encryption Pause 1

2. A confirmation dialog pops up, press **Yes** to continue or **No** to cancel.

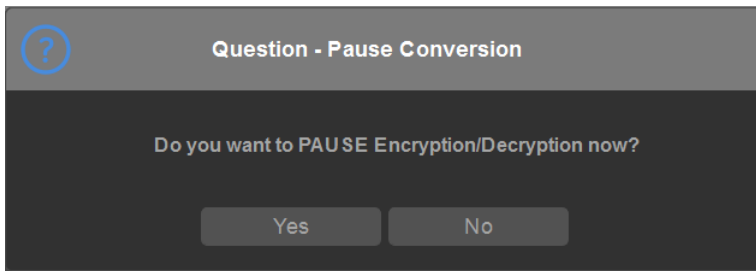


Figure 4-28. Encryption Pause 2



4-3-4 Resume Encryption

- 1. Press Utility -> Admin -> System Admin -> Disk Encryption. Press Resume.

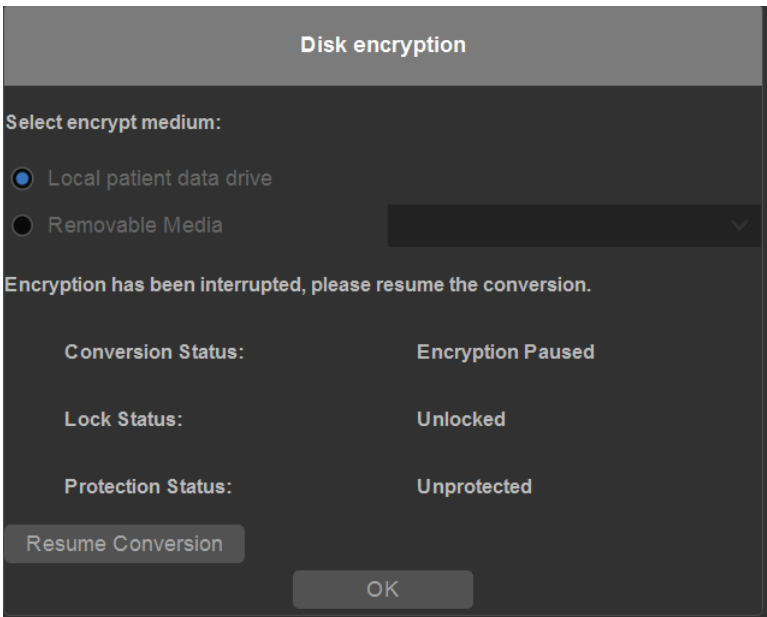


Figure 4-29. Encryption Resume 1

- 2. A confirmation dialog pops up, press **Yes** to resume conversion or press **No** to cancel.

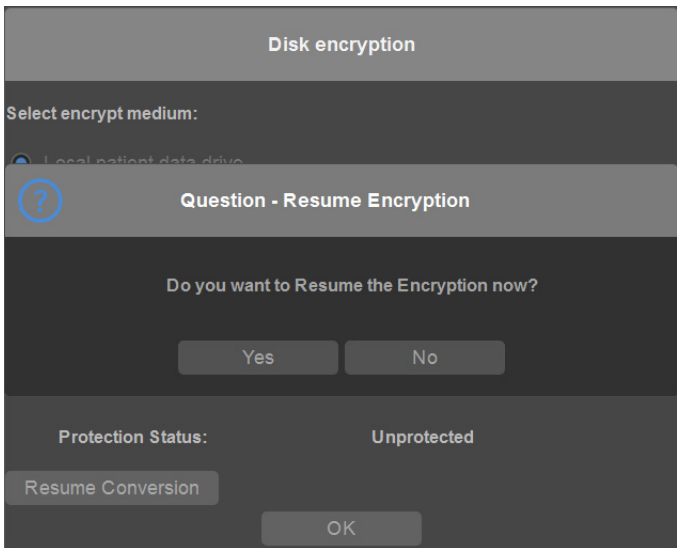


Figure 4-30. Encryption Resume 2



4-3-4 Resume Encryption(continued)

- Encryption of patient data is ongoing. Please do not use the system until the process is completed.

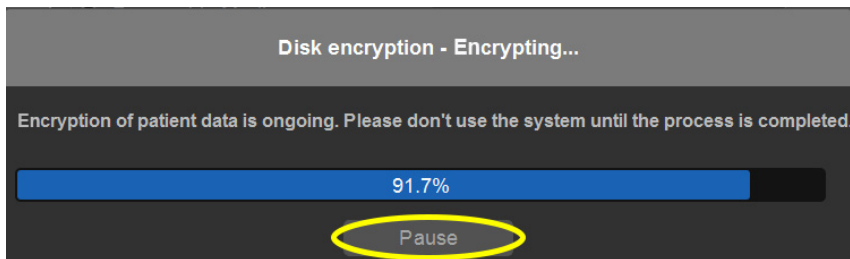


Figure 4-31. Encryption Resume 3

4-3-5 Change Password

After the encryption process is completed, you can change the password as you wish.

- Press **Utility** -> **Admin** -> **System Admin** -> **Disk Encryption**. Press **Change Password**.

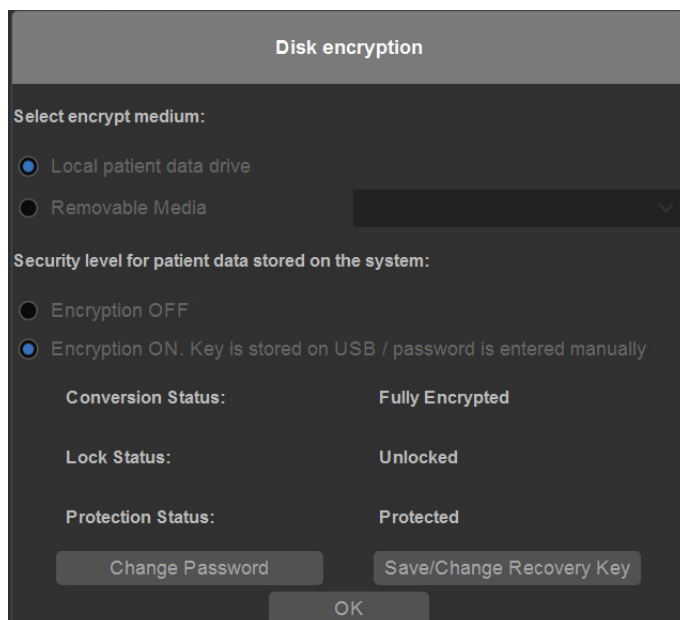


Figure 4-32. Change Password 1



4-3-5 Change Password(continued)

- 2. Enter new password/passphrase, and re-enter it to confirm.

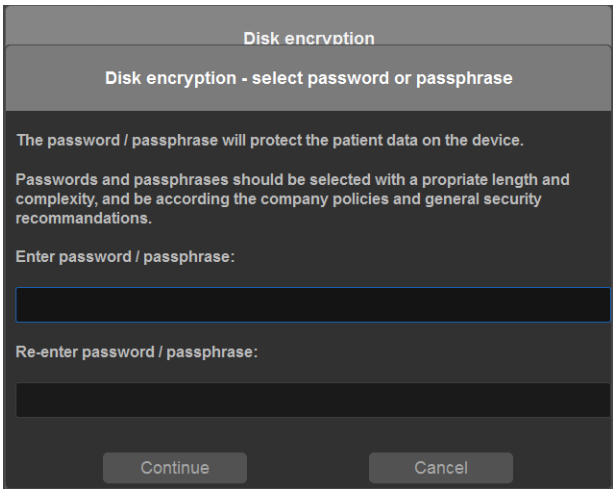


Figure 4-33. Change Password 2

- 3. Press OK.

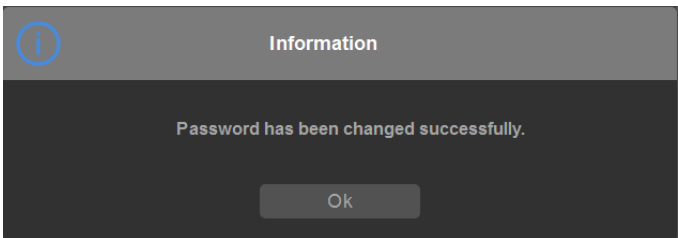


Figure 4-34. Change Password 3

4-3-6 Change Recovery Key

After the encryption process is completed, you can change the recovery key as you wish.

1. Press **Utility -> Admin -> System Admin -> Disk Encryption**. Press **Save/Change Recovery Key**.

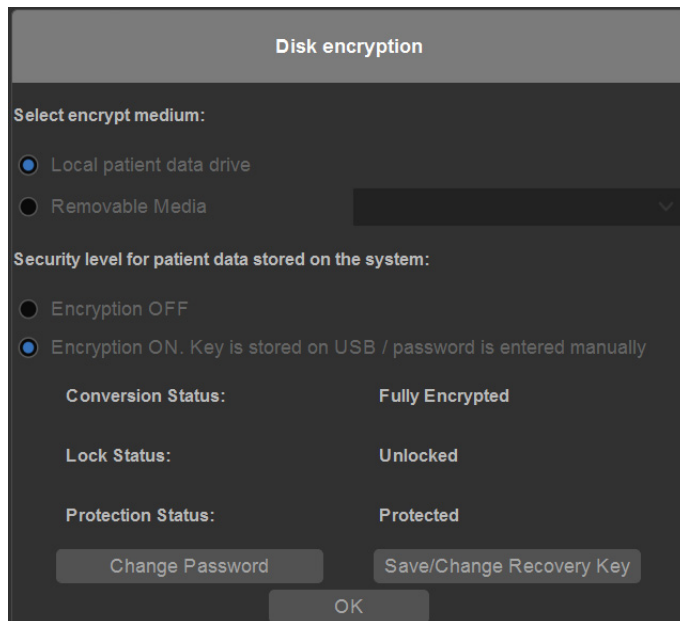


Figure 4-35. Change Recovery Key 1

2. Insert a USB to store the new recovery key.



Figure 4-36. Change Recovery Key 2



4-3-6 Change Recovery Key(continued)

3. Press OK.

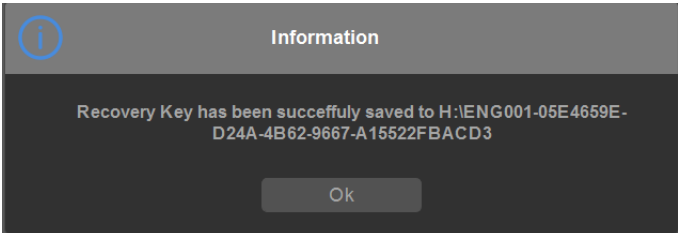


Figure 4-37. Change Recovery Key 3

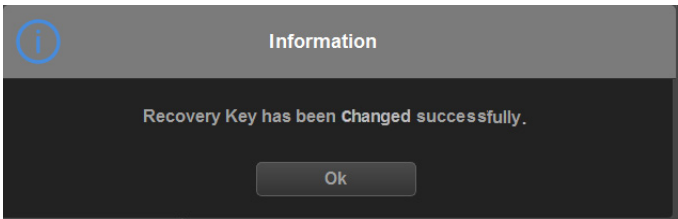


Figure 4-38. Change Recovery Key 4

4-3-7 Unlock with user entered key & recovery key

When the patient data is in locked status, you can unlock it with user entered key and recovery key.

You can insert the USB with recovery key, or you can input the password or recovery key manually to unlock the system.

NOTE: If you press **Cancel**, the system will stay in locked status and some of the functions will be not available.

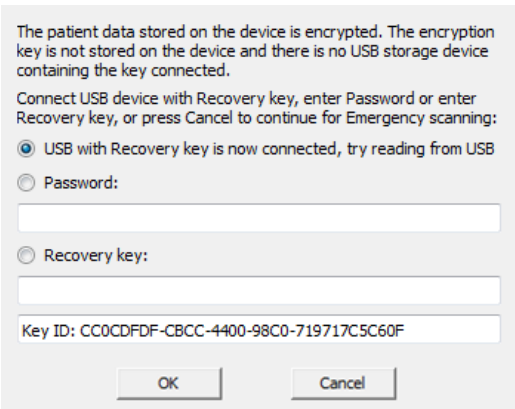


Figure 4-39. Unlock Dialog

4-3-8 Emergency Scanning

1. Boot scanner.
2. Press **Cancel** on unlock dialog.

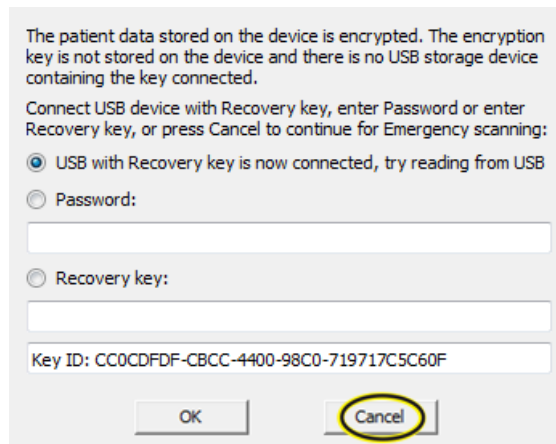


Figure 4-40. Cancel Unlock Process

3. Continue as before (Press Emergency in login dialog).



4-3-9 Disk Decryption

1. If you want to decrypt the patient data, you can press **Utility** -> **Admin** -> **System Admin** -> **Disk Encryption**. Select **Encryption Off**.



Figure 4-41. Decryption 1

2. A confirmation dialog pops up, press **Yes** to continue.
3. Decryption of patient data is ongoing. Please don't use the system until the process is completed.

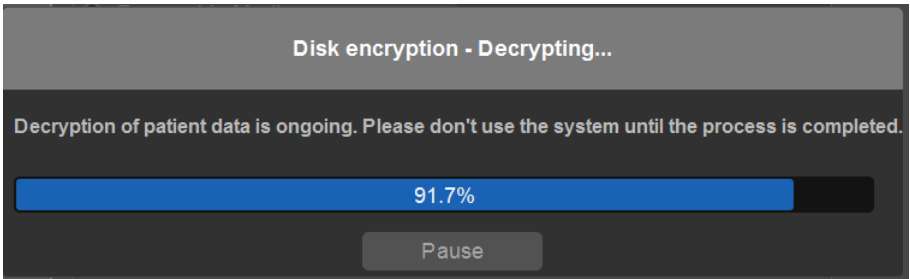


Figure 4-42. Decryption 2

4. When the decryption process is completed, press **Finish**.



4-4 Functional checks

4-4-1 Overview

In this section, the functional checks for Versana Premier are described. Functional checks are used to verify that the product works as intended. Functional checks may also be used during troubleshooting.

4-4-2 Contents in this Section

4-4-3 Preparation

Turn on power to Versana Premier. For detailed description, [See 4-2-2 'Power ON/Boot Up' on page 4-5 for more information.](#)



4-4-4 Basic Controls

4-4-5 Control Panel

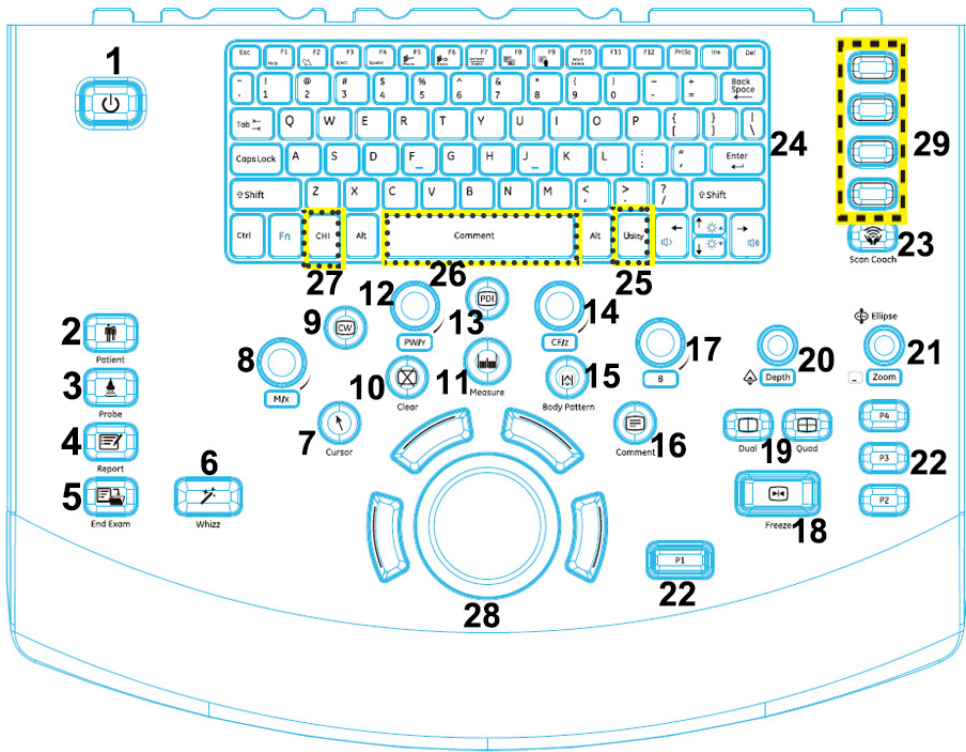


Figure 4-43. Control Panel Map

- | | | |
|-----------------|-----------------------|---------------------------------------|
| 1. Power On/Off | 11. Measure key | 21. Ellipse/Zoom key |
| 2. Patient key | 12. PW Mode/Y | 22. Utility -> Connectivity -> Button |
| 3. Probe key | 13. PDI | 23. Scan Coach key |
| 4. Report key | 14. CF Mode/X | 24. Alphanumeric Keyboard |
| 5. End Exam key | 15. Body Pattern key | 25. Utility |
| 6. Whizz key | 16. Comment key | 26. Comment key |
| 7. Cursor key | 17. B Mode key | 27. CHI key |
| 8. M Mode/Z | 18. Freeze key | 28. Trackball |
| 9. CW | 19. Dual key&Quad key | 29. User Configurable Keys |
| 10. Clear key | 20. Depth key | |

4-4-6 Versana Premier SoftMenu Key Tour

1. Rotary key: Rotate to adjust the menu.
2. Page Up/Down key: To turn the menu page up and down.



Figure 4-44. SoftMenu Key Tour



4-4-7 Control Panel

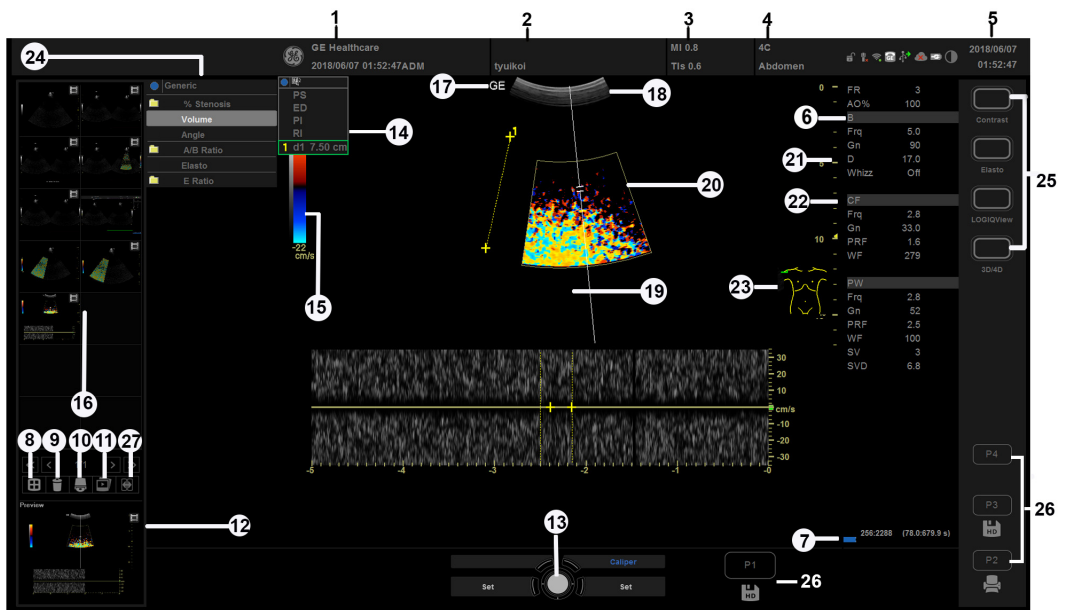


Figure 4-45. Monitor Display Tour

1. Institution/Hospital Name, Date, Time, Operator Identification.
2. Patient Name, Patient Identification.
3. Power Output Readout.
4. Probe Identifier. Exam Preset.
5. Current date and time, Caps Lock: (lit when on), network connection indicator, system messages display, InSite status, InSite controls.
6. Imaging Parameters by Mode.
7. Cine Gauge.
8. Active Images screen.
9. Delete Image.
10. Save As Menu.
11. Three types of Images Clipboard.
12. Image Preview.
13. Trackball Functionality Status.
14. Measurement Results Window.
15. Gray/Color Bar.
16. Image Clipboard.
17. Probe Orientation Marker.
18. Image.
19. Measurement Calipers.
20. Region of interest.
21. Depth Scale.
22. Focal Zone Indicator.
23. Body Pattern.
24. Measurement Summary Window.
25. User Configurable Key.
26. P1, P2, P3.
27. Follow-up tool.

4-4-8 Performance Tests

4-4-8-1 Image Quality Check (IQC) preset for service

Image Quality Check (IQC) is intended to facilitate Image Quality checks during Quality Assurance Evaluation. Quality Assurance tests are used to determine whether a scanner is providing the same level of performance year after year.

By using the same setting year after year, this ensures that the data collection consistent, independently of who performs the test.

This preset only includes fundamental settings for 2D mode. Processing modes like SRI, Harmonics, etc., are turned off.

To do IQC, follow the steps below:

NOTE: *The IQCforService is only visible when service dongle is connected to the system.*

1. Activate IQC via **Utility--> Admin--> System Admin**. Check the “Enable IQC for Service” box. Select **Save**, then select **Exit**.

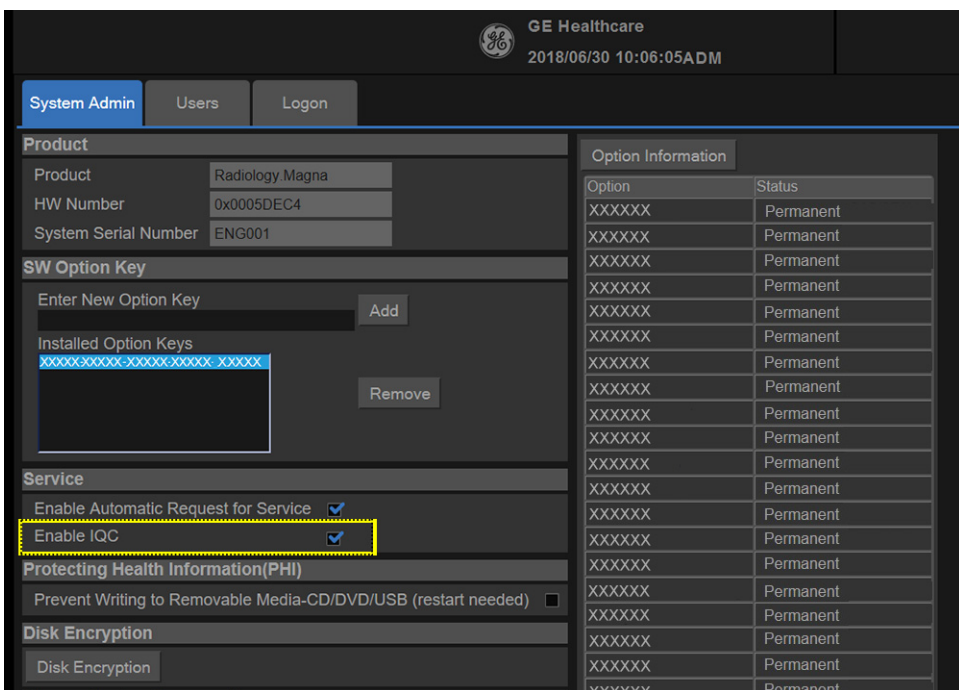


Figure 4-46. Check “Enable IQC for Service”

2. Press **Utility -> Imaging Preset Manager**. Select IQC from the left column, and select **toRight** to move it to the **Imaging Preset Selections**. Then Select **Exit**.



4-4-8-1 Image Quality Check (IQC) preset for service(continued)

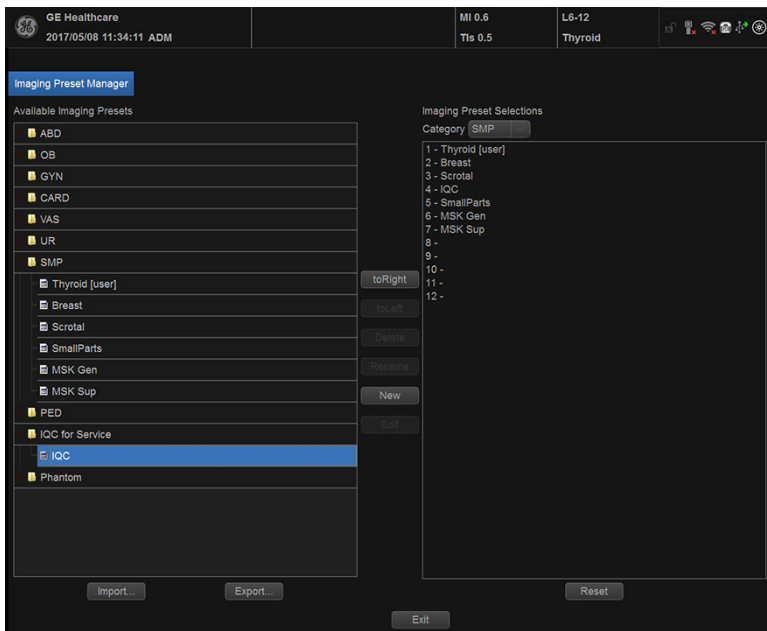


Figure 4-47. Image Quality Check

3. Press **Probe/Preset** on the control panel. Then select

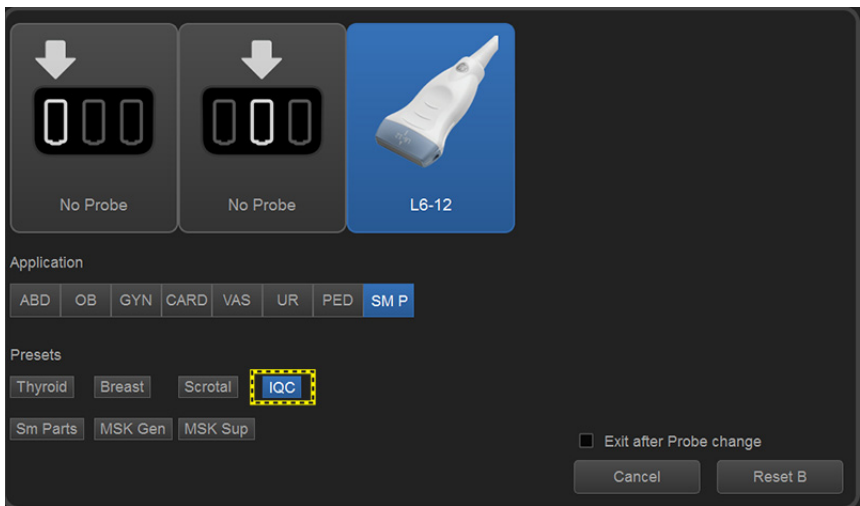


Figure 4-48. Image Quality Check



4-4-8-2 Test Phantoms

The use of test phantoms is only recommended if required by your facility's (customer's) QA program.



4-4-9 B Mode Checks

4-4-9-1 Introduction

The B Mode is the system's default mode.

4-4-10 B Mode Screen Example

4-4-11 Preparations

- Connect one of the probes.
- Turn ON the scanner.

The B Mode is displayed (default mode).

4-4-12 Adjust the B mode controls

Press **B Mode** on the Operator Panel to access B mode.

These Image Controls are used to optimize the B Mode picture. Verify that all the listed controls are working as intended:

- Use **Gain** and TGC controls to optimize the overall image together with the Power control.
- Use **Depth** to adjust the range to be imaged.
- Use **Focus** to center the focal point(s) around the region of interest.
- Use **Frequency** (move to higher frequencies) or **Line Density** (move to higher line density) to increase resolution in image.
- Use **Frequency** (move to lower frequency) to increase penetration.
- Use the **Rejection** control to reduce noise in the image.



4-4-13 M Mode Checks

4-4-14 M-Mode Screen Example

4-4-15 Preparations

- Connect one of the probes to the scanner's left-most probe connector.
- Turn ON the scanner.
The 2D Mode window is displayed (default mode).
- Press **M Mode** on the Operator panel to bring up an M-Mode picture on the screen.

Use the trackball to position the cursor over the required area of the image.

4-4-16 Adjust the M Mode controls

These Image Controls are used to optimize the M mode picture. Verify that all the listed controls are working as intended:

- Adjust **Horizontal sweep** to optimize the display resolution.

Adjust **Gain** and TGC controls to adjust the range to be imaged.

Adjust **Compression** and **Edge Enhance** to further optimize the display.

Adjust **Rejection** to reduce noise while taking care not to eliminate significant low-level diagnostic information.



4-4-17 Color Mode Checks

4-4-17-1 Introduction

Color Flow screens are 2D or M Mode screens with colors representing blood or tissue movement.

Color Flow may be selected both from 2D mode or from M mode or a combination of these.

4-4-17-2 Preparations

- Connect one of the probes to the scanner's left-most probe connector.
- Turn ON the scanner.

The 2D Mode window is displayed (default mode).

4-4-18 Select Color 2D Mode

1. From an optimized 2D image, press **CF**.
2. Use the trackball to position the ROI frame over the area to be examined.
3. Press **Set**. The instruction **Size** should be highlighted in the trackball status bar. Use the trackball to adjust the dimension of the ROI.



4-4-19 Adjust the Color Mode controls

- Adjust the **Active mode gain** to set the gain in the color flow area.

Adjust **Scale** to the highest setting that provides adequate flow detection.

NOTE: The scale value may affect FPS, Low Velocity Reject, and Sample Volume.

Adjust **Wall Filter** to remove low velocity blood flow and tissue movement that reduces image quality.

Adjust **Sample volume** (SV) to a low setting for better flow resolution, or a higher setting to more easily locate disturbed flows.

Adjust **Frequency** to optimize the color flow display. Higher settings improve resolution. Lower settings improve depth penetration and sensitivity. This does not affect the frequency used for 2D and M-Mode.

NOTE: Frequency setting may affect FPS, SV and Low Velocity Reject.

Adjust **PowerOutput** to obtain an acceptable image using the lowest setting possible.

NOTE: The Power setting affects all other operating modes.

Adjust the following settings to further optimize display of the image:

- Use **Invert** to reverse the color assignments in the color flow area of the display.

Use **Threshold** to emphasize either the color flow overlay, or the underlying grey scale tissue detail.

Use **Baseline** to emphasize flow either toward or away from the probe.

Use **Spatial Filter** to reduce noise in the color flow area. Spatial Filter smooths the image by averaging collected data along the same horizontal line. An increase of the spatial filter will reduce noise, but this will also reduce the lateral resolution.



4-4-20 Select Color M Mode

1. Select M Mode.
2. Use the trackball to position the ROI frame over the area to be examined.
3. Press **Set**. The instruction **Size** should be highlighted in the trackball status bar. Use the trackball to adjust the dimension of the ROI.

4-4-20-1 Adjust the Color M Mode controls

- Adjust the Active mode gain to set the gain in the color flow area.

Adjust **Scale** to the highest setting that provides adequate flow detection.

NOTE: *The scale value may affect FPS, Low Velocity Reject, and Sample Volume.*

Adjust **Wall Filter** to remove low velocity blood flow and tissue movement that reduces image quality.

Adjust **Sample volume** (SV) to a low setting for better flow resolution, or a higher setting to more easily locate disturbed flows

Adjust **Frequency** to optimize the color flow display. Higher settings improve resolution. Lower settings improve depth penetration and sensitivity. This does not affect the frequency used for 2D and M-Mode.

NOTE: *NOTE: Frequency setting may affect FPS, SV and Low Velocity Reject.*

Adjust **PowerOutput** to obtain an acceptable image using the lowest setting possible.

NOTE: *The Power setting affects all other operating modes.*

Adjust the following settings to further optimize display of the image:

- Use **Invert** to reverse the color assignments in the color flow area of the display.

Use **Threshold** to emphasize either the color flow overlay, or the underlying grey scale tissue detail.

Use **Baseline** to emphasize flow either toward or away from the probe.



4-4-21 PW Doppler Mode Checks

4-4-21-1 Introduction

PW Doppler are used to measure velocity (most often in blood).

Doppler mode can be done with a special pencil probe or with an ordinary probe. By using an ordinary probe, you can first bring up a 2D picture for navigation purpose and then add PW Doppler.

4-4-21-2 Preparations

- Connect one of the probes to the scanner.
- See [4-4-26 'Probe/Connectors Check' on page 4-59](#) for info about connecting the probes.

For available probes, see [9-3-2 'Probe' on page 9-6](#):

- Turn ON the scanner
The 2D Mode window is displayed (default mode).
- If needed, adjust the Display's Brightness and Contrast setting.

Press **PW** to start Pulsed Wave Doppler (PW).

Use the trackball to select the Area of Interest (Sample Volume) in PW.

4-4-22 Adjust the PW Doppler Mode controls

Adjust the **Active mode gain** to set the gain in the spectral Doppler area.

- Adjust **Wall Filter** to reduce unwanted low velocity blood flow and tissue movement.

In PW mode, adjust **Sample volume** to low setting for better resolution, or higher setting to more easily locate the disturbed flows.

Adjust the **Compression** setting to balance the effect of stronger and weaker echoes and obtain the desired intensity display.

Adjust **Frequency** to optimize flow display. Higher setting will improve resolution and the lower setting will increase the depth penetration.

Adjust **Frame rate** to a higher setting to improve motion detection, or to a lower setting to improve resolution.

NOTE: *Frequency and Frame rate settings may affect the Low Velocity Reject.*

Adjust **Power Output** to obtain an acceptable image using the lowest setting possible. This is particularly important in CW mode, as the energy duty cycle is 100% (constant).

NOTE: *The Doppler Power setting affects only Doppler operating modes.*

Adjust the following settings to further optimize the display of the image.

Use the **Sweep Speed** to optimize the sweep speed.

To view signal detail, adjust **Scale** to enlarge the vertical spectral Doppler trace.

Use **Invert** to reverse the vertical component of the spectral Doppler area of the display.

Use **Angle Correct** to steer the ultrasound beam to the blood flow to be measured.



4-4-23 Tissue Velocity Imaging (TVI) Checks

4-4-23-1 Introduction

TVI calculates and color codes the velocities in tissue. The tissue velocity information is acquired by sampling of tissue Doppler velocity values at discrete points. The information is stored in a combined format with grey scale imaging during one or several cardiac cycles with high temporal resolution.

4-4-23-2 Preparations

- Connect one of the probes, to the scanner's left-most probe connector.
- See [4-4-26 'Probe/Connectors Check' on page 4-59](#) for info about connecting the probes.

For available probes, see [9-3-2 'Probe' on page 9-6](#):

- Turn ON the scanner.
The 2D Mode window is displayed (default mode).
- If needed, adjust the Display's Brightness and Contrast setting.

Press **TVI**.

Use the trackball (assigned function: Pos) to position the ROI frame over the area to be examined.

Press **Set**. The instruction Size should be highlighted in the trackball status bar.

NOTE: *If the trackball control pointer is selected, press **trackball** to be able to select between Position and Size controls.*

Use the trackball to adjust the dimension of the ROI.

4-4-24 Adjust the TVI Controls

- To reduce quantification noise (variance), the Nyquist limit should be as low as possible, without creating aliasing. To reduce the Nyquist limit: Reduce the **Scale** value.

NOTE: The Scale value also affects the frame rate. There is a trade off between the frame rate and quantification noise.

TVI provides velocity information only in the beam direction. The apical view typically provides the best window since the beams are then approximately aligned to the longitudinal direction of the myocardium (except near the apex). To obtain radial or circumferential tissue velocities, a parasternal view must be used. However, from this window the beam cannot be aligned to the muscle for all the parts of the ventricle.

NOTE: PW will be optimized for Tissue Velocities when activated from inside TVI.



4-4-25 Basic Measurements

NOTE: *The following instructions assume that you first scan the patient and then press **Freeze**.*

4-4-25-1 Check Distance and Tissue Depth Measurement

1. Press **Measure** once to display an active caliper.
2. Move the trackball to position the active caliper at the start point (distance) or the most anterior point (tissue depth).
3. Press **Set** to fix the start point.
4. The system fixed the first caliper and displays a second active caliper.
5. Move the trackball to position the second active caliper at the end point (distance) or the most posterior point (tissue depth).
6. Press **Set** to complete the measurement. The system displays the distance or tissue depth value in the measurement results window.

Before you complete a measurement:

To toggle between active calipers, rotate Cursor Select button.

To erase the second caliper and the current data measured and start the measurement again, press Clear.

NOTE: *To rotate through and activate previously fixed calipers, rotate Cursor Select button.*

NOTE: *After you complete the measurement, to erase all data that has been measured to this point, but not data entered onto worksheets, press Clear.*

4-4-26 Probe/Connectors Check

NOTE: Probes can be connected at any time, whether the unit is ON or OFF.

4-4-26-1 To connect a Probe

1. Place the probe's carrying case on a stable surface and open the case.
2. Carefully remove the probe and unwrap the probe cable.
3. Put the probe in the probe holder.



CAUTION

DO NOT allow the probe head to hang free. Impact to the probe head could result in irreparable damage.

4. Hold the probe connector vertically with the cable pointing upward.
5. Slide the connector lock to the left (unlocked position).
6. Align the connector with the probe port and carefully push into place.
7. Slide the connector lock to the right position to secure the probe connector.
8. Carefully position the probe cable in the probe cord holder spot so it is free to move, but not resting on the floor.



CAUTION

TAKE THE FOLLOWING PRECAUTIONS WITH THE PROBE CABELS:

-KEEP AWAY FROM THE WHEELS

-DO NOT BEND

-DO NOT CROSS CABLES BETWEEN PROBES

Table 4-1: Probe and Connectors Checks

Step	Task	Expected Results
1	Select the appropriate connected probe from the probe indicators.	The probe activates in the currently-selected operating mode. The probe's default settings for the mode and selected exam are used automatically.
2	Launch the application. To change application, press Probe key on the Control Panel.	The selected application starts.
3	Verify there's no EMI/RFI or artifacts specific to the probe.	No EMI/RFI or artifacts.



Table 4-1: Probe and Connectors Checks

Step	Task	Expected Results
4	Test the probe in each active connector slot.	It will display pictorial data each time.
5	Do a leakage test on the probe, See 10-7 'Electrical safety tests' on page 10-23 for more information.	It passes the test.
6	Repeat this procedure for all available probes.	

4-4-26-2 Activating the probe

The probe activates in the currently-selected operating mode. The probe's default settings for the mode and selected exam are used automatically.

4-4-26-3 Deactivating the probe

1. Press the Freeze key.
2. Gently wipe the excess gel from the face of the probe. (Refer to the User Guide for complete probe cleaning instructions.)
3. Carefully slide the probe around the right side of the keyboard, toward the probe holder. Ensure that the probe is placed gently in the probe holder.

4-4-26-4 Disconnecting the probe

Probes can be disconnected at any time. However, the probe should not be selected as the active

1. Unlock the probe.
2. Pull the probe and connector straight out of the probe port.
3. Carefully slide the probe and connector away from the probe port and around the right side of the keyboard.
4. Ensure the cable is free.
5. Be sure that the probe head is clean before placing the probe in its storage box.



Take the following precautions with the probe cables: Do not bend, be sure to keep probe cables free from the wheels.



4-4-27 ECG Check

4-4-27-1 Introduction

The ECG capability on this unit, is intended as use as a trigger for measurements, but can also be viewed on the screen.

4-4-27-2 Parts needed

- ECG Module

4-4-27-3 Preparations

None

4-4-27-4 ECG Check

Table 4-2: ECG Checks

Step	Task	Expected Result(s)
1	Connect the ECG harness to the connector under the control panel.	The unit displays a straight curve along the bottom edge of the image sector on the screen.
2	Connect the three leads to an ECG simulator, or Fasten the three ECG Pads to your body and connect the three leads to respective ECG Pad.	When connecting, the signal on the screen will be noisy. When the connection is completed, a typical clean ECG signal is displayed.



4-4-28 Cineloop Check

4-4-28-1 Introduction

A cineloop is a sequence of images recorded over a certain time frame. When using ECG the time frame can be adjusted to cover one or more heart cycles. When frozen, the System automatically displays the cineloop boundary markers on either side of the last detected heart cycle.

4-4-29 Preparation

- Connect one of the probes to the scanner.
- See [4-4-26 'Probe/Connectors Check' on page 4-59](#) for info about connecting the probes
For available probes, see [9-3-2 'Probe' on page 9-6](#):
- Turn ON the scanner. The 2D Mode is displayed (default mode).

4-4-30 Adjust the Cineloop controls

- Press Freeze.
The left and right markers are displayed on either side of the last detected heart cycle on the ECG trace.
- Press Freeze.
The selected heart beat is played back.
- Press **Freeze** to freeze the cineloop.
Use the trackball to scroll through the acquisition and find the sequence of interest.
- Adjust **Cycle** select to move from heart beat to heart beat and select the heart cycle of interest.
Adjust **Num cycles** to increase or decrease the number of heart beats to be played back.
Adjust **Left marker** and **Right marker** to trim or expand the cineloop boundaries.

4-4-31 Back End Processor checks

- If all the previous tests have been passed successfully, the Back End Processor is most likely OK.
If the system seems to be operating erratically, please refer to ['Diagnostics/Troubleshooting' on page 7-1](#).

4-4-32 Operator Panel Test

- The Operator Panel is tested when the Versana Premier is powered up as part of the start-up scripts, run at every start-up.

For more info, please refer to [‘Diagnostics/Troubleshooting’ on page 7-1](#).

4-4-33 Peripheral checks

Check that peripherals work as described below:

Table 4-3: Peripheral Checks

Step	Task to do	Expected Result(s)
1.	Press FREEZE	Stop image acquisition.
2.	Press PRINT on the Control Panel	The image displayed on the screen is printed on B&W printer.
3.	Connect with Foot Switch on USB port and press once.	To start image acquisition (the same function as FREEZE key).

4-4-33-1 Printer checks

The internal printer is controlled from the **Print** and **Store** keys on the Versana Premier's Operator Panel.

The factory default is:

- Print** for the standard printer
- Store** for the screen capture to clipboard

4-4-34 Turn OFF Power to Versana Premier

[See 4-2-3 ‘Power off’ on page 4-8 for more information.](#)

4-4-35 Mechanical Functions Checks

4-4-35-1 Operator Panel Movement

Please refer to:

- [6-3 ‘Monitor Adjustments’ on page 6-6](#)



4-4-35-2 Casters (Wheels) and Brakes Checks

Examine the wheels frequently for defects to avoid breaking or jamming.

Table 4-4: Wheel Characteristics

Wheel	Characteristics
Front and Rear	Swivel and Brake

4-5 Power supply test & adjustments

4-5-1 Power Supply Test Procedure

There is no need to do any special tests on the Power Supplies if there don't seem to be a problem that may be related to the Power Supply.

Refer to [7-7-1-1 'System Doesn't Boot \(Hang-up\)' on page 7-51](#), if you appear to have a problem that may be related to the Power Supplies.

4-5-2 Power Supply Adjustment

There are no adjustments on the power supply. The DC Power is self-regulated. If a voltage is outside the specified range, it means that something is wrong, either with the power supply itself or with a unit connected to that specific power outlet. When an error occurs, the power will be turned off immediately.

Refer to [7-7-1-1 'System Doesn't Boot \(Hang-up\)' on page 7-51](#), if you appear to have a problem that may be related to the Power Supplies.



4-6 Application Turnover Check List

Complete these checks before returning the scanner to customer for use:

4-6-1 Software Configuration Checks

Table 4-5: Software Configuration Checks

Step	Task to do	Notes
1	Verify Date and Time is correct.	
2	Verify that Location (Hospital Name) is correct.	
3	Verify Language settings are correct.	
4	Verify assignment of Print Keys.	
5	Verify all of the customer's options are set up correctly.	Demo Option strings turn on

4-7 Site Log

Table 4-6: Site Log

DATE	SRVICE PERSON	PROBLEM	COMMENTS



4-8 My Trainer

4-8-1 Overview

My Trainer provides a quick guide to operate the system.

To access My Trainer,

1. Press **Alt + H** to enter My Trainer.

Or,

1. Press Utility -> System -> User Configurable Key. Check Enable Numeric Hot Key, then set **My Trainer** in the Keyboard Key or User Defined Key.

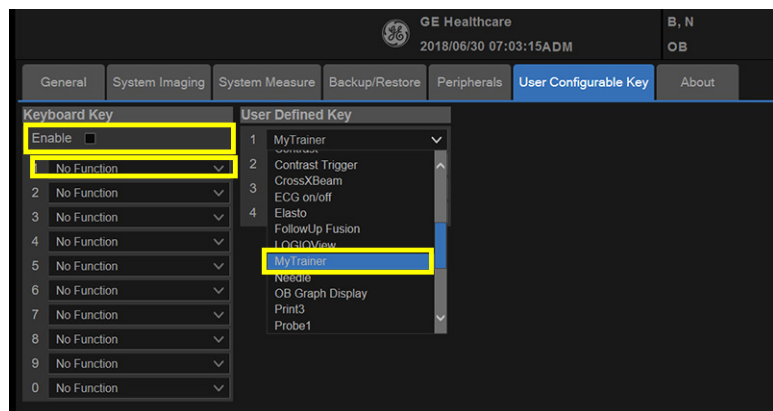


Figure 4-49. Set My Trainer

2. Press defined key to access My Trainer.

There are five sections in My Trainer. The five sections are displayed on the left side of the My Trainer interface.



4-8-1 Overview(continued)

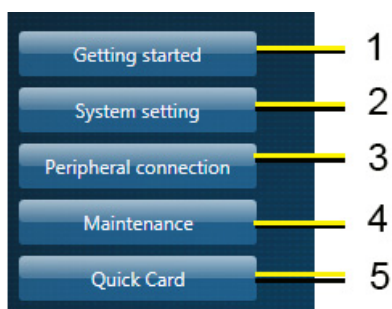


Figure 4-50. Sections display

1. Getting Started: Circuit breaker, Probe Connection, Touch Panel
2. System Setting: Facility name set up, Date time set up, Enable options check, Language setting, User conf, User preset
3. Peripheral Connection: Back panel ports, Network Connectivity, Connect to a printer, DICOM setting, Back-up/restore the patient information, software version.
4. Maintenance: Trackball, Contact GE service, Insite, Log export, Air Filter Replacement.
5. Quick Card: Control Panel Overview, Entering Patient Data, Selecting a Probe/Application, Measurements, Annotating an Image, Adjust Color ROI, Pulsed Wave Doppler, Split Screen, End Exam, About GE Healthcare.



4-8-1 Overview(continued)

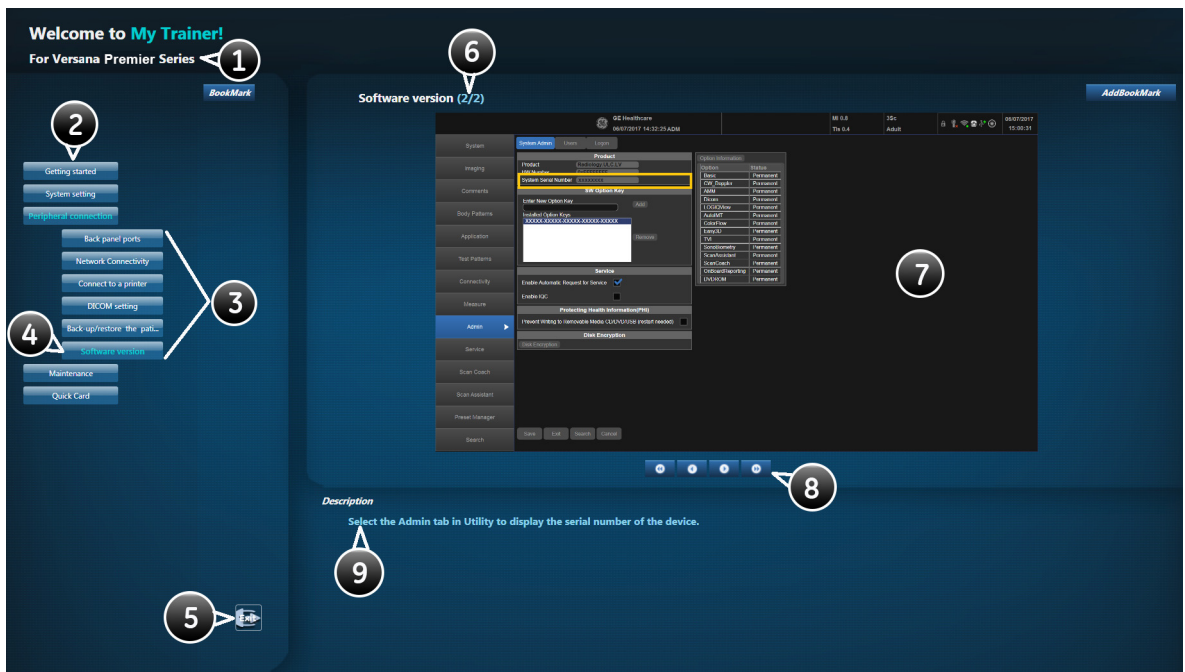


Figure 4-51. Interface Illustration

The interface of the My Trainer includes below information:





1. The product name of the system.
2. Sections. Select the button to expand the section to show the list of subsections.
3. Subsections.
4. The highlighted subsection shows this subsection is currently opened and displayed on the right side.
5. Exit. Press this button to exit this interface.
6. The left number shows the current page of the subsection. The right number shows the total pages of the subsection.
7. Illustration with graphic.



4-8-1 Overview(continued)

8. Text instruction about how to operate.

Table 4-7: Page turning

	Select the arrow to go to the previous page
	Select the arrow to move to the next page.
	Select the arrow to go to the home page
	Select the arrow to go to the end page.



Chapter 5

Components and Functions (Theory)

This chapter explains Versana Premier's system concepts, component arrangement, and subsystem functions.

It also describes the power distribution and the Common Service Desktop interface.



5-1 Overview

5-1-1 Contents in this chapter

- 5-1 'Overview' on *page 5-2*
- 5-2 'Block Diagram and Theory' on *page 5-3*
- 5-3 'Common Service Desktop' on *page 5-6*

5-2 Block Diagram and Theory

5-2-1 General Information

Versana Premier is an ultrasound imaging scanner.

The system can be used for:

- 2D Gray Scale
- 2D Color Flow imaging
- M-Mode Gray Scale imaging
- Color M-Mode
- Doppler
- Different combinations of the above

Signal flow from the Probe Connector Panel to the Front End, to the Mid Processors and Back End Processor and finally to the monitor and peripherals.

System configuration is stored on a hard disk drive and all necessary software is loaded from the hard disk drive on power up.

5-2-2 Top Console

The Top Console includes a Standby/On switch, a keyboard, different controls for manipulating the picture quality, controls for use in Measure & Analyze (M&A), and loudspeakers for stereo sound output (used during Doppler scanning).



5-2-2-1 Block Diagram

5-2-2-2 System Diagram

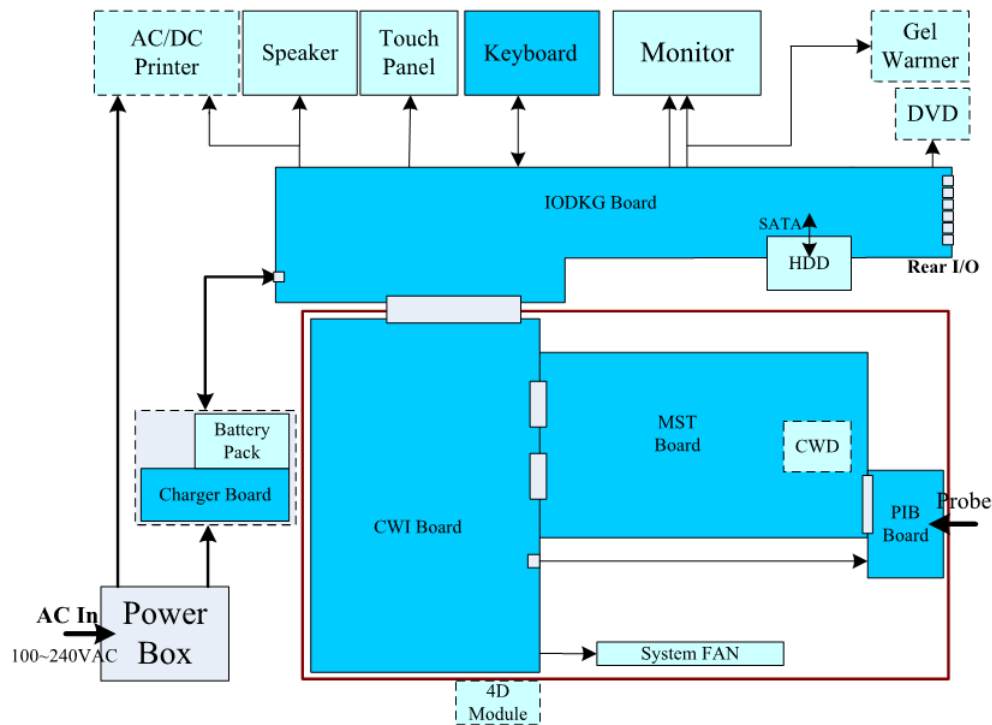


Figure 5-1. Versana Premier System Block Diagram

NOTE: The dotted square illustration shows the option parts.

5-2-2-2-1 System Diagram Introduction

The system is composed of top modules, one box and power box which is located at the bottom side of the machine.

The top module include Keyboard Assy, Speaker, Monitor (21.5 inch), Touch panel and optional peripherals like AC/DC printer, ECG module, DVD and Gel warmer.

The one box has 4 PWAs: CWI (CPU_WDC_IO Board), MST, PIB (Probe Interface Board) and CWD board. System FANs are also included in the Box to dissipate the system thermal. 4D module is mounted on this one box.

There is IODKG (I/O Docking) board which is fixed in the mechanical frame, this board connects with one box through the docking connector, and provides all I/O signals for system use.

The power box includes power switch, AC noise filters and an ACDC module which provides DC19V power to system. It also has AC outlet for on-board AC printer.

NOTE: *When AC power in, the power is DC19V generated by ACDC of Power Box; When no AC power, and if the machine has battery, the power is discharged from battery.*



5-3 Common Service Desktop

5-3-1 Introduction

The Service Desktop is an interface that provides access to system information, status and diagnostics.

The Service Desktop has different content or views depending on the access level. The access level is determined by the user profile as well as the service options enabled on the Versana Premier.

- Basic view is the standard view, restricted only by the user through the user profile settings. Administrator default user has access to the Service Desktop. Any user with "local Service access" in their user profile can have access to this view.
- Class C view is the view enabled by the service options purchased.
 - Service Advanced
 - Service Expert (requires Service Advanced)
 - Service Pro (requires Service Advanced)



Chapter 6

Service Adjustments

This chapter describes how to test and make adjustments to the Versana Premier. You can use these to test the system for errors.



6-1 Overview

6-1-1 Contents in this chapter

- [6-1 'Overview' on page 6-2](#)
- [6-2-1 'Region presetting procedure' on page 6-4](#)
- [6-3 'Monitor Adjustments' on page 6-6](#)

6-2 Preset Region

Only factory default presets are supported. User is allowed to selection region presets according to where the system is used with service support.

Table 6-1: Preset Region

Region	Preset Region
USA, Canada and Latin America	USA_LA Preset
Europe	EU Preset
China	China Preset
APAC	Asia Preset
South Asia	India Preset
Middle East, Africa and other countries	EAGM Preset



6-2-1 Region presetting procedure

The Region Presetting procedure:

- In Utility--> System--> General, select the correct region from Preset Region (restart needed), refer to [Figure 6-1 on page 6-4](#).

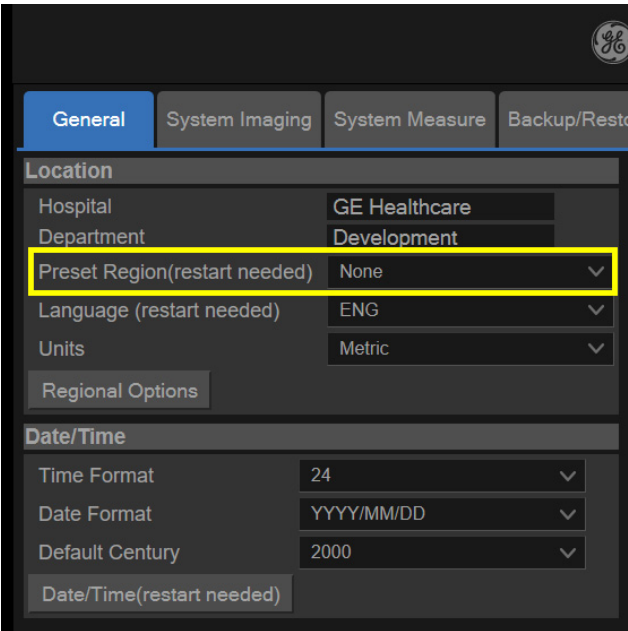


Figure 6-1. Region Preset

- The window below will display after the region being selected. Select "Ok", refer to [Figure 6-2 on page 6-4](#).

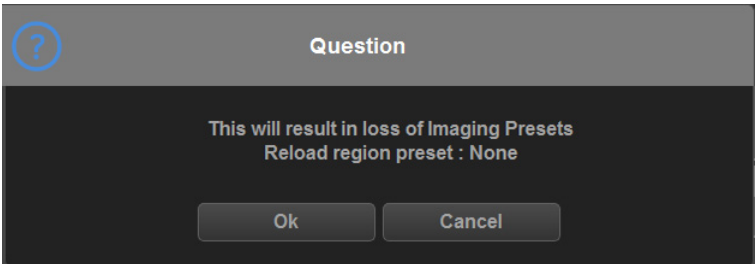


Figure 6-2. Quesiton

6-2-1 Region presetting procedure(continued)

- After "Ok" is selected, the window below will display. Select "Ok" and then restart the system.

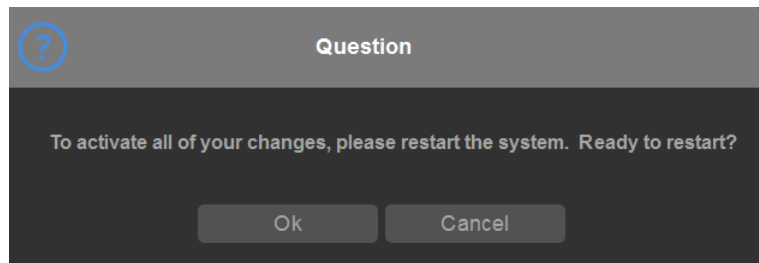


Figure 6-3. Restart the system



6-3 Monitor Adjustments

6-3-1 Purpose of this section

This section describes how to test and adjust the scanner. These tests are optional. You may use them to check the system for errors.

6-3-2 Monitor Adjustments

Please refer to User Manual for how to adjust the Monitor Position, Brightness and Contrast.

To adjust the brightness and volume:

1. On the alphanumeric keyboard,
 - adjust brightness with **Ctrl +Up/Down** keys;
 - adjust volume with **Ctrl +Left/Right** keys.



Figure 6-4. Monitor Adjustment



6-3-3 Brightness and Contrast

1. Press **Cursor** key on the control panel. Move the trackball to position the cursor over the adjustment icon, then press **Set** to display the setting menu.



Figure 6-5. Setting Menu Icon

2. Follow the procedure below to adjust the Color Temperature, Contrast, Brightness and LED Light:
 - To adjust the color temperature: press **Standard**, **Brown**, or **Blue** to choose the color temperature. The chosen color temperature displays in the **Color Temp** area.

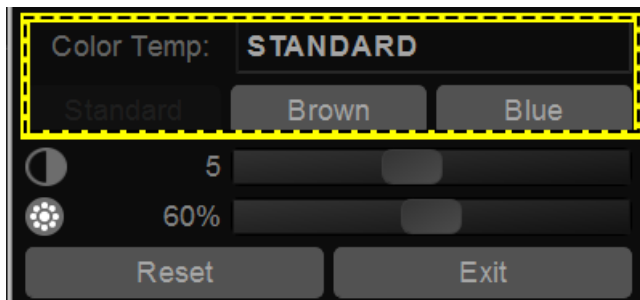


Figure 6-6. Color Temperature

- To adjust the Contrast: Press **Set** to choose the adjustment button, hold down the **Set** key and move the trackball to move the adjustment button. Move the adjustment button to the left to decrease the contrast or move the adjustment button to the right to increase the contrast.

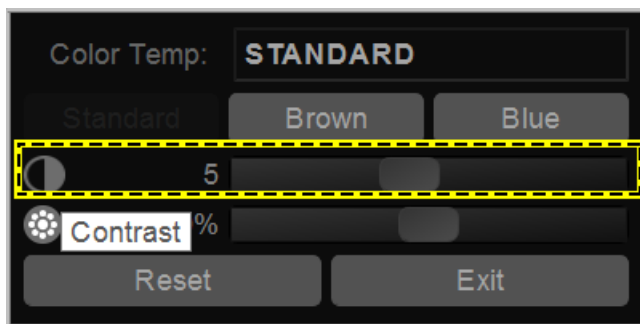


Figure 6-7. Contrast



6-3-3 Brightness and Contrast(continued)

- To adjust the Brightness: Press **Set** to choose the adjustment button, hold down the **Set** key and move the trackball to move the adjustment button. Move the adjustment button to the left to decrease the brightness or move the adjustment button to the right to increase the brightness.

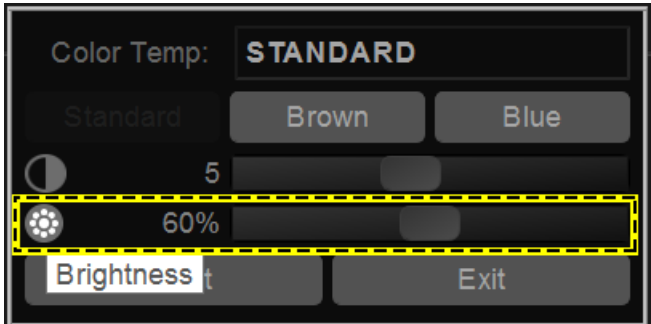


Figure 6-8. Brightness

- To adjust the LED Light (at the bottom of the Monitor): Press **Set** to choose the adjustment button, hold down the **Set** key and move the trackball to move the adjustment button. Move the adjustment button to the left to decrease the LED brightness or move the adjustment button to the right to increase the LED brightness.

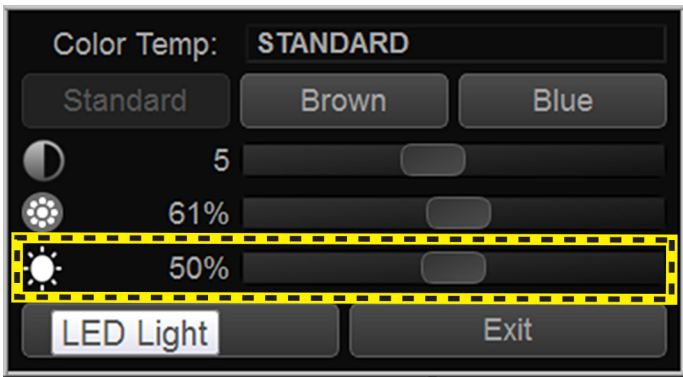


Figure 6-9. LED Brightness

3. Press **Reset** to return to the default setting; Press Exit to exit the setting menu.

NOTE: Press Reset button and the three color temperature settings will return to the default settings.

Chapter 7

Diagnostics/Troubleshooting

This chapter describes how to setup Versana Premier and run the tools and software that help maintain image quality and system operation. Very basic host, system and board levels are run whenever power is applied. Some Service Tools may be run at the application level. However most software tests are required.



7-1 Overview

7-1-1 Contents in this chapter

- [7-1 'Overview' on page 7-2](#)
- [7-2 'Gathering Trouble Data' on page 7-3](#)
- [7-3 'Screen Capture' on page 7-5](#)
- [7-4 'System Warning/Error and Logs' on page 7-11](#)
- [7-5 'Common Service Desktop' on page 7-14](#)
- [7-6 'Network and Common Diagnostics' on page 7-37](#)
- [7-7 'Troubleshooting' on page 7-51](#)

7-2 Gathering Trouble Data

7-2-1 Overview

There may be a time when it would be advantageous to capture trouble images and system data (logs) for acquisition to be sent back to the manufacturer for analysis. There are different options to acquire this data that would give different results.

7-2-2 Collect Vital System Information

The following information is necessary in order to properly analyze data or images being reported as a malfunction or being returned to the manufacturer:

Product Name = Versana Premier

From the **Utility>System>About** screen:

Applications Software

- Software Version
- Software Part Number

System Image Software

- Image Date
- Image Part Number

Additional Information



7-2-3 Collect a Trouble Image with Logs

If the system should malfunction, press the Alt+D keys simultaneously. This will collect a screen capture of the image monitor, system presets and several log files in a date and time stamped “.zip” file.

NOTE: This function may also be used to make a Print Screen.

This **Alt+D** function is available at all times.

When **Alt+D** is pressed, a menu box appears that allows for:

- a place to enter a description of the issue
- a checkbox to indicate a System lockup
- a choice to Export a pre-formatted CD-R/DVD-R or save to the Export directory D: drive (for remote viewing through InSite)

System Problem Reporting

Export stored reports

Description of issue :
Address the following :
1) Date and time of occurrence
2) Sequence of events leading to issue
3) Is this repeatable ?
Address the following, as applicable :
4) Imaging mode, probe, preset/application
5) Media brand, speed, capacity, type (eg. CD-R, DVD-R, etc.)
6) Save secondary image capture, cine loop, 4D multi volume loop

☐ System lockup (application has been restarted after problem)
Please include the date and times when the problem occurred.

☐ Include Protected information, requires Admin privileges
(This may be required for GE to determine the cause of your problem.)

Destination: CD / DVD Recordable (G:)

☐ Complete Log
☒ Service Log

Store Cancel

Figure 7-1. Alt+D Dialog Box



7-3 Screen Capture

There may be times when the customer or field engineer will want to capture a presentation on the screen. This is accomplished by first saving the image(s) to the clipboard using a Store Key.



7-3-1 Capturing a Screen

The following is a generic process to capture any screen from the scanner:

- 1. Navigate to and display the image/screen to be captured.
- 2. Press **Store**. This will place a snapshot of the screen on the “clipboard” displayed at the left side of the scan image display.

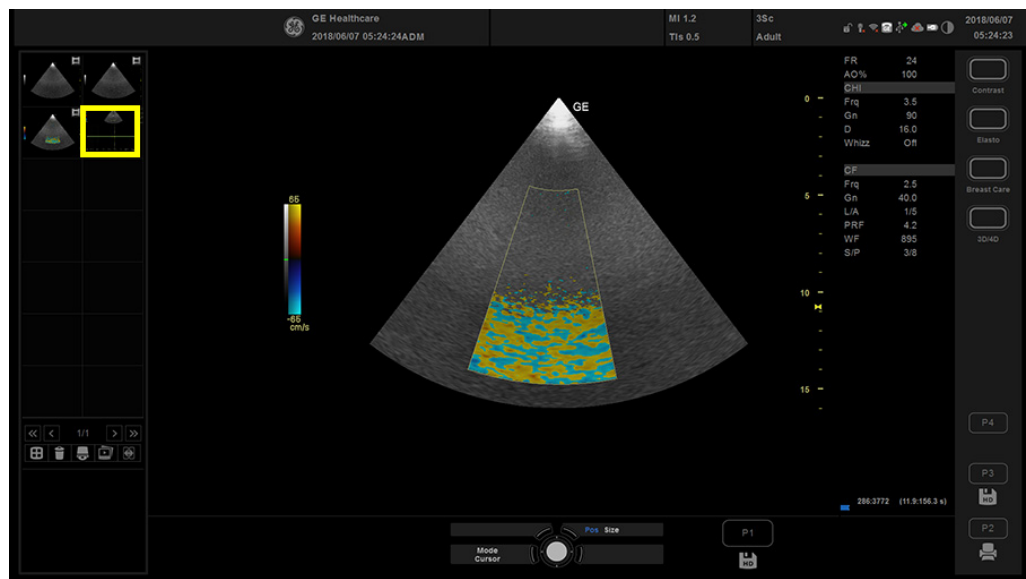


Figure 7-2. Select Image to Capture

- 3. Select and highlight the snapshot to be stored.
- 4. Select Save As Icon on the lower left of the image screen.



Figure 7-3. Menu > Save As

7-3-1 Capturing a Screen(continued)

5. A Save dialog box will be opened. Choose the archive location to save image on the USB Drive or CD/DVD.

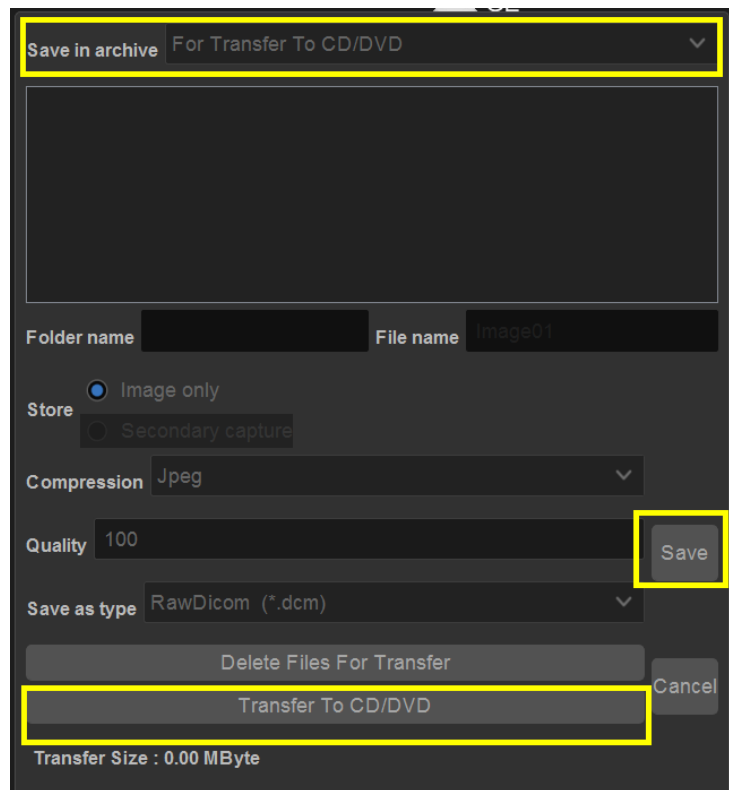


Figure 7-4. Save Dialog Box

NOTE: Click **Save** -> **Transfer To CD/DVD**, if the archive location is DVD/CD; Click **Save**, if the archive location is USB.

NOTE: It is better to save the image in Jpeg format. Image of this format can be easily reviewed in the computer.



7-3-2 Capturing a Screen with Service Dongle

The following is a generic process to capture the whole screen from the scanner:

- 1. Insert the Service dongle in the system’s USB port.
- 2. Press **Prtsc** key on the control panel, the whole screen is captured.
- 3. Press **Ctrl+Shift+Esc**, the **Start Task Manager** dialog is displayed.

NOTE: It is also available to Exit to Windows and save the image on the system or removal media. For how to Exit to Windows, please refer to Proprietary Service Manual.

- 4. In **Windows Task Manager**, select **File-> New Task (Run...)**.

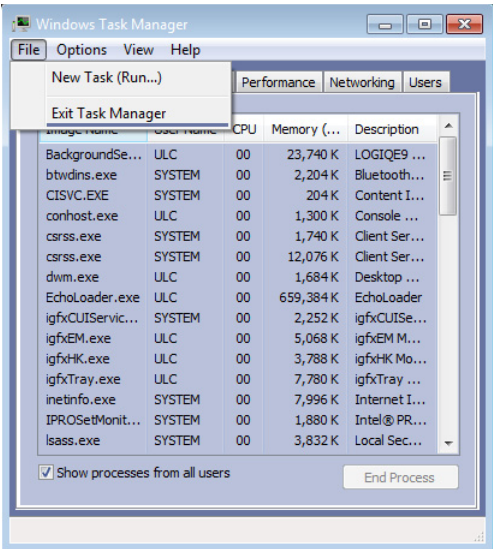


Figure 7-5. Windows Task Manager

- 5. Type in the program name: **mspaint**.

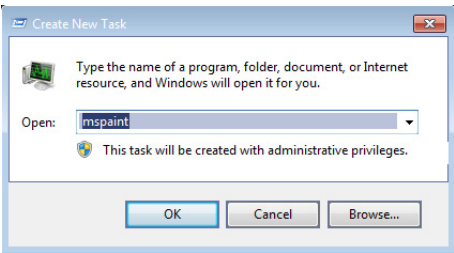


Figure 7-6. Create New Task

7-3-2 Capturing a Screen with Service Dongle(continued)

6. The paint screen is displayed, press **Ctrl+V** to paste the captured screen. And then save the image in the appropriate destination.

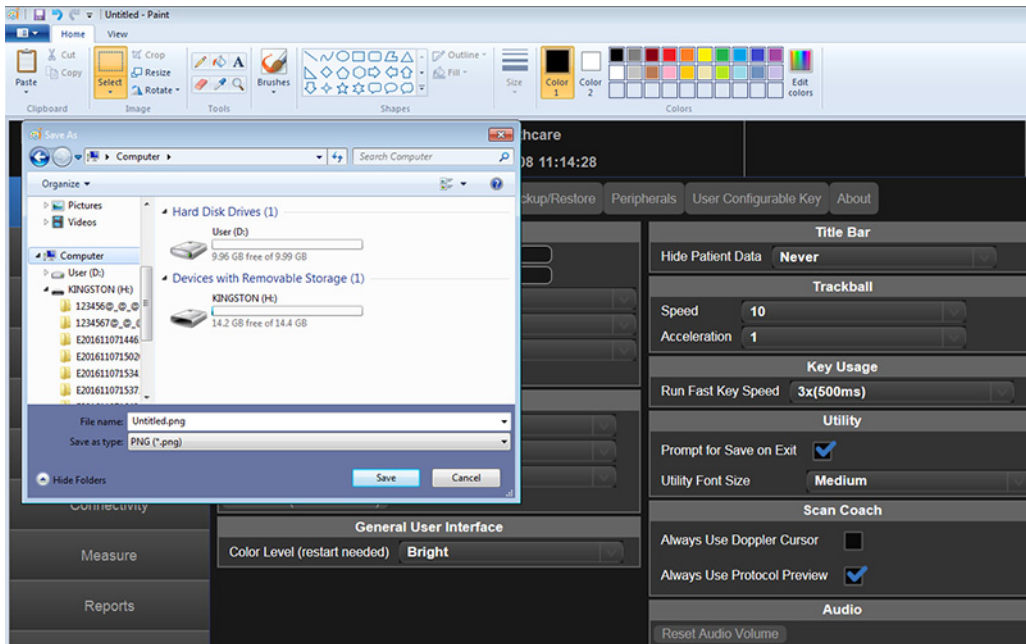


Figure 7-7. Save Image



7-3-3 Capturing a Screen by physical print buttons

The following is a generic process to capture the whole screen (not including the Touch Panel screen) from the scanner:

1. Press **Utility -> Connectivity -> Button** to configure Physical Print Buttons for the button to capture screens.
2. Select any key from Print1, Print2, Print3 or Print4 from **Physical Print Buttons**.
3. Select **Secondary Capture Screen** from **Format**.
4. Select **USB Quick Save**, press >> to move to right column. Press Save and Exit.

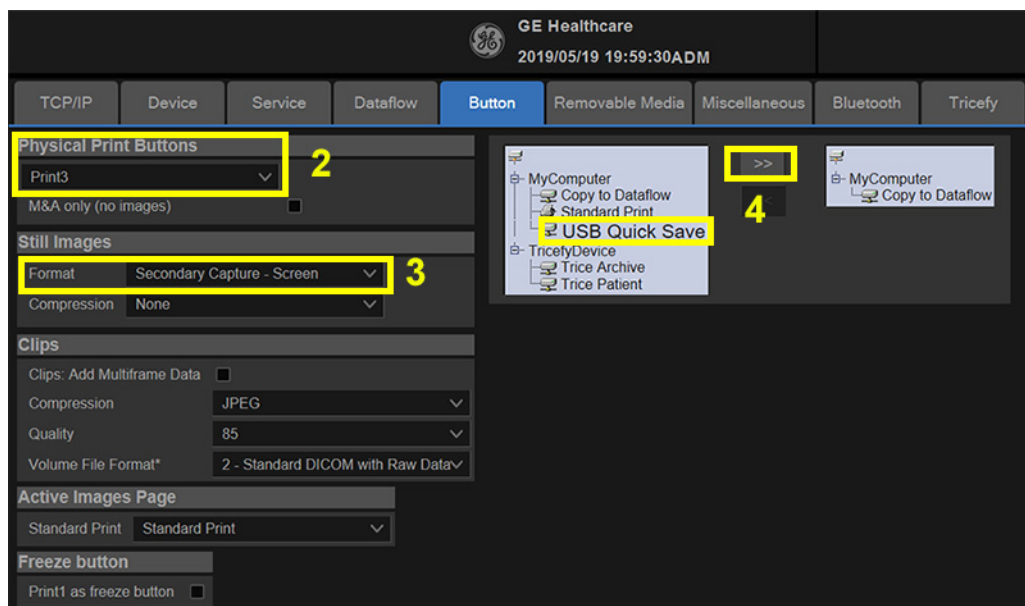


Figure 7-8. Windows Task Manager

5. After Print key configuration complete, press the configured Print key, the captured screen will be saved to the USB directly.



7-4 System Warning/Error and Logs

7-4-1 Temperature warning

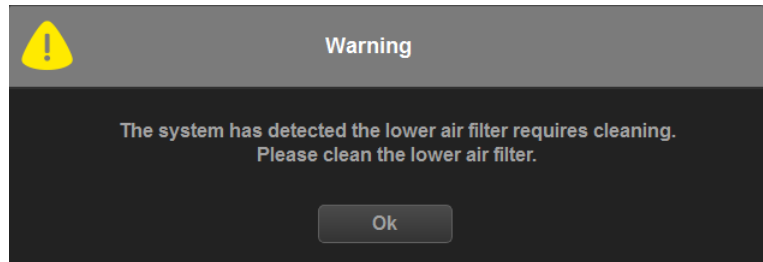


Figure 7-9. Temperature Warning

- Cause: CPU temperature exceeds threshold (95 degrees)
- What to do: shut down the system and clean the filter.

7-4-2 Temperature exceeds threshold

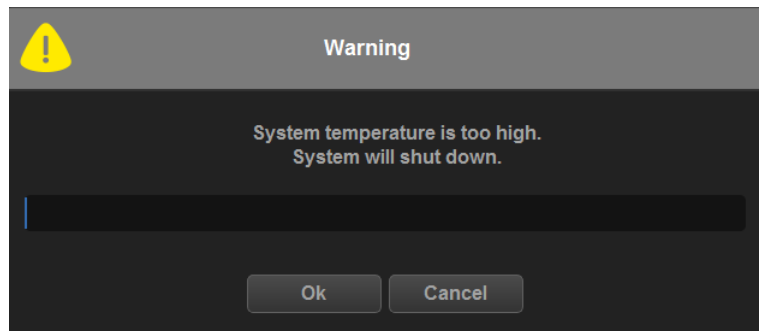


Figure 7-10. Temperature exceeds threshold

- Cause: CPU temperature exceeds threshold (100 degrees) and therefore, system must be shutdown immediately.
- What to do: shut down the system and clean the filter.



7-4-3 System voltage failure

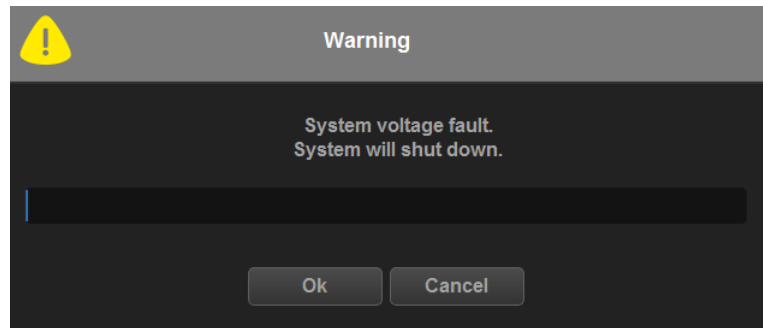


Figure 7-11. System voltage failure

- Cause: Hardware and/or voltage error detected.
- What to do
 1. Press OK and reboot the system.
 2. if the problem persists, shut down the system, turn OFF the circuit breaker and then reboot the system.

7-4-4 Hardware configuration error

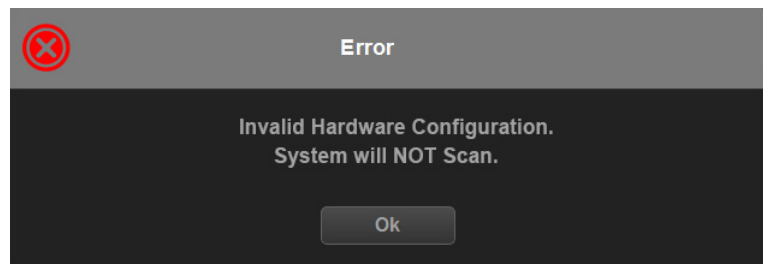


Figure 7-12. Hardware configuration error

- Cause: Hardware(s) is not detected as valid system. System is able to boot up but not able to scanning.
- What to do
 1. Press OK and reboot the system.
 2. If the problem persists, shut down the system, turn OFF the circuit breaker and then reboot the system.
 3. if the problem persists, shut down the system and analyze the log files in Technical Support Mode.

7-4-5 System error

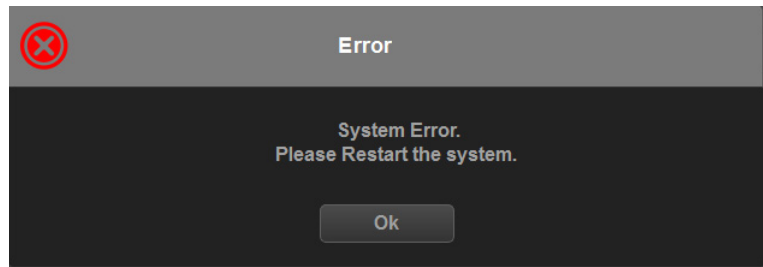


Figure 7-13. System error

- Cause: Hardware(s) is not detected as valid system. System is able to boot up but not able to scanning.
- What to do
 1. Press OK, turn off the system and then reboot it.
 2. If the problem persists, shut down the system and analyze the log files.



7-5 Common Service Desktop

7-5-1 Purpose of this section

This section describes the features of the Service desktop.
These are the different levels of access to the Service desktop:

- Service Basic access (Class A) - a user locally logged into the machine with Local Service Access privilege. This level provides limited access to Service desktop widgets and utilities.
- Service Expert, Pro, and Advanced access (Class C) Local - Depending on the purchase level, includes an option string to control access.
- GE Service access (Class M) and an SSA key. For users with local Service Access privileges, this level provides unrestricted access to all Service desktop widgets and utilities.
- Remote access - a user remotely accessing the Versana Premier. This level provides unrestricted access to all Service desktop widgets and utilities. Disruptive mode is limited to the user access privileges to Remote Service Access.



7-5-2 Disruptive mode

Disruptive mode is a way to control interruptions to operation of the Versana Premier. Disruptive mode is required whenever service performs a function that may disrupt a normal scan. Activating Disruptive mode results in a red message displayed on the task bar. This message indicates that the Versana Premier needs to be restarted once the service activity is complete. The message remains until the Versana Premier is restarted. This prevents patient scanning while the Versana Premier is not operating at an optimal status. For example, running a diagnostic may leave the Versana Premier in a state that is not good for imaging.

Specifically, Disruptive mode is required to run diagnostics, clean presets, and reset the patient database, and turn on Virtual Console Observation (VCO).

- When Disruptive mode is On, all service functionality on the Service desktop is allowed but user operation of the Versana Premier may be limited.
- When Disruptive mode is Off, some service functionality on the Service desktop is not available and user operation of the Versana Premier is normal.

Additionally, the ability to enable Disruptive mode depends on the logged in user.

- Local user - a user locally logged into the machine will be able to set the Versana Premier to Disruptive mode or allow a Disruptive mode request from a remote user through the Service desktop. The local user must have Authorize Remote Service Access to allow Disruptive mode. If the local user does not have this right, the remote user's request will be automatically denied
- Remote user - a user remotely accessing the Versana Premier will not be able to automatically switch Disruptive mode to On. The logged in user (user actually logged on to the Versana Premier) needs to have the ability to grant remote access. The logged in user will be notified through a dialog box and asked to allow Disruptive mode.

NOTE: *Change Password and Disk Defragment are not available for the remote user whether Disruptive mode is On or Off.*

For more information, see: [7-5-2 'Disruptive mode' on page 7-15](#)



7-5-3 Color statuses

Throughout the Service desktop, colors indicate the following:

- Green - Status is normal
- Orange - Status is a warning
- Red - Status is an error

7-5-4 Licenses

With Service Basic Access (Class A), these are the available options:

- HOME
- Utilities
 - Change Password
 - Data Transfer
 - Delete Files
 - Gather Logs
 - Network Capture
 - SSA License
 - Thirty Party Licenses
- Options
- Agent Configuration

With Service Advanced (Class C), these are the available options:

NOTE: *With a Class C license, options display according to these purchased level of access.*

- HOME
- Diags
 - Run Diags
 - Diag History
- Utilities
 - Change Password
 - Checkpoints
 - Delete Files
 - Disk Defragment
 - Data Transfer
 - Gather Logs
 - Network Capture
 - SSA License

7-5-4 Licenses(continued)

- System Shutdown
- Thirty Party Licenses
- Options
- Agent Configuration

With Service Advanced plus Service Expert (Class C), the Clean Userdefs, Reset Patient Database, and Software Reload utilities are added to the Service Advanced options listed.

With Service Advanced and Service Expert plus Service PRO (Class C), the probe assessment tool (ePAT) diagnostic is added to the Service Advanced and Service Expert options listed.

With GE Service access (Class M) and an SSA key, these are the available options:

- HOME
- Diags
 - Run Diags
 - Diag History
- Utilities
 - Change Password (not available through a remote connection)
 - Checkpoints
 - Clean Userdefs
 - Data Transfer
 - Delete Files
 - Disk Defragment (not available through a remote connection)
 - Disruptive Mode Utility
 - Gather Logs
 - Network Capture
 - Reset Patient Database
 - Software Reload
 - SSA License
 - SSH
 - Thirty Party Licenses
 - Virtual Console Observation
- Options
- Agent Configuration



7-5-5 Home

Home configurations vary depending upon the purchased service level.

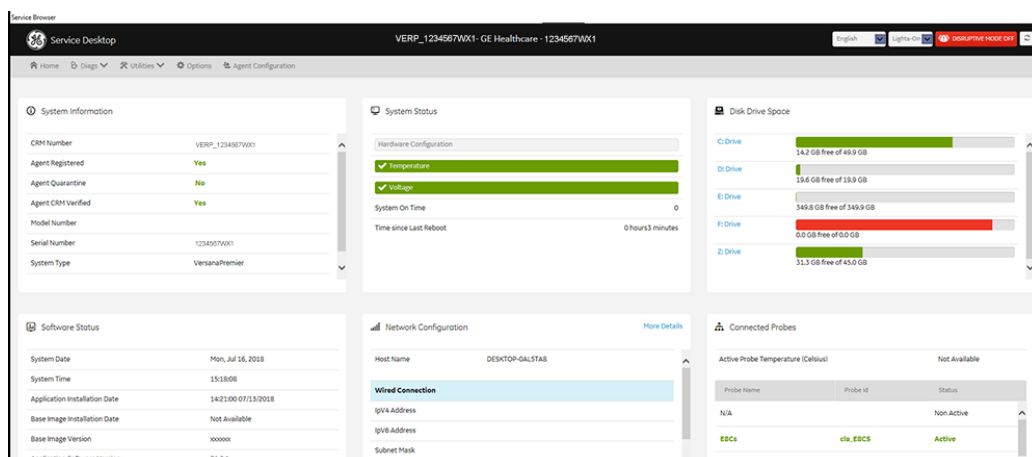


Figure 7-14. Home with Class C and Class M Access

For more information, see:

- [7-5-5-1 'System Information' on page 7-19](#)
- [7-5-5-2 'Software Status' on page 7-21](#)
- [7-5-5-3 'System Status' on page 7-22](#)
- [7-5-5-11 'Disk Drive Space' on page 7-32](#)
- [7-5-5-12 'Network Configuration' on page 7-34](#)
- [7-5-5-13 'Connected Probes' on page 7-36](#)



7-5-5-1 System Information

System Information displays general information about the Versana Premier. When the Versana Premier has been successfully configured with the back office, these elements will have the corresponding values:

- **Agent Registered** will be **Yes**
- **Agent Quarantine** will be **No**
- **Agent CRM Verified** will be **Yes**

The information on **System Information** is available to all service class licenses.

To access **System Information**, navigate to **Utility > Service > Home**.

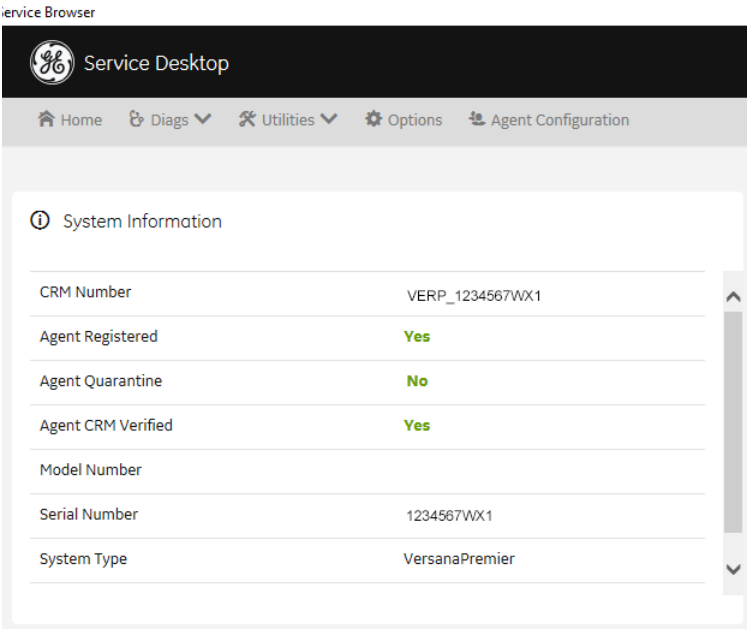


Figure 7-15. System Information

This table shows all the elements available on **System Information** with descriptions.

Table 7-1: System Information

Element	DESCRIPTION
CRM Number	Customer Relationship Management (CRM) number. System identifier assigned to the customer unit by the region service team.



Table 7-1: System Information

Agent Registered	Registered status of the agent. Valid values are: <ul style="list-style-type: none"> • Yes - The agent is registered in the back office. • No - The agent is not registered in the back office. • Not Available - The agent is not running or has not been configured.
Agent Quarantine	Quarantine status of the agent. Valid values are: <ul style="list-style-type: none"> • Yes - The agent has more than one device registered with the same CRM Number in the back office. • No - The agent has one device registered with the listed CRM Number in the back office. • Not Available - The agent is not running or has not been configured.
Agent CRM Verified	CRM verified status of the agent. Valid values are: <ul style="list-style-type: none"> • Yes - The agent is verified in the back office. • No - The agent is not verified in the back office. • Not Available - The agent is not running or has not been configured.
Model Number	GE part number for the Versana Premier. The same number as listed on the rating plate.
Serial Number	Serial number of the Versana Premier. The same number as listed on the rating plate.
System Type	Product name of the Versana Premier.
Facility	Name of the hospital or facility where the Versana Premier is installed

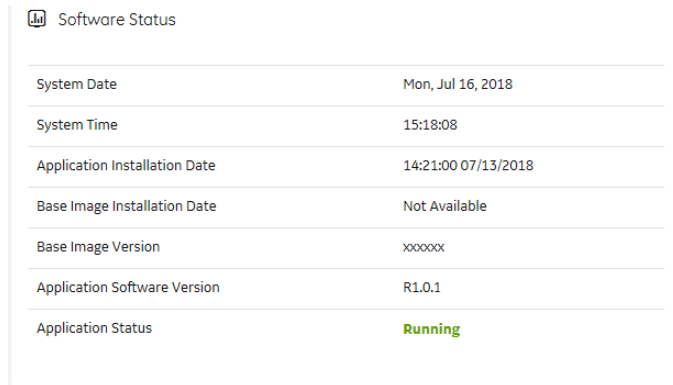
For more information, see: [7-5-5 'Home' on page 7-18](#)

7-5-5-2 Software Status

Use **Software Status** to view general information about the software installed on the Versana Premier.

The information on **Software Status** is available to all service class licenses.

To access **Software Status**, navigate to **Utility > Service > Home**.



Software Status	
System Date	Mon, Jul 16, 2018
System Time	15:18:08
Application Installation Date	14:21:00 07/13/2018
Base Image Installation Date	Not Available
Base Image Version	XXXXXXXX
Application Software Version	R1.0.1
Application Status	Running

Figure 7-16. Software Status

This table shows all the elements available on **Software Status** with descriptions.

Table 7-2: Software Status

Element	DESCRIPTION
System Date	Current date in the format <day>, <month> <date> <year>.
System Time	Local time based on the last time the system desktop was refreshed in the format <hh:mm:ss>.
Application Installation Date	Date the application software was installed. The application software includes the Versana Premier product-specific software.
Base Image Installation Date	Date the base image software was installed. The base image software includes the Windows operating system and other supporting software.
Base Image Version	Version number of the base image software
Application Software Version	Version number of the application software
Application Status	Status of the application. Valid values are <ul style="list-style-type: none"> • Running • Stopped

For more information, see:

- [7-5-5 'Home' on page 7-18](#)



7-5-5-3 System Status

Use **System Status** to view status information on the Versana Premier. Specifically, do the following:

- View the hardware configuration file
- View temperatures for FRUs, fans, and a graphical representation of the monitored temperatures
- View voltages for FRUs and AC
- View the amount of time the Versana Premier has been running
- View the amount of time since the Versana Premier has last been rebooted

The information on **System Status** is available to Class C and Class M licenses.

To access System Status, navigate to **Utility > Service > Home**.

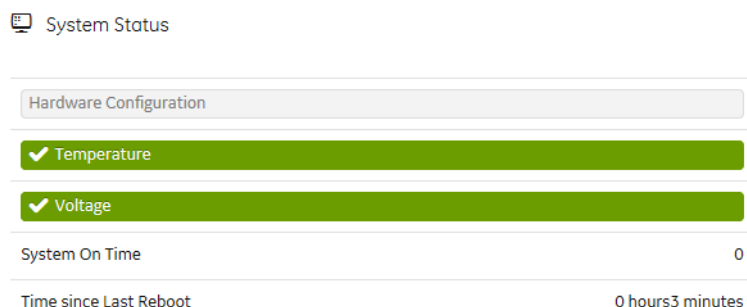


Figure 7-17. System Status



7-5-5-3 System Status(continued)

This table shows all the elements available on **System Status** with descriptions.

Table 7-3: System Status

Element	DESCRIPTION
Hardware Configuration	Displays the contents of the hardware configuration file.
Temperature	Displays the temperature monitoring of the Versana Premier as normal, warning, or error using the standard colors and icons. Includes temperature out-of-spec events including an overall count of event warnings and errors for the last 30 days or the last status checkpoint whichever is sooner. Temperature displays temperature a graph for the configured monitoring points.
Voltage	Displays the voltage monitoring of the Versana Premier as normal, warning or error using the standard colors and icons. Includes voltage out-of-spec events including an overall count of the event warnings and errors for the last 30 days or last status checkpoint whichever is sooner.
System On Time	Displays the time the Versana Premier was turned on.
Time Since Last Reboot	Displays the time the Versana Premier was last rebooted.



7-5-5-4 Hardware Configuration

Hardware Configuration displays the contents of the hardware configuration file which includes all the vital product data (VPD).

To access **Hardware Configuration**, navigate to **Utility > Service > Home**, and then under **System Status**, select **Hardware Configuration**.

Hardware Configuration Home Page

Component	Item	Value
BEP	COMPUTERNAME	DESKTOP-LHIDARA
BF	VPD revision field	3
BF	Pole that owns the design	dragon
BF	Functional revision	2H
BF	System Platform	Wukong
BF	Part number (GE format)	5759921
BF	Revision Number	3
BF FPGA	version	0x2023
COMEXP	VPD revision field	3
COMEXP	Pole that owns the design	dragon
COMEXP	Functional revision	1A
COMEXP	System Platform	Wukong
COMEXP	Part number (GE format)	5759921

Figure 7-18. Hardware Configuration

This table shows all the elements available on **Hardware Configuration** with descriptions.

Table 7-4: Hardware Configuration

Element	DESCRIPTION
Component	Hardware component.
Item	Parameter with the vital product data (VPD).
Value	Actual value of the Item.

For more information, see:

- [7-5-5-3 'System Status' on page 7-22](#)
- [7-5-5 'Home' on page 7-18](#)

7-5-5-5 Temperature

Use **Temperature** to troubleshoot problems with monitored FRUs and the fans. Specifically, use these pages:

- FRU Status
- Graphs

To access **Temperature**, navigate to **Utility > Service > Home**, and then under **System Status**, select **Temperature**.

For more information, see:

- [7-5-5-6 'FRU Status' on page 7-26](#)
- [7-5-5-7 'Graphs' on page 7-28](#)
- [7-5-5-3 'System Status' on page 7-22](#)
- [7-5-5 'Home' on page 7-18](#)



7-5-5-6 FRU Status

FRU Status displays a summary of the FRUs being monitored and the details for each FRU.

To access this page, under **System Status**, select **Temperature** and then select **FRU Status**.

 FRU Status Details

Name		Status	Lower Limit Warnings	Upper Limit Warnings	Lower Limit Errors	Upper Limit Errors
BEP_CHIPSET_TEMPERATURE		Normal	0	0	0	0
BEP_CPU_TEMPERATURE		Normal	0	0	0	0
BEP_SYS_TEMPERATURE		Normal	0	0	0	0
MST_AFE_TEMPERATURE		Normal	0	0	0	0
MST_BF0_TEMPERATURE		Normal	0	0	0	0
MST_BF1_TEMPERATURE		Normal	0	0	0	0
MST_MVP_TEMPERATURE		Normal	0	0	0	0

Figure 7-19. FRU Status

This table shows all the elements available on **FRU Status** with descriptions.

7-5-5-6 FRU Status(continued)

Table 7-5: FRU Status

Element	DESCRIPTION
FRU Status Summary	Number of the FRUs being monitored.
FRU Status Details	
Name	• Name of the FRU.
Status	Status of the FRU. Valid values are: • Normal - Indicates that the FRU is operating within the allowable range. • Warning - Indicates that the FRU is operating close to the limit of the allowable range. • Error - Indicates that the FRU is operating outside the allowable range.
Low Level Warning	Number of low temperature warnings.
High Level Warning	Number of high temperature warnings.
Low Level Errors	Number of low temperature errors.
High Level Errors	Number of high temperature errors.

For more information, see:

- [7-5-5-5 'Temperature' on page 7-25](#)
- [7-5-5 'Home' on page 7-18](#)



7-5-5-7 Graphs

Graphs displays trend graphs for selected elements which have been selected as key indicators of overall temperature status inside the card rack.

To access this page, under **System Status**, select **Temperature** and then select **Graphs**.

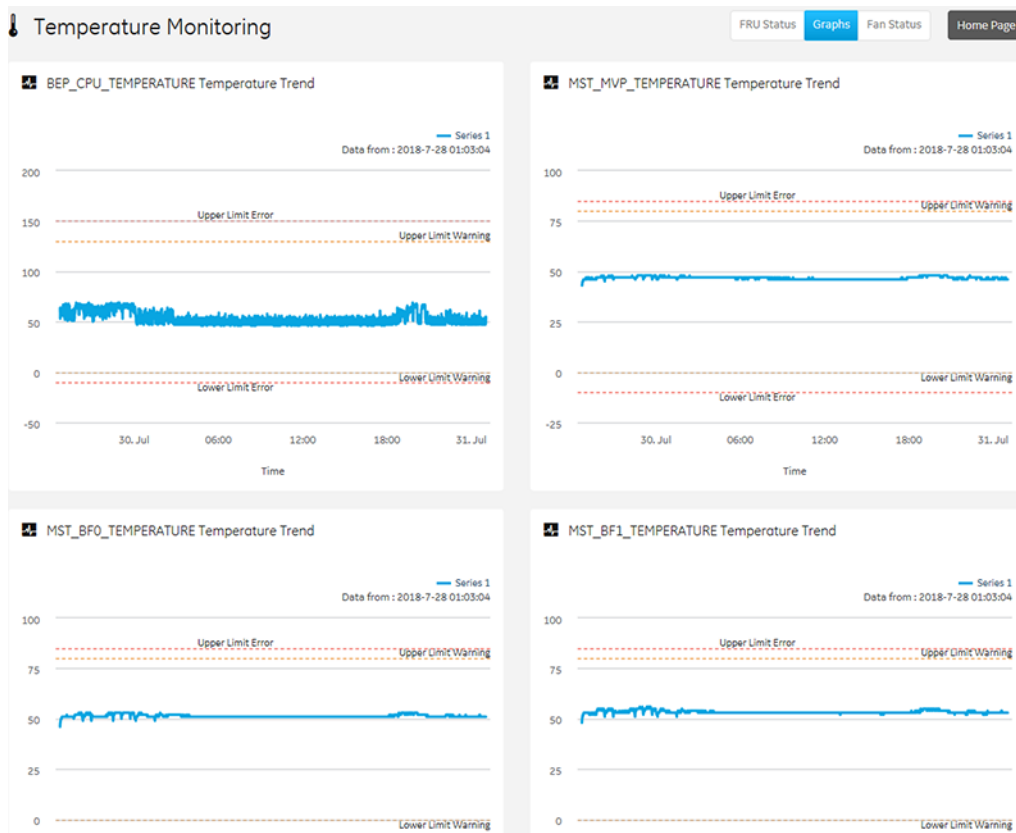


Figure 7-20. Graphs

For more information, see:

- [7-5-5-5 'Temperature' on page 7-25](#)
- [7-5-5 'Home' on page 7-18](#)



7-5-5-8 Voltage

Use **Voltage** to troubleshoot problems with monitored FRUs and the AC voltage of the Versana Premier.

Specifically, use these pages:

- FRU Status
- AC Voltage

To access **Voltage**, navigate to **Utility > Service > Home**, and then under **System Status**, select **Voltage**.

For more information, see:

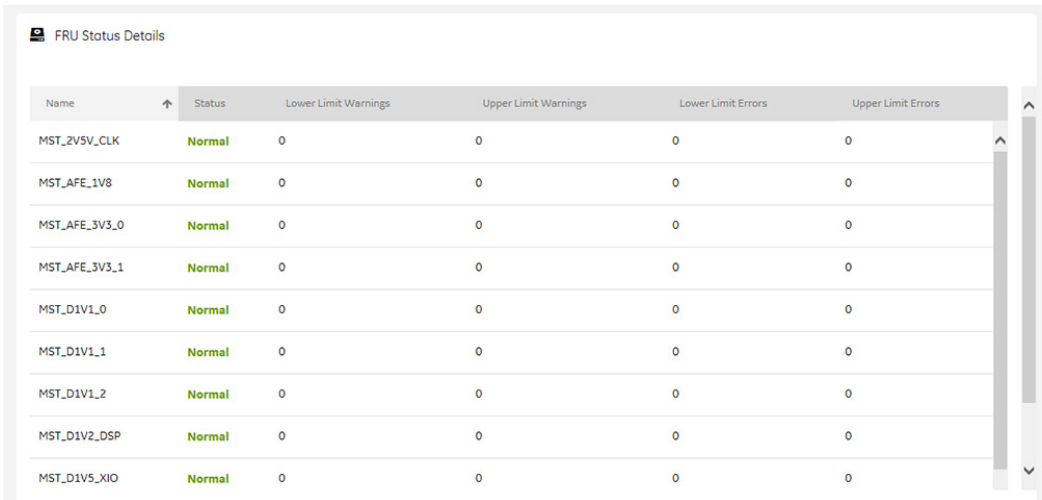
- [7-5-5-6 'FRU Status' on page 7-26](#)
- [7-5-5-10 'AC Voltage' on page 7-31](#)
- [7-5-5-3 'System Status' on page 7-22](#)
- [7-5-5 'Home' on page 7-18](#)



7-5-5-9 FRU Status

FRU Status displays a summary of the voltages for the FRUs being monitored and the details for each FRU.

To access this page, under **System Status**, select **Voltage** and then select **FRU Status**.



The screenshot shows a web interface titled "FRU Status Details". It contains a table with the following columns: Name, Status, Lower Limit Warnings, Upper Limit Warnings, Lower Limit Errors, and Upper Limit Errors. The table lists nine FRUs, all of which are in a "Normal" status with zero warnings and errors.

Name	Status	Lower Limit Warnings	Upper Limit Warnings	Lower Limit Errors	Upper Limit Errors
MST_2V5V_CLK	Normal	0	0	0	0
MST_AFE_1V8	Normal	0	0	0	0
MST_AFE_3V3_0	Normal	0	0	0	0
MST_AFE_3V3_1	Normal	0	0	0	0
MST_D1V1_0	Normal	0	0	0	0
MST_D1V1_1	Normal	0	0	0	0
MST_D1V1_2	Normal	0	0	0	0
MST_D1V2_DSP	Normal	0	0	0	0
MST_D1V5_XIO	Normal	0	0	0	0

Figure 7-21. FRU Status

This table shows all the elements available on **FRU Status** with descriptions.

Table 7-6: FRU Status

Element	DESCRIPTION
Name	Name of the FRU.
Status	Status of the voltage for the FRU. Valid values are: <ul style="list-style-type: none">• Normal - Indicates that the fan is within the allowable range.• Warning - Indicates that the voltage is close to the limit of the allowable range.• Error - Indicates that the voltage is outside the allowable range.
Lower Limit Warnings	Number of low limit voltage warnings.
Upper Limit Warnings	Number of high limit voltage warnings
Lower Limit Errors	Number of low limit voltage errors
Upper Limit Errors	Number of high limit voltage errors

For more information, see:

- [7-5-5-8 'Voltage' on page 7-29](#)
- [7-5-5 'Home' on page 7-18](#)

7-5-5-10 AC Voltage

AC Voltage graphically displays the voltage input over a period of time to help identify instabilities, or fault conditions, over time.

To access this page, under **System Status**, select **Voltage** and then select **AC Voltage**.

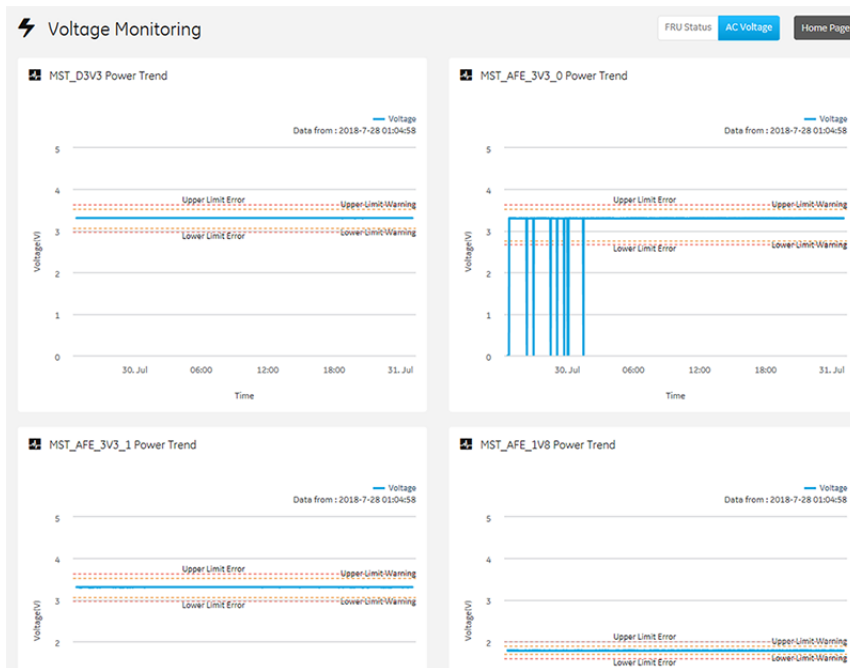


Figure 7-22. AC Voltage

For more information, see:

- [7-5-5-8 'Voltage' on page 7-29](#)
- [7-5-5 'Home' on page 7-18](#)



7-5-5-11 Disk Drive Space

Use **Disk Drive Space** to view the hard drive partitions including total size and available free space in GB. Includes the overall health of the drive in one of these colors:

- Red - Available free space is less than 10% of the total size.
- Orange - Available free space is more than 10% and less than 20% of the total size.
- Green - Available free space is more than 20% of the total size.

The information on **Disk Drive Space** is available to Class C and Class M licenses.

To access **Disk Drive Space**, navigate to **Utility > Service > Home**.

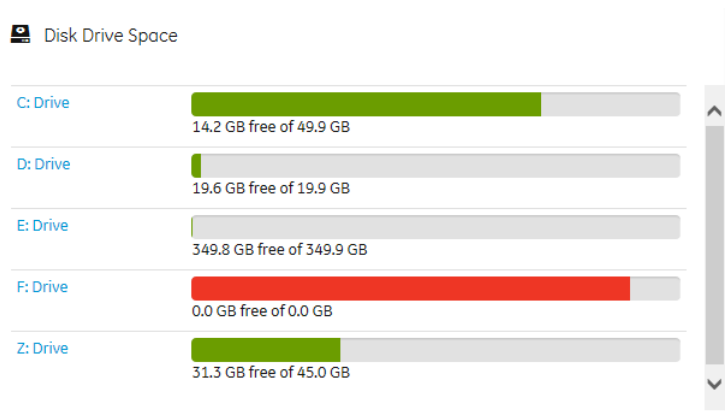


Figure 7-23. Disk Drive Space

7-5-5-11 Disk Drive Space(continued)

This table shows all the elements available on **Disk Drive Space** with descriptions.

Table 7-7: Disk Drive Space

Element	DESCRIPTION
C: Drive	C: partition shows the graphical representation of the following: <ul style="list-style-type: none"> • Used space in GB • Available free space in GB
D: Drive	D: partition shows the graphical representation of the following: <ul style="list-style-type: none"> • Service • Logs. • Temp • Export • Service configuration • Misc • Available free space in GB
E: Drive	E: partition shows the graphical representation of the following: <ul style="list-style-type: none"> • Patient images • Archive • Printer spooler • Clipboard • Dicom spooler • Misc • Available free space in GB
F: Drive	F: partition shows the graphical representation of the following: <ul style="list-style-type: none"> • Serial Number • Available free space in MB
Z: Drive	Z: partition shows the graphical representation of the following: <ul style="list-style-type: none"> • Package repository • Misc • Available free space in GB

For more information, see:

- [7-5-5 'Home' on page 7-18](#)



7-5-5-12 Network Configuration

Use **Network Configuration** to view network (wired and wireless) information (the full ipconfig details)for the network configured with the Versana Premier.

The information on **Network Configuration** is available to Class C and Class M licenses.

To access **Network Configuration**, navigate to **Utility > Service > Home**.



Figure 7-24. Network Configuration

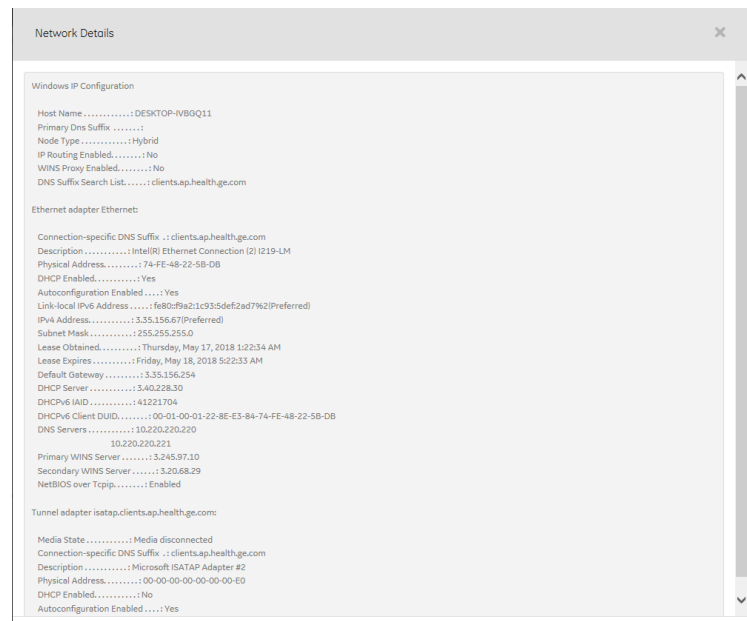


Figure 7-25. Network Configuration with More Details



7-5-5-12 Network Configuration(continued)

This table shows all the elements available on **Network Configuration** with descriptions.

Table 7-8: Network Configuration

Element	DESCRIPTION
Host Name	Name of the local host for the Versana Premier.
More Details	Displays the ipconfig details
Wired Connection	
IPv4 Address	Local IP address for the wired network connection.
IPv6 Address	Local IP address for the wired network connection.
Subnet Mask	Local subnet mask for the wired network.
Default Gateway	Default gateway for the wired network.
MAC Address	Address for the MAC for the wired network.
Speed (Mbps)	Speed of the wireless connection.
Wireless Connection	
IP Address	IP address for the wireless network connection.
Subnet Mask	Subnet mask for the wireless connection.
Default Gateway	Default gateway for the wireless connection.
MAC Address	Address for the MAC for the wireless connection.
Speed (Mbps)	Speed of the wireless connection
Status	Current status of the wireless connection.

For more information, see:

- [7-5-5 'Home' on page 7-18](#)



7-5-5-13 Connected Probes

Connected Probes shows probes connected to the Versana Premier. The order on the user interface is top down matching the left-to-right order on the Versana Premier.

The information on **Connected Probes** is available to all service class licenses.

To access **Connected Probes**, navigate to **Utility > Service > Home**.

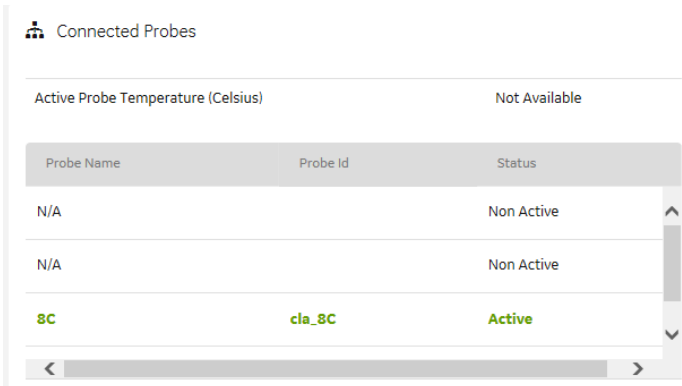


Figure 7-26. Connected Probes

This table shows all the elements available on **Connected Probes** with descriptions.

Table 7-9: Connected Probes

Element	DESCRIPTION
Active Probe Temperature (Celsius)	When available, temperature of the active probe. Not all probes report temperature. The most common probe to report temperature is the TEE probe.
Probe Name	Name of the probe connected to the Versana Premier.
Probe ID	Identifier of the probe connected to the Versana Premier.
Serial Number	Serial number of the probe connected to the Versana Premier. If the serial number of the probe is not available, then N/A displays.
Status	Statuses of the probe connected to the Versana Premier. Valid values are: <ul style="list-style-type: none">• Active• Non Active

For more information, see:7-5-5 'Home' on page 7-18

7-6 Network and Common Diagnostics

7-6-1 Network Configuration

7-6-1-1 Wire-LAN Network

1. Connect system with network.
2. Enter **Utility-> Connectivity-> TCP/IP**, in IP settings window, check **Enable DHCP**, and select the proper network speed in **Network Speed**.

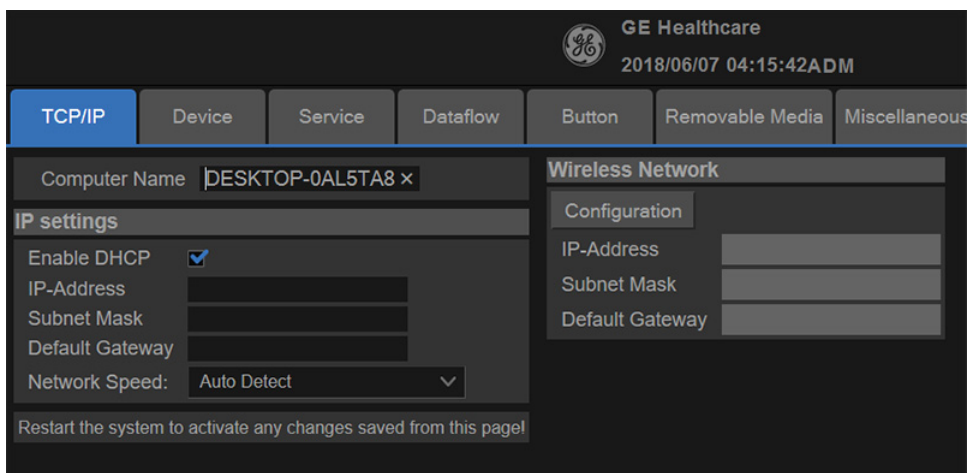


Figure 7-27. Enable DHCP



7-6-1 Network Configuration(continued)

NOTE: If user wants to setup static IP address, uncheck **Enable DHCP** option, input static address in **IP-Address box**, **Subnet Mask** and **Default Gateway** box. In **Network Speed**, choose the proper speed available.

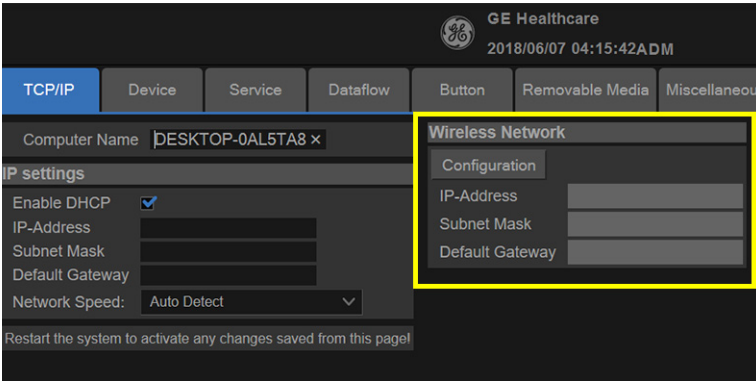


Figure 7-28. Network Settings

- 3. Select **Save**, and a popup window displays. Select **OK** to restart the system and activate the changes.

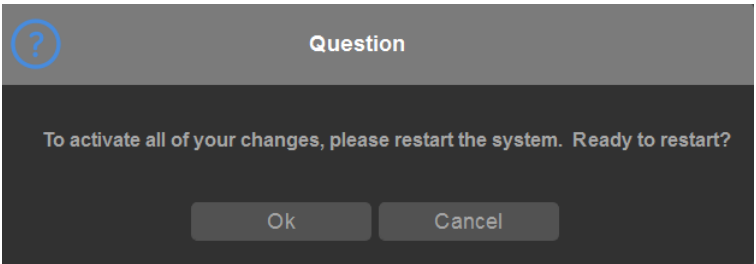


Figure 7-29. System Restart inquiry dialog

- 4. After the system restarts, the network icon on the right top of the screen shows that the network is available.

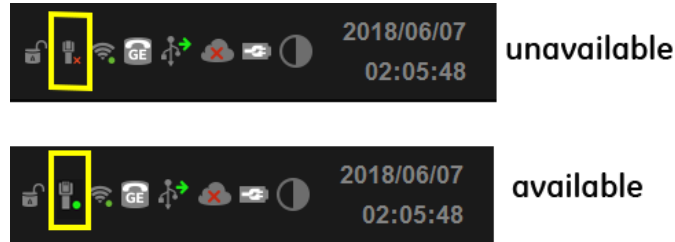


Figure 7-30. Network icon



7-6-1-2 Wireless-LAN Network

NOTE: To configure the Wireless-LAN network, the operator must login as administrator.

1. Connect the wireless adapter in the USB port.
2. Enter **Utility-> Connectivity-> TCP/IP**, press **Configuration**.
3. Double click **Wireless network**. you chosen, or click the **Connect** at the left bottom of screen.

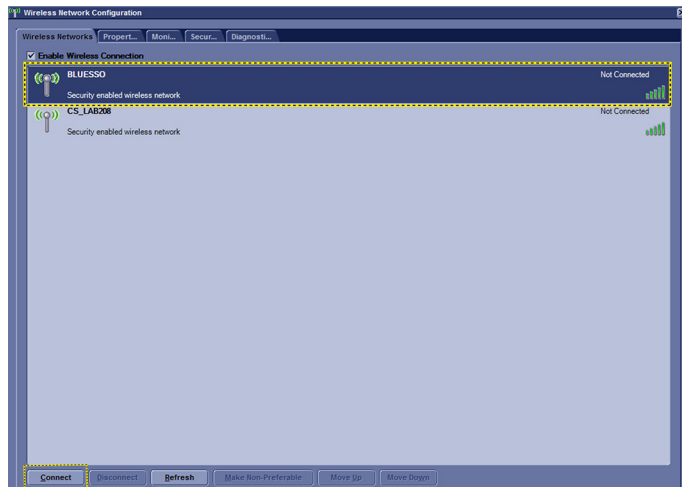


Figure 7-31. Wireless Network Connection



7-6-1-2 Wireless-LAN Network(continued)

4. Input Network Key and Confirm Network Key, then click **Connect**.

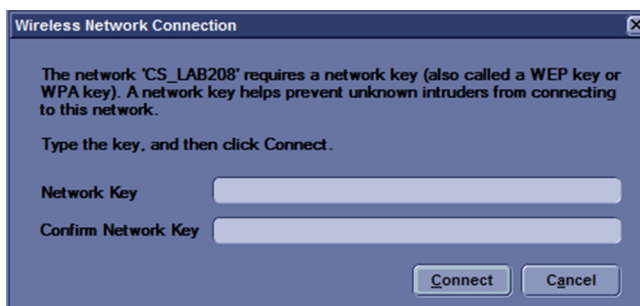


Figure 7-32. Connection Status

5. The network icon at the left bottom of screen shows that the wireless network is available.

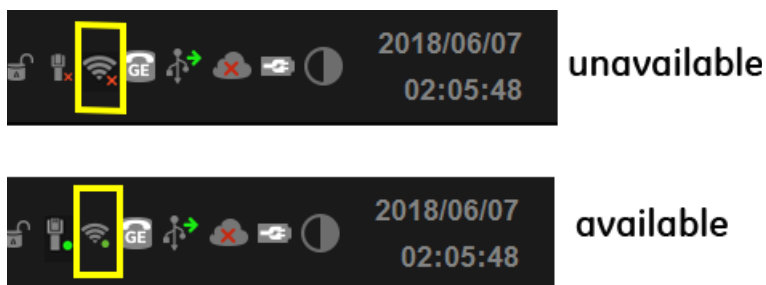


Figure 7-33. Wireless-LAN Connection



7-6-2 Remote Access

Remote Access is a feature designed to enable OLE's access to customer's desktop remotely, service engineers don't have to be on site to connect the physical dongle to exit to desktop, it's doable remotely by using this feature.

1. In the server side, type the CRM No. of the system which the OLE would remotely connect to, and select **Get Started**.

NOTE:

Remote FFA link: <https://stg-ffa.am.health.ge.com/#/di/home>.

Start Remote Troubleshooting

Workflow Type

☒ Standard (Includes Insite1, Insite2, and RSvP)

Enter System or Service ID

☒ System ID

Devices using RSvP may utilize [Advanced Search](#) for filtering.

CRMNo

Service Request ID (Optional)

☐ Service Request ID

Country of System

Get Started

Figure 7-34. Input System ID



7-6-2 Remote Access(continued)

2. Select **Connect**. Then the **Connect** page is displayed.

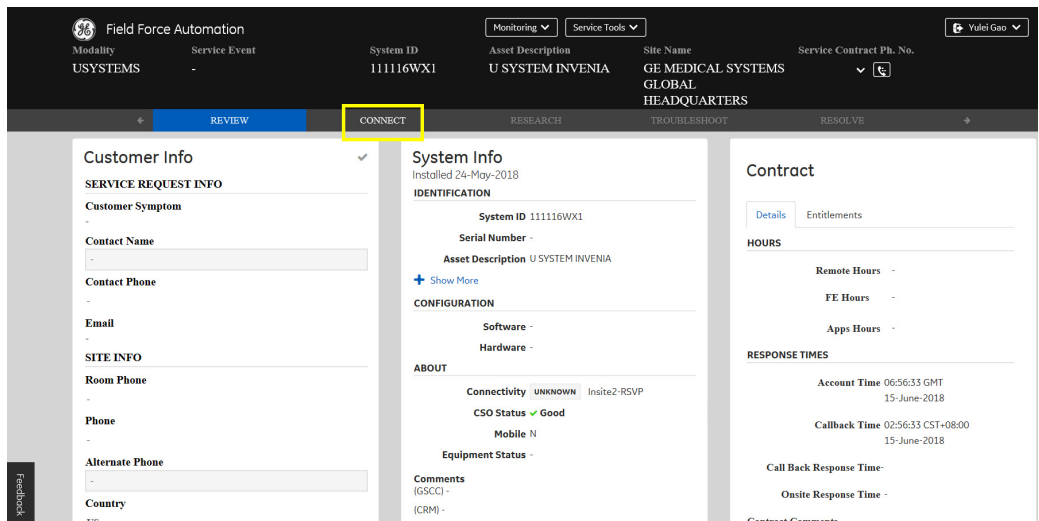


Figure 7-35. Connect Page

3. Select **HTTPS** to **Connect**. Then the OLE is remotely connected to the system.

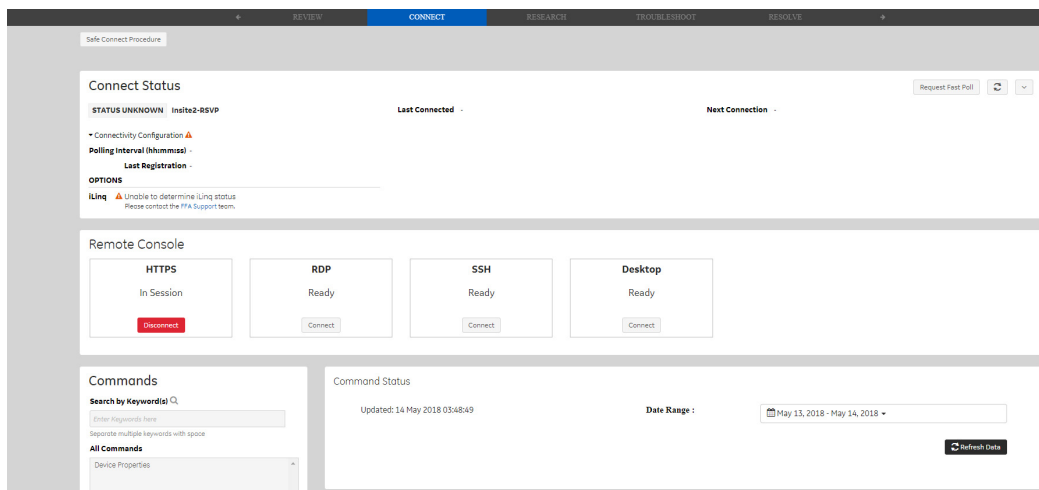


Figure 7-36. Select HTTPS to Connect

NOTE: RDP is not available in Versana Premier.



7-6-2 Remote Access(continued)

4. Enter **Options** to add service option key.

NOTE: Please delete the added service option key when your service work is done.

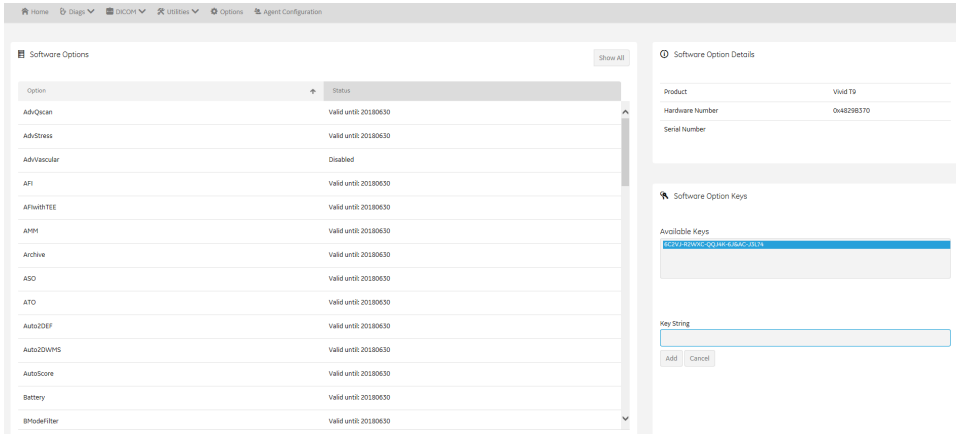


Figure 7-37. Add Service Option Key

5. Enter **Utility-> Disruptive Mode Utility**, select **Enable**.

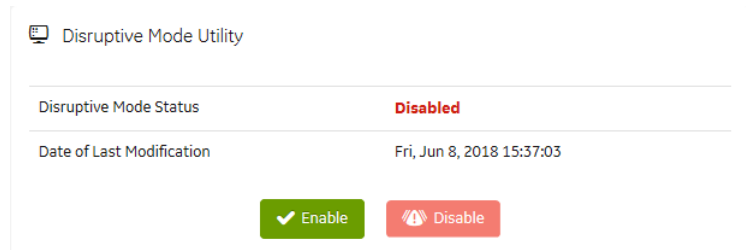


Figure 7-38. Enable Disruptive Mode

6. If we want to see the Scan screen or have control of the unit, we have to go to Virtual Console Observation and start it. Enter **Utility-> Virtual Console Observation**, select **Start**.

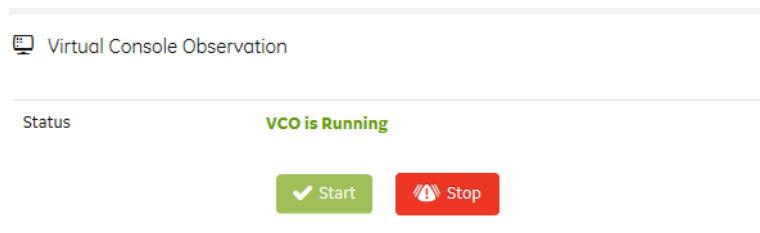


Figure 7-39. Start VCO



7-6-2 Remote Access(continued)

- 7. Select Desktop to Connect. Then the OLE is remotely connected to the system.

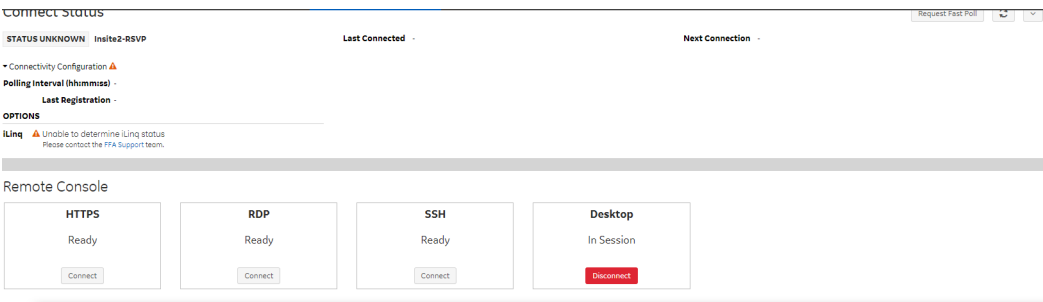


Figure 7-40. Select Desktop to Connect

NOTE: *You need to reboot the system before clinical scanning is resumed.*



7-6-3 Service Diagnostics

7-6-3-1 MST board

- MST Swept Demodulator Test performs a signal path test of the swept demodulator FPGA on the MST.
- MST Front End Interface Test tests that the MST can access Front-End boards.
- MST Analog Test.
- MST Memory Access Test tests that MST can access to the internal, external, external cache memory spaces.
- Front End Interface FPGA Test reads the version of the GFE FPGA.
- MST Fixed Demodulator Test: MST Fixed Demodulator signal path test.
- DSP Master Clock Check checks DSP Master Clock.
- MST Swept Demodulator Long Test.
- MST Temperature Test.
- MST Voltage.
- FPGA Internal Memory Test.

NOTE: *The FPGA Internal Memory test may fail if it is performed with other tests at the same time.*

- FPGA Version.

7-6-3-2 CWI board

- HV STOP Test tests HV-STOP mechanism and checks each board is able to assert HV_STOP using its HV_STOP source.
- CWI Voltage.
- Other Voltage test point.
- Memory tests the memory on the mother board.
- Network Interface.
- Network Interface Reliability Test.
- CPU Temperature Test.



7-6-3-3 Front End Path

- AFE IF Test checks digital path between AFE chips and FPGA.
- Complex Mixer Test checks the Mixer process chain of FPGA.
- CE Decoder Test checks the Code Excitation Decoder process chain of FPGA.
- Analog CW checks I-Q symmetry of pedof CW beamformer receiving signal.

7-6-3-4 PC Test

- Hard Drive Test Long tests functionality of the hard drive.
- Hard Drive Test Short tests functionality of the hard drive.
- RTC clock:
- **AVI playback** tests playing back an AVI file.
 - Click “Play” to run the test. If the test is successful, you will see a brief video clipo with audio. For more information about the test, click “More Information”.
 - Click “Pass” if the test successfully reproduces the video clip.
 - Click “Fail” if the test is unable to successfully reproduce the video clip.
 - Click “Cancel” button to quit the test without recording a test result.
- **Keyboard**
 - Press each key on the keyboard and it will be added to the History. Hold down a key to test the repeat of that key. To cancel, click Cancel or press Alt-X.
 - Special purpose keys like volume control or Internet access keys may not be detected. To test the Fn key of a notebook computer, hold down the Fn key while pressing another key.
 - Note: This diagnostic is intended to verify keyboard keys are in good working order. It is not intended to verify that keyboards produce desired characters.



7-6-3-4 PC Test(continued)

- **Monitor Test Patterns**

- This test is composed of various elements that verify a monitor functions correctly. To test a monitor feature, click the appropriate button. You can return to this dialog by clicking the mouse button or pressing any key.
- The Combination Test helps you verify your monitor is properly aligned, and set at the correct color depth and resolution. Use the crosshair pattern in each corner of the screen to visually determine if the monitor aligns correctly. If the crosshairs appear distorted or out of focus, a problem may exist with the monitor alignment. Use the color spectrum array for visually verifying the monitor color depth capacity. If the colors in the color spectrum do not blend smoothly together, a problem may exist with the monitor color depth. Use the graduated horizontal and vertical alignment bars to determine the monitor resolution capabilities. The better you can discern individual lines as they move closer together, the higher the resolution capabilities of the monitor.
- The Solid Color Test helps point out malfunctioning or dysfunctional pixels using five basic colors: red, green, blue, black, and white. Fill the screen with an appropriate color by clicking the associated button. If a pixel is malfunctioning, the pixel color will contrast with the color of all other pixels.
- The VESA Test Patterns allow you to test the monitor for proper luminance, geometry and focus. Click the appropriate button to fill the screen with the associated test pattern. You can return to this dialog by clicking the mouse button or pressing any key.



7-6-3-4 PC Test(continued)

- **Trackball**
 - The Mouse Status Test verifies the cursor position and mouse button state. When a mouse button is pressed, the corresponding button on the picture will change color. If the mouse is a wheel or scroll mouse, an arrow will indicate the direction the wheel is being rotated. Clicking the wheel will flash the picture of the mouse in the Mouse Status Test area.
 - The Drag and Drop Test verifies a mouse can successfully perform drag and drop operations. Left click the picture of the CD and drag it onto the picture of the drive. If successful, the picture will change.
 - The Double Click Test verifies a mouse can successfully perform double-click operations. Double-click on the picture of the monitor. If successful, the picture will change.
- **Sound Test** generates sounds for testing the speakers.
- **USB Ports Test** lists USB Devices.

7-6-3-5 Assessment Utility

Probe Assessment

NOTE: The probe assessment is only available for the probe connected in the first probe port.

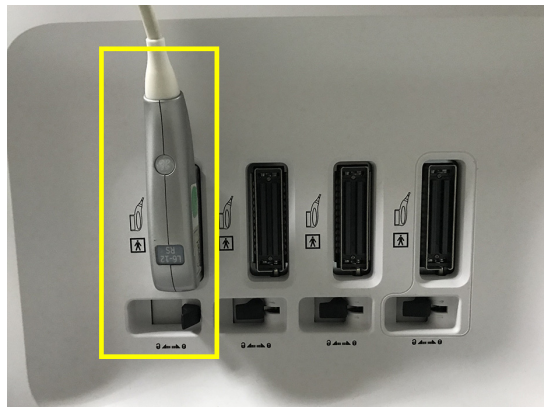


Figure 7-41. The first probe port

NOTE: P2D probe is not supported in Probe Assessment.



7-6-3-5 Assessment Utility(continued)

1. Place the probe's carrying case on a stable surface and open the case.
2. Carefully remove the probe and unwrap the probe cord.
3. Put the probe in the probe holder.



DO NOT allow the probe head to hang free. Impact to the probe head could result in irreparable damage.

4. Prior to inserting the probe, ensure that the connector locking handle is positioned to the left.
5. Align the connector with the probe port and carefully push into the left-most probe port.
6. Turn the connector locking handle to the right to secure the probe connector.
7. Carefully position the probe cord so it is free to move and is not resting on the floor.
8. Press **Probe** button on the control panel and select the first probe from the probe indicators.
9. Enter global service user interface as GE service.
10. In the **Diags-> Run Diags-> ProbeAssessment** to check the probe.

If there is no broken element and the probe is acceptable for diagnostic, the following result window displays.

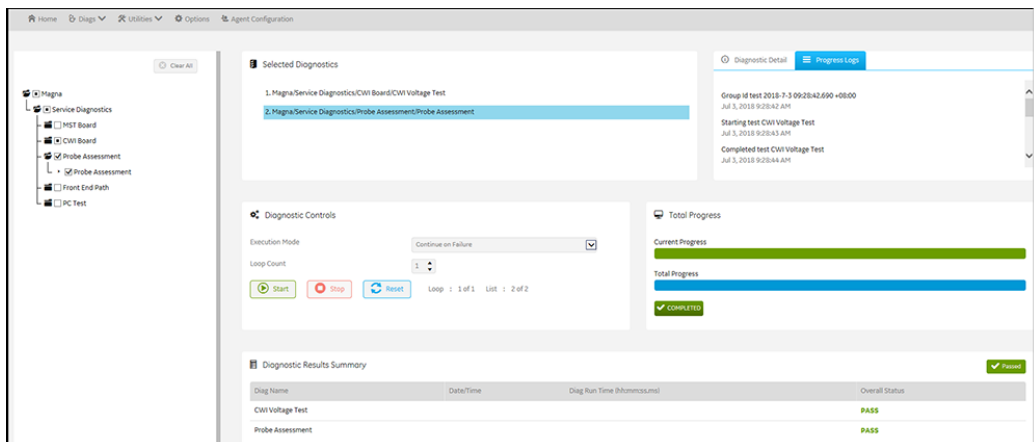


Figure 7-42. Probe Assessment Pass



7-6-3-5 Assessment Utility(continued)

11. In the **Diags-> Run Diags->Diags History** to check the probe diagnostic results.

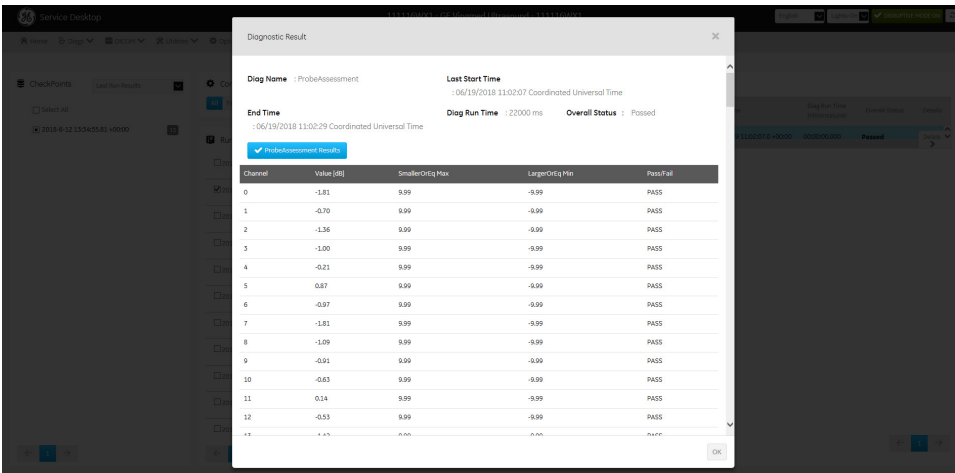


Figure 7-43. Probe Assessment Result



Reboot the system after the probe assessment.

7-6-3-5-1 Probe Pass/Fail Criteria

Pass

- No dead element
- Dead elements on the edge (#0, #1 or #end-1, #end)

Fail

- Max 2 weak elemets on the scan line: -3dB<elements<-2dB
- Any one of the elements in one scan line: element<-3dB

7-7 Troubleshooting

7-7-1 Console Troubleshooting

7-7-1-1 System Doesn't Boot (Hang-up)

Table 7-10: Hang-up black screen diagnostic table

	ON/OFF button	LED1 (HDD)	LED2	LED3	Failure module
Power connected. Power on button not pressed	White On		Blink slowly	Blink Slowly	Normal status
	No light		OFF	OFF	1. ACDC failure or its related cable. 2. Charger module failure or its related cable fail. 3. CWI PWA failure.
	No light		Blink slowly	Blink Slowly	1. KBD Cable Connection failure. 2. IODKG PWA failure. 3. KBD PWA failure.
	White On		Not Blink	Not Blink	CWI PWA failure
Power on button pressed	Green ON	NA	Blink slowly	ON	Normal status
	White		Blink slowly	Blink slowly	Power on failed, no response to power on button: 1. KBD Cable Connection failure 2. IODKG PWA failure. 3. KBD PWA failure. 4. CWI PWA failure.
	NA		Blink quickly	OFF	CWI PWA failure - CWI power have failure which leads to CPU boot fail.
	NA		OFF	Blink quickly	1. IODKG PWA failure - IODKG power have failure. 2. Peripheral failure - which may cause D12V of IODKG abnormal. 3. CWI PWA failure - PWR MCU fail to send PWR_OK to IODKG board.
	Green ON		Blink quickly	Blink quickly	CWI PWA failure - CPU boot fail.



Chapter 8

Replacement Procedures

This chapter describes how to remove and install, or replace, modules and subsystems in the Versana Premier. It also includes instructions for installing and re-installing the software.



8-1 Overview

8-1-1 Contents in this chapter

- [8-1 'Overview' on page 8-2](#)
- [8-2 'Warnings and important information' on page 8-3](#)
- [8-3 'Disassembly/Re-assembly' on page 8-5](#)
- [8-4 'Loading the software' on page 8-9](#)

8-2 Warnings and important information

8-2-1 Warnings



WARNING

Energy Control and Power Lockout for Versana Premier.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:

1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.

Ultrasound System components may be energized.



WARNING

Because of the limited access to cabinets and equipment in the field, placing people in awkward positions, GE has limited the lifting weight for one person in the field to 16 KG (35 LBS). Anything over 16 KG (35 LBS) requires 2 people.



WARNING

DO NOT touch any boards with integrated circuits prior to taking the necessary ESD precautions.

Always connect yourself, via an arm-wrist strap, to the advised ESD connection point located on the rear of the Ultrasound system (near the power connector).

Follow general guidelines for handling of electrostatic sensitive equipment.



8-2-1 Warnings(continued)

NOTE: Use an ESD compatible work space or the ESD-kit during parts replacement.



The waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately.

Please contact the manufacturer or other authorized disposal company to decommission your equipment.



8-2-2 Returning/shipping probes and repair parts

Equipment being returned must be clean and free of blood and other infectious substances.

GE policy states that body fluids must be properly removed from any part or equipment prior to shipment. GE employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstance should a part or equipment with visible body fluids be taken or shipped from a clinic or site (for example, body coils or an ultrasound probe). The purpose of the regulation is to protect employees in the transportation industry, as well as the people who will receive or open this package.

NOTE: *The US Department of Transportation (DOT) has ruled that “items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care” are “regulated medical waste” for transportation purposes and must be transported as a hazardous material.*



8-3 Disassembly/Re-assembly

8-3-1 Warning and Caution



ONLY QUALIFIED SERVICE PERSONNEL SHOULD REMOVE ANY COVERS OR PANELS. ELECTRICAL HAZARDS EXISTS AT SEVERAL POINTS INSIDE. BECOME THOROUGHLY FAMILIAR WITH ALL HAZARDOUS VOLTAGES AND HIGH CURRENT LEVELS TO AVOID ACCIDENTAL CONTACT



Do wear the ESD wrist strap when you work on live circuits and more than 30V peak is present.



8-3-2 Tools needed for servicing Versana Premier

Table 8-1: Standard tools list for Versana Premier

No	Part Name	Part No.	QTY	Screw Description	Screwdriver Description
1	screw	2159632	2	Screw BH M4x6	Common Phillips Screwdriver
2	screw	2159634	4	Screw BH M4x10 WHT	Common Phillips Screwdriver
3	screw	2327793	135	D2 Screw SJ2836-87 M3x8	Common Phillips Screwdriver
4	screw	2373562	3	Screw M4x10	Common Phillips Screwdriver
5	screw	5138465	10	Screw FH M2.5x5(NL)	Common Phillips Screwdriver
6	screw	5176890	6	Screw DIN965A M4x8	Small Phillips Screwdriver
7	screw	5244775	2	Screw GB T820-2000 M3x8	Common Phillips Screwdriver
8	screw	5342274	4	Inch Screw #6-32UNC	Common Phillips Screwdriver
9	screw	5439265	246	Screw-M4x10	Common Phillips Screwdriver
10	screw	5445720	12	GB 818-2000 M4x30	Common Phillips Screwdriver
11	screw	2337572	2	Screw FH M3x6	Common Phillips Screwdriver
12	screw	5476381	20	Bolt M8x18 with Washer	6# Inner Hexangular Set
13	screw	5476387	34	Bolt M6x15 with Washer	5# Inner Hexangular Set
14	screw	5476394	5	Bolt M8x30	6# Inner Hexangular Set
15	screw	5476438	14	Bolt M8x36 With Washer	6# Inner Hexangular Set
16	screw	5476440	17	Bolt M6x24 With Washer	5# Inner Hexangular Set
17	screw	5477579	2	Screw_DIN912 M6_20	5# Inner Hexangular Set
18	screw	5490719	4	Screw PM SW4x8	Common Phillips Screwdriver
19	screw	5491747	1	Screw Pan Head M4x4	Common Phillips Screwdriver
20	screw	5491847	2	Hand Screw M2p5x5	by hand

NOTE: Please use the correct Screwdrivers listed in [Table 8-1](#).



8-3-3 Overview of Versana Premier

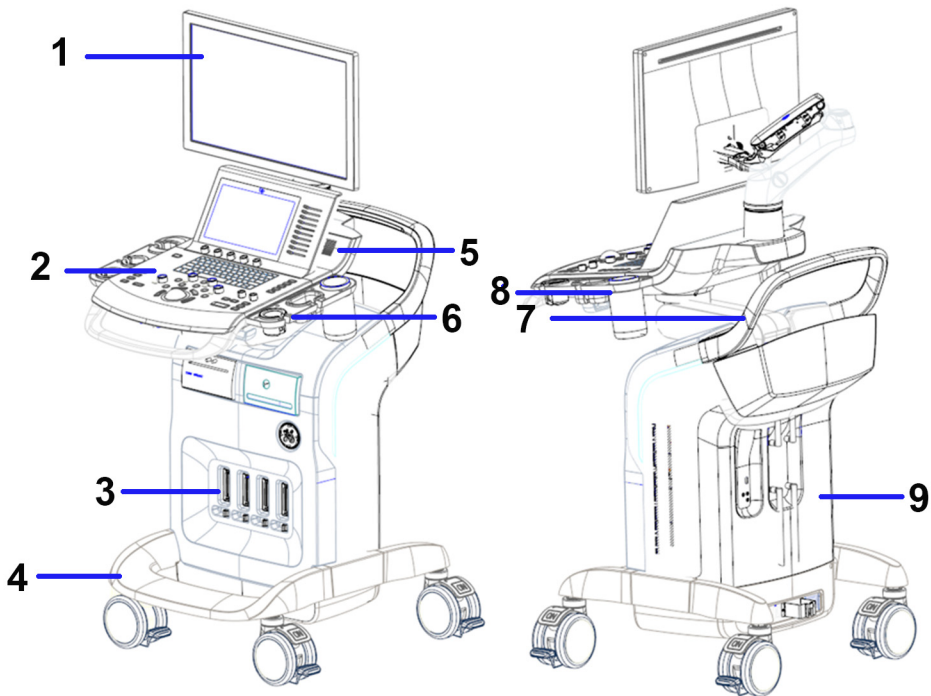


Figure 8-1. System Overview 1

- | | |
|---|--|
| 1. Monitor Assy | 5. KBD Speaker Cover for Versana Premier |
| 2. Keyboard Assy | 6. Probe holder for Versana Premier |
| 3. Body 4PP Front Cover for Versana Premier(Optional) | 7. Frame Handle for Versana Premier |
| 4. Base Assy | 8. Gel holder for Versana Premier |
| | 9. Body Top Cover Assy for Versana Premier |



8-3-3 Overview of Versana Premier(continued)

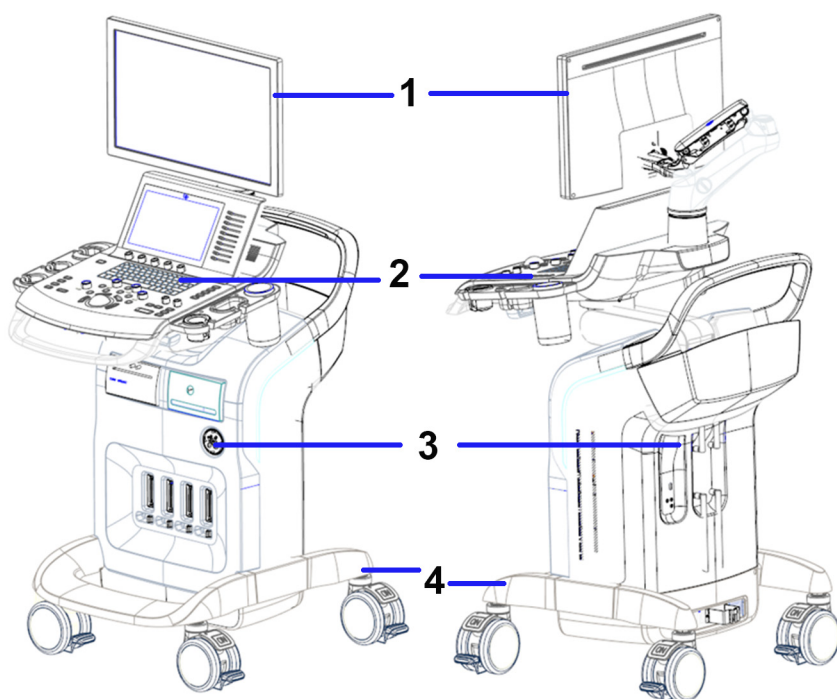


Figure 8-2. System Overview 2

1. Monitor Assy
2. Keyboard Assy
3. Body Assy
4. Base Assy



8-4 Loading the software

8-4-1 Purpose of this section

This section describes how to reinstall software on Versana Premier.

8-4-2 Customer provided prerequisite

- Formatted and labelled media for Images storage.
- Formatted and labelled media for Patient Archive and Presets (User Defined Settings).
- Password for the user ADM.

8-4-3 Data Management - moving all images



CAUTION

An error, or a power loss may occur.

Always backup the Patient Archive and the Presets (System Configurations) before loading the software!

In order to complete a successful restore of the Patient Database, as needed after a hard disk replacement, or if all the content on the hard disk has been erased, the images must be moved away from Versana Premier before doing backup of the Patient Database.

Depending on the location set-up, either move the images to a remote server or to removable media like DVD or CD discs.

- Move the images to a remote server or to removable media.

For instructions, please see “Disk management” in the Basic User Manual/User Guide.



8-4-4 Backing up the Patient Archive and System Configurations



CAUTION

An error, or a power loss may occur.

Always backup the Patient Archive and the Presets (System Configurations) before loading the software!

In order to complete a successful restore of the Patient Database, as needed after a hard disk replacement, or if all the content on the hard disk has been erased, the images must be moved away from Versana Premier before doing backup of the Patient Database.

Depending on the location set-up, either move the images to a remote server or to removable media like DVD or CD discs.

- Backup the Patient Archive and System Configurations.

For instructions, please see “Data Backup and Restore” in the Basic User Manual/User Guide.

8-4-5 Restoring up the Patient Archive and System Configurations

NOTE: *It is not suggested to manually delete the files in D:\ldunn\target\resources\ldunn\userdefs.*



WARNING

To avoid lacking of connecting to Local Archive, connectivity.res and IPSave in D:\ldunn\target\resources\ldunn\userdefs could not be deleted. If they are deleted, please rewrite the serial number.



8-4-6 Recording important settings and parameters

8-4-6-1 Overview



CAUTION

An error, or a power loss may occur.

It is considered to be best practice to always keep a record on paper of the settings for the Versana Premier. Verify if it is current before you start to load software!

Always keep a record of the settings for the Versana Premier on paper. Verify if it is current before starting a software loading! If needed, record the settings.

This subsection includes descriptions for recording data from the following screens:



8-4-7 Loading the System Software



WARNING

While the software install procedure is designed to preserve data, you should save any patient data, images, system setups and customer presets to CD, DVD, USB Flash Drive, or USB Hard Disk before doing a software upgrade.

NOTE: Before loading the system software, please ensure that the power can be continuously supplied and there is no risk of power cut off during loading procedure.

NOTE: Before loading/reload the system software, please change system language to English, refer to [Figure 3-57 on page 3-70](#). Otherwise, there will be garbage on the system after software reload/loading.

There is one method to load the system software:

NOTE: Load the system software with USB memory stick.

NOTE: Find the system software USB memory stick by removing the body left cover, detailed position refer to the Figure.

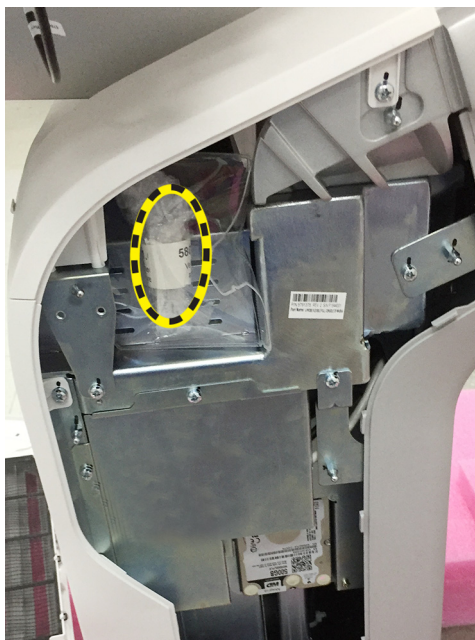


Figure 8-3. Software USB memory stick position



8-4-7-1 Loading the System Software with USB memory stick

This section describes how to upgrade the software.

1. Insert the Upgrade USB memory stick labeled “System & Application Software” to the USB port of the system.
2. Properly turn off the system by momentarily pressing the *Power On/Off Switch*. Then select **Shutdown** in the System Exit Window.

NOTE: *If the system does not shutdown normally, hold down the Power On/Off Switch until the light turns off.*

3. Power on the system and it will detect the USB memory stick automatically.
4. Select the option **Load the complete disk** or **Load the bootable C: partition only** for software upgrade. Or select **Exit** to exit the upgrade process.

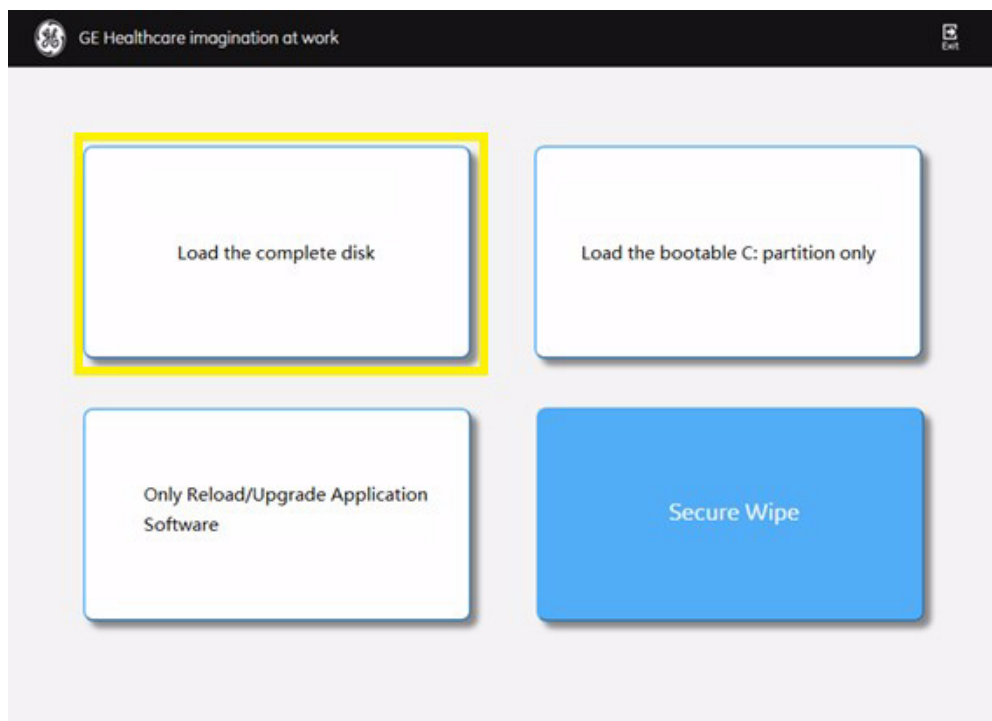


Figure 8-4. Upgrade instruction



8-4-7-1 Loading the System Software with USB memory stick(continued)

- **Load the complete disk:** the complete disk will be loaded. This option is recommended for application software upgrade.

Only Reload/Upgrade Application Software: the application software will be loaded/upgraded only. This option is recommended for application software upgrade or reload.



WARNING

If selecting Load the complete disk, all existing software and data will be erased. If backup has not been performed, all data like Patient Data, System Configuration and User Configurations (Customer Presets) will be lost. Please ensure that any patient data on the disk has been backed up before upgrading the system.

NOTE: *This option is used by service engineer only.*

- **Load the bootable C: partition only:** this option is intended for recovery of a system that will not boot up. All patient data is preserved.

NOTE: *While the software installation procedure is designed to preserve data, select choice Load the bootable C: partition only to format disk C.*

5. If **Load the complete disk** is selected, a confirmation window will pop out, then select **Execute** to continue.

NOTE: *Before loading the complete disk, please ensure that any patient data on the disk has been backed up.*



8-4-7-1 Loading the System Software with USB memory stick(continued)

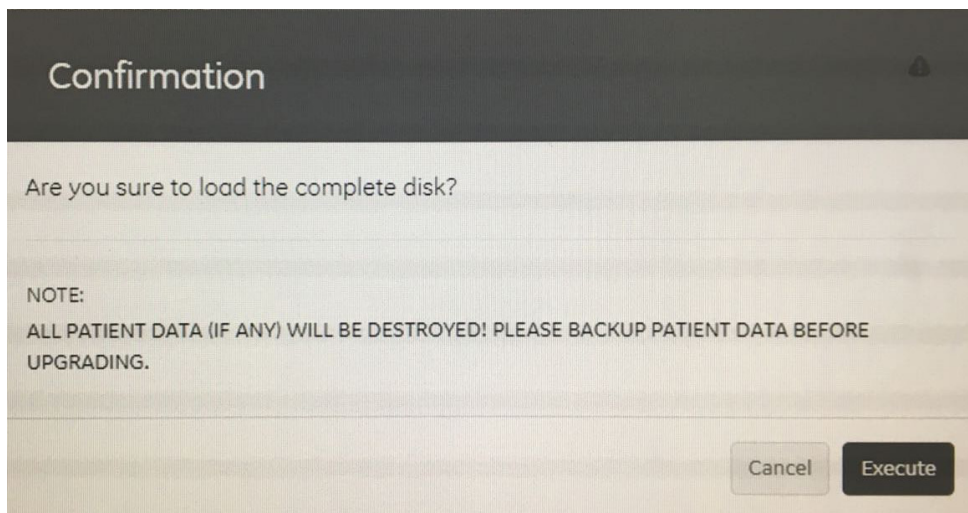


Figure 8-5. Confirmation Window

6. System USB memory stick will be loading. Wait for the software installation to complete. Status bar on the screen indicates the progress (about 30 minutes).



^W **WARNING**

Do not interrupt the software loading at any time.



8-4-7-1 Loading the System Software with USB memory stick(continued)

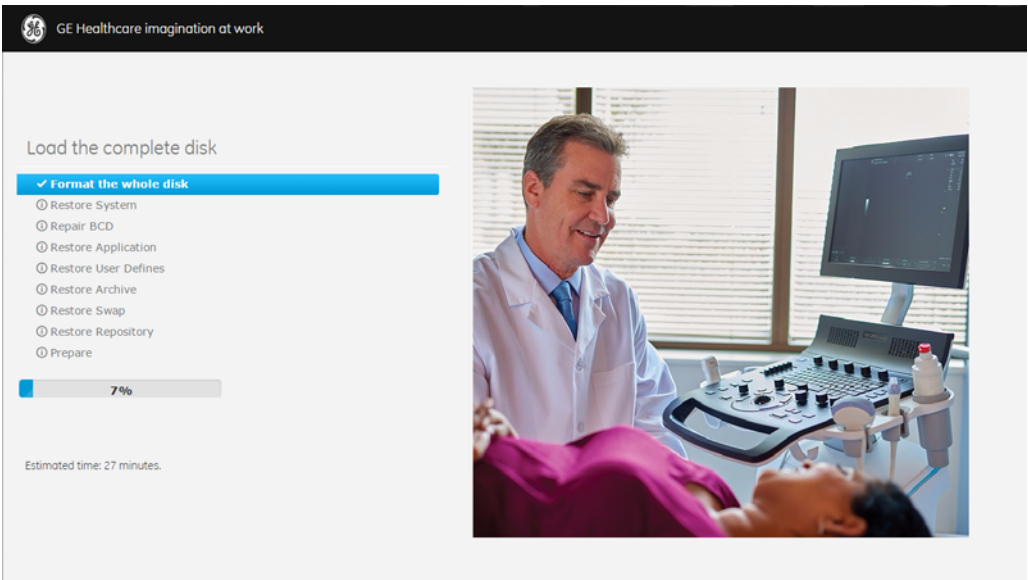


Figure 8-6. Loading Process

8-4-7-1 Loading the System Software with USB memory stick(continued)

7. The system will display upgrading result and shutdown automatically within 30 seconds. Or click the Shutdown in the screen to shut down the system immediately.

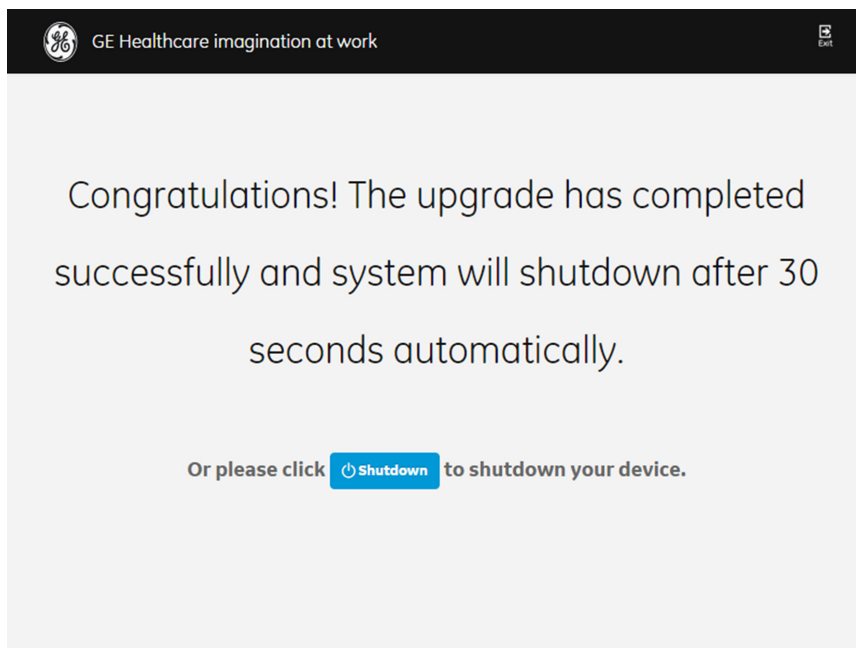


Figure 8-7. System upgrade complete

If the upgrade fails, select **Exit** to exit the upgrade process, then remove the USB memory stick. Insert the USB memory stick again and repeat the upgrade process from [step 2 on page 8-13](#).

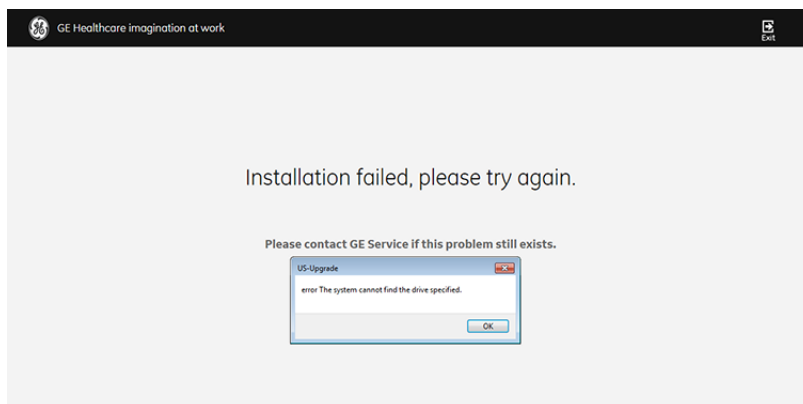


Figure 8-8. System upgrade fail



8-4-7-1 Loading the System Software with USB memory stick(continued)

8. Remove USB memory stick. Then press *Power On/Off* switch to power on the system.

NOTE: *Remove the USB memory stick before the system restarts. If you do not remove the USB memory stick, the software system upgrading process repeats when the system boots up.*

NOTE: *Ensure the USB memory stick is properly and securely connected. Once the USB memory stick is accidentally disconnected from the system during the upgrading process, the error message will pop up: "The volume for a file has been externally altered so that the opened file is no longer valid." Insert the USB memory stick again and restart the system to run the upgrading process from [step 3 on page 8-13](#).*

8-4-7-2 Rewrite the Serial Number

If selected to load the complete disk during the software loading process, when powering the system, the system will indicate to rewrite the serial number.

8-4-7-3 Secure Wipe

Secure wipe is intended to erase all the patient data with the software on the system before the system will be shipped for service.

NOTE: *This tool is not BAM approved.*

NOTE: *Before starting this procedure, remove all probes and peripherals and remove them from the system.*

NOTE: *While it is believed to be unnecessary, it would not hurt to disconnect the system from the network and remove all transducer.*

NOTE: *Please ensure AC adapter is connected during system upgrade!*

1. Insert the USB memory stick labeled “System & Application Software” to the system.
2. Properly turn off the scanner by momentarily pressing the *Power On/Off* Switch. In System-Exit window, select **Shutdown** to shutdown the system.

NOTE: *If the system will not shutdown normally, hold down the Power On/Off Switch until the light turns off.*

3. Power on the system. The system will detect the USB memory stick automatically.



8-4-7-3 Secure Wipe(continued)

4. Select **Secure Wipe**. Or select **Exit** to exit the process.

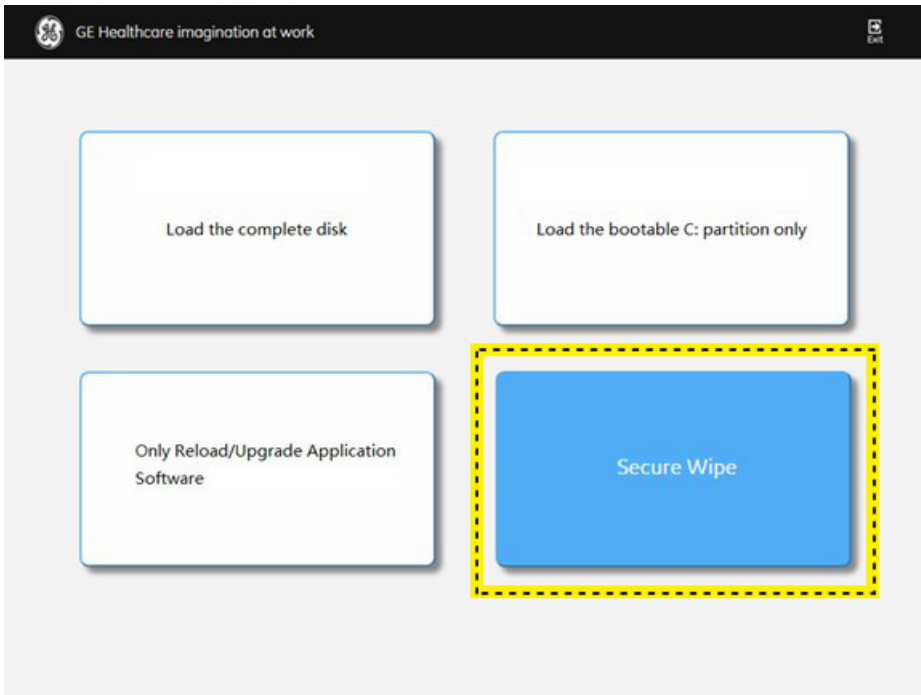


Figure 8-9. Upgrade message

5. The system indicates all data will be erased, select **Execute** to continue.

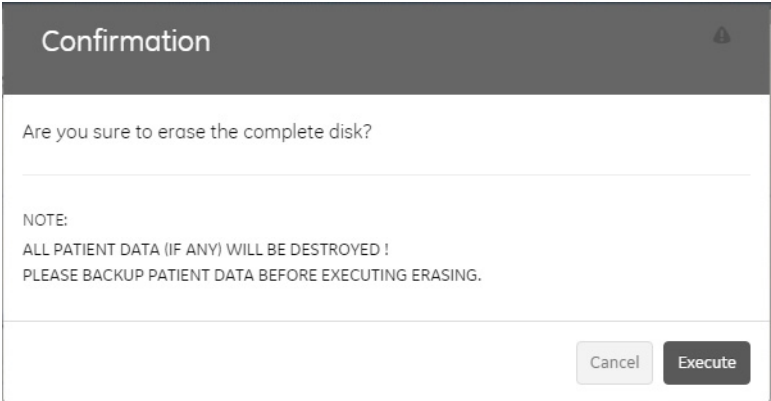


Figure 8-10. Confirm Dialog

NOTE: All the patient data cannot be recovered after wipe process.

8-4-7-3 Secure Wipe(continued)

6. The process may take twenty minutes or more.

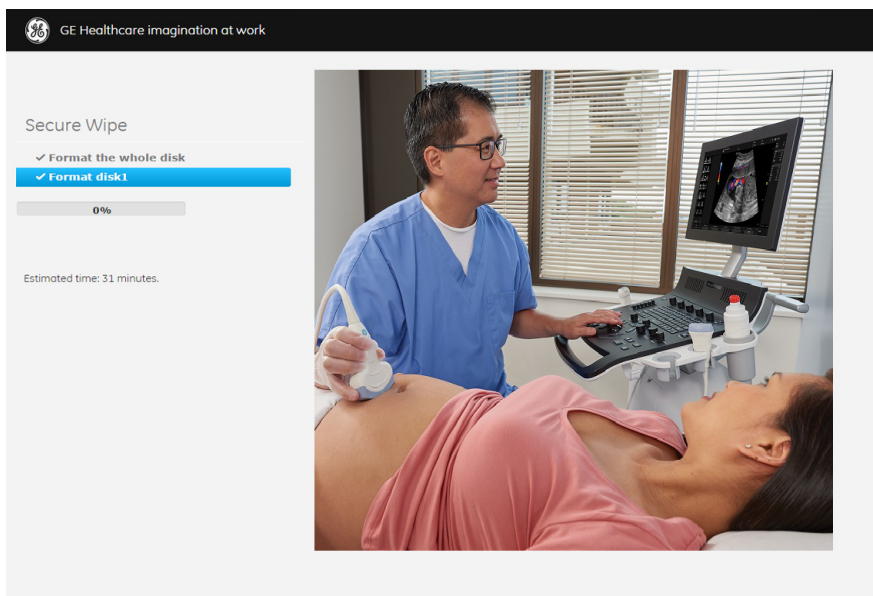


Figure 8-11. Wiping Process

7. The system will shutdown automatically when the wiping progress completes.

NOTE: *As the SSD is empty after secure wipe, the system cannot boot up. The software should be loaded first after the wipe process.*



8-4-7-4 Software Version check out

8-4-7-4-1 Functional Check-out

1. Power on Versana Premier system and wait until system booting to scanning screen.

NOTE: *If selected to load C Disk only when loading the system software, the system will display a screen to restore Computer name before entering the scanning screen.*

2. Press **Utility** on the control panel.
3. Select the **System** -> **About** and check whether the software version is right.

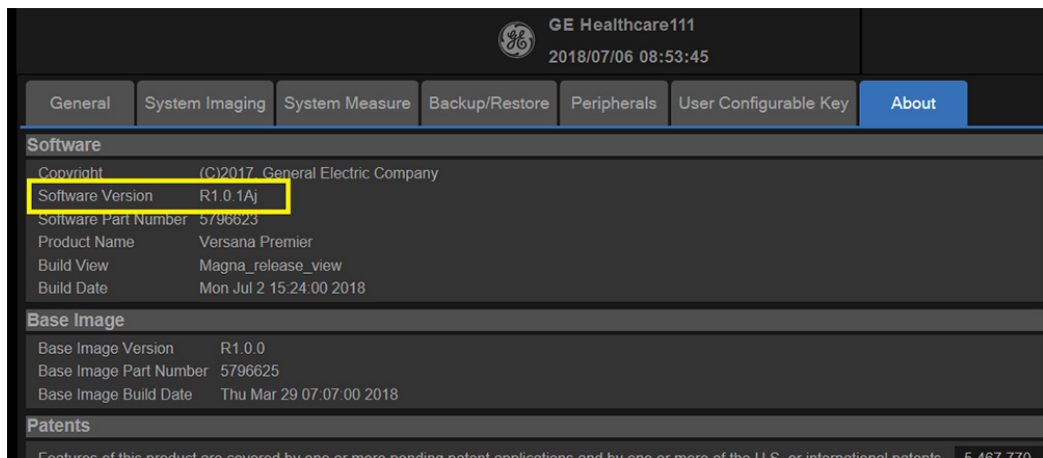


Figure 8-12. Software version

8-4-7-5 Reload the Correct Preset Region

NOTE: After the system software loading completion, please reload the correct preset region.

1. Reboot the system.
2. Press **Utility** on the Control Pane, then select **System -> General**.
3. In the **Location** portion, select the right region in the field of **Preset Region**.

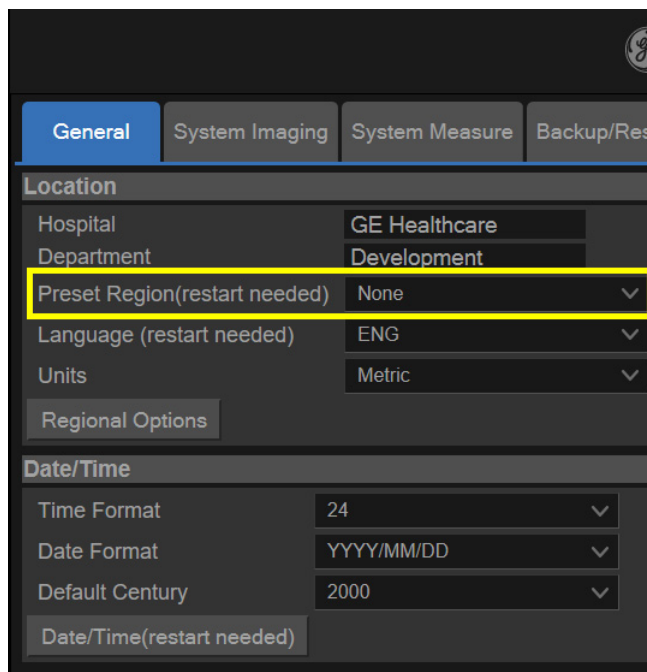


Figure 8-13. Preset Region

4. Reboot the system.



8-4-7-6 Option Strings Check

NOTE: After the system software loading completion, please check the option strings to ensure that the options are activated and working.

- 1. Reboot the system.
- 2. Press **Utility** on the control panel.
- 3. Select **Admin** -> **System Admin**.
- 4. Ensure that all the installed option keys are displayed and the status of Options are valid.
 - The status “Permanent” means the option keys are activated and working.

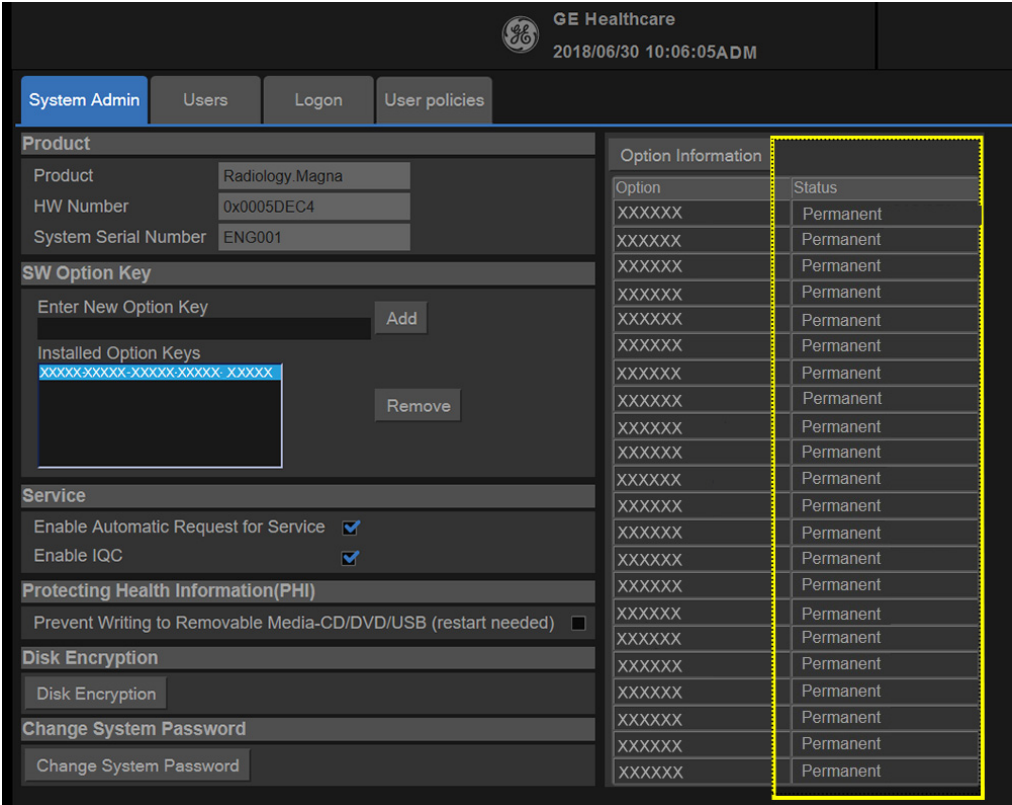


Figure 8-14. Software Option



8-4-7-7 Probe Recognition Check

NOTE: After the system software loading completion, please check to ensure that the system can recognize the probes.

Plug in the probe. In scanning mode, the probe information is displayed on the **right top** location of the screen. About the probe specification for intended use on Versana Premier.

Plug in at least one of each type of the probes and check if each of the probes is recognized and the probe information is displayed correctly.



Figure 8-15. Probe identification

8-4-7-8 Peripheral Device Check

Check to ensure that all the peripheral devices work properly.

For instruction of peripheral device check, [See 4-4-33 'Peripheral checks' on page 4-63 for more information.](#)



8-4-7-9 Reinstall DICOM Devices

Reinstall any DICOM devices used by the customers and check to ensure these DICOM devices work properly.

The instruction about installing DICOM devices is not incorporated in this manual. To access the instruction about installing DICOM devices please refer to another manual **Basic User Manual**. Please use the latest revision of this document.

Chapter 9

Renewal Parts

This chapter lists the renewal parts available for the Versana Premier.



9-1 Overview

9-1-1 Contents in this chapter

- [List of Abbreviations](#)
- [Renewal Parts Lists](#)

9-2 List of Abbreviations

Table 9-1: List of Abbreviations

ABBREVIATION	DESCRIPTION
3D	THREE DIMENSIONAL
Assy	ASSEMBLY
FRU	Field Replacement Unit
CRU	Customer Replacement Unit
KBD	Keyboard Assy
BnV	Brightness and Volume
MST	Master Board
CWI	CPU / WDC / IO Board. WDC is DC Power Board for Wukong Platform.
PIB	Probe Interface Board, also name as Relay PIB
4PP	4 Probe Port
SSA	Secure Service Access



9-3 Renewal Parts Lists

9-3-1 Operator Console Assy

The following figure illustrates what is the body front cover (1), body left cover (2), body back cover (3), body right cover (4) of the system.

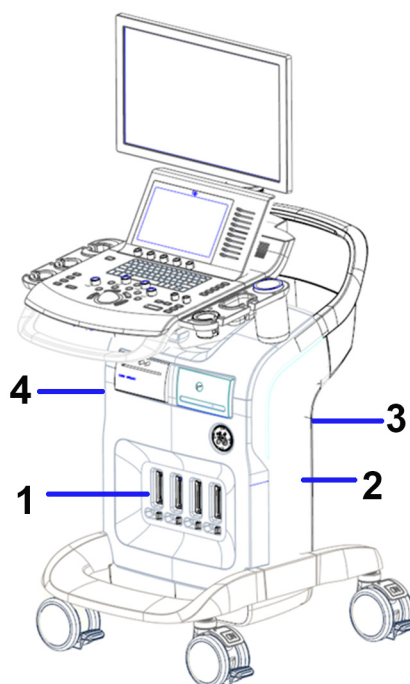


Figure 9-1. Operator Console Assy



9-3-1 Operator Console Assy(continued)

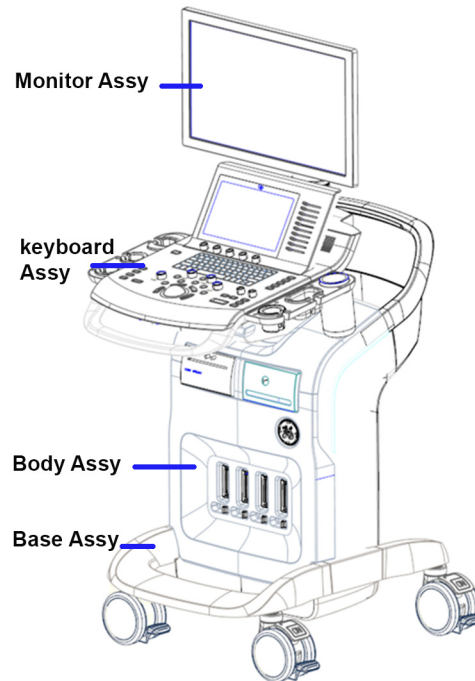


Figure 9-2. Console Assy



9-3-2 Probe

Table 9-2: Probes for Versana Premier

Item	Part Name	Part Number	Commercial Part Number	Center Image Frequency (MHz)	Replaced By	Qty
1100	4C-RS	5488477	H4000SR	3.10 ± 10%		1
1101	8C-RS	5499508	H40402LS	6.5 ± 20%		1
1102	E8C-RS	5499516	H40402LN	6.5 ± 20%		1
1103	E8Cs-RS	5670375	H48062AF	2.75 ± 20%		1
1104	BE9CS-RS	5589323	H40482LN	7.5 ± 20%		1
1105	3Sc-RS	47237516	H45041DL	2.75 ± 20%	5433833	1
1106	6S-RS	5499316	H45021RP	4.5 ± 20%		1
1107	12S-RS	5499321	H44901AB	7.75 ± 20%		1
1108	12L-RS	5499501	H40402LY	7.5 ± 20%		1
1109	LK760-RS	5548914	H44901AF	7.15 ± 20%		1
1110	L8-18i-RS	5499609	H40462LF	9.5 ± 20%		1
1111	RAB2-6-RS	KTZ303982	H48681WR	3.3 ± 10%		1
1112	RIC5-9A-RS	KTZ304063	H48701EJ	6.5 ± 10%	KTZ304128	1
1113	L6-12-RS	5454332	H48062AC	7.75 ± 20%		1

9-3-3 Peripheral

Table 9-3: Peripherals for Versana Premier

Item	Part Number	Commercial Part Number	Description	Qty
Footswitch				
1201	5151236	H41642LS	Footswitch MKF 2-MED USB GP26	1
1202	5338419	H41882LD	1-Peadl type Footswitch "Whanam FSU-1000"	1
USB Stick				
1203	5446638	H48962LC	USB Stick	1
Printer				
1204	5133107-2	H48542LZ	SONY UPD25 Color Printer USA Kit	1

Table 9-3: Peripherals for Versana Premier

Item	Part Number	Commercial Part Number	Description	Qty
1205	5133108-2	H48552LA	SONY UPD25 Color Printer EUP Kit	1
1206	5133106-2	H48542LY	SONY UPD25 Color Printer CHN Kit	1
1207	5133109-2	H48552LB	SONY UPD25 Color Printer JPN Kit	1
1208	5491253	H48312AN	SONY UPD25 Color Printer BRAZIL kit	
1209	5151259-2	H48492AZ	BW Printer (UP-D898MD)	1
1210	5778615	H48052BG	UP-D898MD DC Printer Kits	1
1211	5130409	H41402LS	898 printer paper	1
Others				
1224	NA	H48832AC	Wireless Adaptor	1
1225	NA	H48122BT	Bluetooth Adaptor	1
1226	5449275-4	H48192BL	Transcend TS8XDVDS-K DVDRW kit with SW	1
1227	5129487	H41852LK	USB ECG Module (AHA)	1
1228	5800116	H41852LL	USB ECG Module (IEC)	1
1229	5149641	H41852LM	ECG ASSY w/ Chinese Label	1
1230	5434317-4	H48492AB	1TB mobile USB HDD	1
1231	5802026-3S	NA	Service for Versana Premier System and Application Upgrade USB R1.0.2	1
1232	5802026-4S	NA	Service for Versana Premier System and Application Upgrade USB R1.0.3	1
1233	5802026-6S	H48172BY	Service for Versana Premier System and Application Upgrade USB R1.0.5	1



9-3-4 Power Cord

Table 9-4: Power Cords for Versana Premier

Item	Part Number	Commercial Part Number	Description	Qty
1300	5177123-2	H48482AF	AC Power Cord Europe	1
1301	5176304-2	H48482AK	AC Power Cord China	1
1302	5176773-2	H48482AH	AC Power Cord India	1
1303	5177195-2	H48482AC	AC Power Cord Argentina	1
1304	5176907-2	H48482AG	AC Power Cord UK	1
1305	5177153-2	H48482AM	AC Power Cord Denmark	1
1306	5177154-2	H48482AD	AC Power Cord Switzerland	1
1307	5177187-3	H48482AE	AC Power Cord Australia	1
1308	5177146-2	H48482AL	AC Power Cord USA	1
1309	5400868-2	H48482AN	AC Power Cord Brazil	1
1310	5176753-2	H48482AJ	AC Power Cord Israel	1
1311	5177126-2	H48482AB	AC Power Cord Japan	1

9-3-5 Manuals

Table 9-5: Manuals for Versana Premier

Item	Part Number	Commercial Part Number	Description	Qty
1401	5789132-200	H48252BB	Versana Premier Manual CD	1
1402	5789129-100	H48252BE	Versana Premier Advanced Reference Manual	1
1403	5789130-100	H48252BC	Versana Premier Basic Service Manual	1
1404	5789128-100	H48252BD	Versana Premier Basic User Manual	1
1405	5789133-100	H48252BG	Versana Premier User Guide English version	1
1406	5789133-101	H48252BH	Versana Premier User Guide French version	1
1407	5789133-106	H48252BJ	Versana Premier User Guide Spanish version	1
1408	5789133-108	H48252BK	Versana Premier User Guide German version	1
1409	5789133-111	H48252BL	Versana Premier User Guide Italian version	1
1410	5789133-121	H48252BM	Versana Premier User Guide Dutch version	1
1411	5789133-127	H48252BN	Versana Premier User Guide Brazilian Portuguese version	1
1412	5789133-129	H48252BP	Versana Premier User Guide Estonian version	1
1413	5789133-131	H48262BN	Versana Premier User Guide Slovenian version	1
1414	5789133-140	H48252BR	Versana Premier User Guide Japanese version	1
1415	5789133-141	H48252BF	Versana Premier User Guide Chinese version	1
1416	5789133-142	H48252BS	Versana Premier User Guide Swedish version	1
1417	5789133-144	H48252BT	Versana Premier User Guide Korean version	
1418	5789133-145	H48252BW	Versana Premier User Guide Russian version	1
1419	5789133-150	H48252BY	Versana Premier User Guide Polish version	1
1420	5789133-151	H48252BZ	Versana Premier User Guide Greek version	1
1421	5789133-153	H48262BR	Versana Premier User Guide Hungarian version	1
1422	5789133-154	H48262BA	Versana Premier User Guide Slovakian version	1
1423	5789133-155	H48262BB	Versana Premier User Guide Czech version	1
1424	5789133-159	H48262BC	Versana Premier User Guide Turkish version	1
1425	5789133-160	H48262BD	Versana Premier User Guide Danish version	1
1426	5789133-161	H48262BS	Versana Premier User Guide Norwegian version	1
1427	5789133-162	H48262BE	Versana Premier User Guide Finnish version	1



Table 9-5: Manuals for Versana Premier

Item	Part Number	Commercial Part Number	Description	Qty
1428	5789133-165	H48262BF	Versana Premier User Guide Bulgarian version	1
1429	5789133-167	H48262BG	Versana Premier User Guide Romanian version	1
1430	5789133-168	H48262BT	Versana Premier User Guide Croatian version	1
1431	5789133-174	H48262BH	Versana Premier User Guide Lithuanian version	1
1432	5789133-175	H48262BJ	Versana Premier User Guide Latvian version	1
1433	5789133-176	H48262BK	Versana Premier User Guide Serbian version	1
1434	5789133-177	H48262BL	Versana Premier User Guide European Portuguese version	1
1435	5789133-180	H48262BW	Versana Premier User Guide Ukrainian version	1
1436	5789133-181	H48262BM	Versana Premier User Guide Indonesian version	1
1437	5789133-183	H48262BY	Versana Premier User Guide Vietnamese version	1
1438	5789133-184	H48262BP	Versana Premier User Guide Kazakh version	1
1439	5789140-100	H48252BG	Versana Premier Release Notes English version	1
1440	5789140-101	H48252BH	Versana Premier Release Notes French version	1
1441	5789140-106	H48252BJ	Versana Premier Release Notes Spanish version	1
1442	5789140-108	H48252BK	Versana Premier Release Notes German version	1
1443	5789140-111	H48252BL	Versana Premier Release Notes Italian version	1
1444	5789140-121	H48252BM	Versana Premier Release Notes Dutch version	1
1445	5789140-127	H48252BN	Versana Premier Release Notes Brazilian Portuguese version	1
1446	5789140-129	H48252BP	Versana Premier Release Notes Estonian version	1
1447	5789140-131	H48262BN	Versana Premier Release Notes Slovenian version	1
1448	5789140-140	H48252BR	Versana Premier Release Notes Japanese version	1
1449	5789140-141	H48252BF	Versana Premier Release Notes Chinese version	1
1450	5789140-142	H48252BS	Versana Premier Release Notes Swedish version	1
1451	5789140-144	H48252BT	Versana Premier Release Notes Korean version	1



Table 9-5: Manuals for Versana Premier

Item	Part Number	Commercial Part Number	Description	Qty
1452	5789140-145	H48252BW	Versana Premier Release Notes Russian version	1
1453	5789140-150	H48252BY	Versana Premier Release Notes Polish version	1
1454	5789140-151	H48252BZ	Versana Premier Release Notes Greek version	1
1455	5789140-153	H48262BR	Versana Premier Release Notes Hungarian version	1
1456	5789140-154	H48262BA	Versana Premier Release Notes Slovakian version	1
1457	5789140-155	H48262BB	Versana Premier Release Notes Czech version	1
1458	5789140-159	H48262BC	Versana Premier Release Notes Turkish version	1
1459	5789140-160	H48262BD	Versana Premier Release Notes Danish version	1
1460	5789140-161	H48262BS	Versana Premier Release Notes Norwegian version	1
1461	5789140-162	H48262BE	Versana Premier Release Notes Finnish version	1
1462	5789140-165	H48262BF	Versana Premier Release Notes Bulgarian version	1
1463	5789140-167	H48262BG	Versana Premier Release Notes Romanian version	1
1464	5789140-168	H48262BT	Versana Premier Release Notes Croatian version	1
1465	5789140-174	H48262BH	Versana Premier Release Notes Lithuanian version	1
1466	5789140-175	H48262BJ	Versana Premier Release Notes Latvian version	1
1467	5789140-176	H48262BK	Versana Premier Release Notes Serbian version	1
1468	5789140-177	H48262BL	Versana Premier Release Notes European Portuguese version	1
1469	5789140-180	H48262BW	Versana Premier Release Notes Ukrainian version	1
1470	5789140-181	H48262BM	Versana Premier Release Notes Indonesian version	1
1471	5789140-183	H48262BY	Versana Premier Release Notes Vietnamese version	1
1472	5789140-184	H48262BP	Versana Premier Release Notes Kazakh version	1



Chapter 10

Care and Maintenance

*This chapter describes **Care and Maintenance** on the Ultrasound system and peripherals. These procedures are intended to **maintain the quality** of the Ultrasound **system's performance**. Read this chapter completely and familiarize yourself with the procedures before performing a task.*



10-1 Overview

10-1-1 Contents in this chapter

- 10-1 'Overview' on *page 10-2*
- 10-2 'Warnings' on *page 10-3*
- 10-3 'Why do maintenance' on *page 10-4*
- 10-4 'Maintenance task schedule' on *page 10-6*
- 10-5 'Tools required' on *page 10-8*
- 10-6 'System maintenance' on *page 10-12*
- 10-7 'Electrical safety tests' on *page 10-23*
- 10-8 'When there's too much leakage current ...' on *page 10-34*
- 10-9 'Inspection Paperwork' on *page 10-36*
- 10-10 'Electrical Safety Tests Log' on *page 10-38*

10-2 Warnings



BE SURE TO DISCONNECT THE ULTRASOUND SYSTEM POWER PLUG AND OPEN THE MAIN CIRCUIT BREAKER BEFORE YOU REMOVE ANY PARTS. BE CAUTIOUS WHENEVER POWER IS STILL ON AND COVERS ARE REMOVED.



Practice good ESD prevention. Wear an anti-static strap when handling electronic parts and even when disconnecting/connecting cables.



Do not pull out or insert circuit boards while power is on.



Do not operate this Ultrasound system unless all board covers and frame panels are securely in place. System performance and cooling require this.



10-3 Why do maintenance

10-3-1 Preventive maintenance inspections

It has been determined by engineering that your Versana Premier does not have any high wear components that fail with use, therefore no Preventive Maintenance inspections are mandatory.

However, some customers' Quality Assurance Programs may require additional tasks and or inspections at a different frequency than listed in this manual.

10-3-2 Quality assurance

In order to gain accreditation from organizations such as the American College of Radiology (USA), it is the customer's responsibility to have a quality assurance program in place for each Ultrasound system. The program must be directed by a medical physicist, the supervising radiologist/physician or appropriate designee.

Routine quality control testing must occur regularly. The same tests are performed during each period so that changes can be monitored over time and effective corrective action can be taken.

Testing results, corrective action and the effects of corrective action must be documented and maintained on the site.

Your GE service representative can help you with establishing, performing and maintaining records for a quality assurance program. Contact GE for coverage and/or price for service.



10-4 Maintenance task schedule

10-4-1 How often should maintenance tasks be performed?

The Care and Maintenance task schedule (provided in [Table 10-1 on page 10-6](#)) specifies how often your Versana Premier should be serviced and outlines items requiring special attention.

NOTE: *It is the customer’s responsibility to ensure the Versana Premier care and maintenance is performed as scheduled in order to retain its high level of safety, dependability and performance.*

Your GE Service Representative has an in-depth knowledge of your Versana Premier and can best provide competent, efficient service. Contact GE for coverage information and/or price for service.

The service procedures and recommended intervals shown in the Care and Maintenance Task Schedule assumes that you use your Versana Premier for an average patient load (10-12 per day) and not use it as a primary mobile Ultrasound system which is transported between diagnostic facilities.

NOTE: *If conditions exist which exceed typical usage and patient load, then it is recommended to increase the care and maintenance frequencies.*

Table 10-1: Customer Care Schedule

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Clean Probes	•*				* or before each use
Inspect AC Mains Cable			•		
Inspect Cables and Connectors			•		
Clean Console			•		
Clean Monitor			•		
Clean Filters			•		

Table 10-1: Customer Care Schedule (Continued)

Service at Indicated Time	Daily	Weekly	Monthly	Per Facilities QA Program	Notes
Console Leakage Current Checks				See Notes	Twice Annually
Peripheral Leakage Current Checks				See Notes	Twice Annually
Surface Probe Leakage Current Checks				See Notes	Twice Annually
Endocavity Probe Leakage Current Checks				See Notes	Quarterly Annually
Surgical Probe Leakage Current Checks				See Notes	Quarterly Annually
Measurement Accuracy Checks				See Notes	Twice Annually
Functional Checks				See Notes	also after corrective maintenance

NOTE: *The maintenance may require specialized equipment to complete.*

NOTE: *The care and maintenances are not mandatory. The table above is for reference only.*



10-5 Tools required

NOTE: For a list of required tools for servicing the Versana Premier, refer to chapter 8.

10-5-1 Standard GE tool kit

The following is a description of the “Standard” GE tool kit in the USA. Not all tools are required.

Table 10-2: Overview of GE-1 tool kit contents

Tool ID	Description	Tool ID	Description
9-45358	Pliers Retaining Ring	9-XL9971MM	Xcelite-hex Blade 1.27mm
9-4078	Scribe	9-XL9972MM	Xcelite-hex Blade 1.5mm
9-44572	Wrench Open End 3/8 - 7/16	9-XL9973MM	Xcelite-hex Blade 2 mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9974MM	Xcelite-hex Blade 2.5mm
9-44579	Wrench Open End 1/2 - 9/16	9-XL9975MM	Xcelite-hex Blade 3mm
9-45385	Pliers, Arc Joint 7 inch	9-XL9976MM	Xcelite-hex Blade 4mm
9-45378	Pliers, Slip Joint	9-XL9977MM	Xcelite-hex Blade 5mm
9-4518	Pliers, Long Nose, Miniature	9-XL991CM	Handle
9-4518	Pliers, Long Nose, Miniature	C2356E	Screw starter - Kedman Quick Wedge
9-44776	Ignition Wrench Set, 10 pc.	BLBO	Box - 18 Compartment
9-44601	Wrench, Adj., 4 inch	DWL4283T	Box - 5 Compartment
9-4151	Screwdriver, Blade, Stubby	9-41322	Pickup Tool, Claw type
9-41421	Screwdriver, Blade, Pocket clip	9-6757	6 pc Needle File Set
9-41594	Screwdriver, Blade 1/8 in. × 4 in.	9-9487	Utility Knife
9-41581	Screwdriver, Blade 3/16 in. × 4 in.	9-45341	Pliers Vice Grip 10 inch
9-39451	20' Steel Tape, locking Spring load	9-3001	Xacto Pen Knife

Table 10-2: Overview of GE-1 tool kit contents (Continued)

Tool ID	Description	Tool ID	Description
9-GH807	Ratchet, Offset, Slotted	9-HT62002	Solder Aid, Fork and Hook
68-412	Ratchet, Offset, Phillips	9-4099	Mirror, Round, Telescoping
9-GH130	Tapered Reamer	9-GH3001	Steel Rule Decimal 6 inch
9-41584	Screwdriver, slotted 1/4 in. × 6 in.	9-GH300ME	Steel Rule Metric 6 inch
9-4118	Screwdriver, Phillips #2, Stubby	9-XL9920	Xcelite-hex Blade .050 inch
9-41293	Screwdriver, Phillips #0	9-XL9921	Xcelite-hex Blade 1/16 inch
9-41294	Screwdriver, Phillips #1	9-XL9922	Xcelite-hex Blade 5/16 inch
9-41295	Screwdriver, Phillips #2	9-XL9923	Xcelite-hex Blade 3/32 inch
9-46677	Hex Keys, 20 pc., Metric	9-XL9924	Xcelite-hex Blade 1/8 inch
9-34701	1/4 in. Standard Socket set (19 pc)	9-XL9925	Xcelite-hex Blade 5/32 inch
9-43499	1/2 inch Socket 1/4 inch drive	9-XL9926	Xcelite-hex Blade 3/16 inch
9-4355	Flex Spinner	9-XL99764	Xcelite-hex Blade 7/64
9-43523	Breaker	9-XL99964	Xcelite-hex Blade 9/64
9-43531	6 inch Ext.	9-XLM60	Mini-screwdriver kit
9-65283	Case 8.5 in. × 4.5 in. × 2 in. Deep	9-45072	Pliers 6 inch Diagonal
9-46696	Hex Keys	9-XL100X	Wire Stripper/Cutter 5 inch - 100X
9-39829	Torpedo Level, Magnetic	9-XL87CG	Pliers - very fine needle nose-87CG
9-38461	Hammer, Ball Peen, 4 oz.	9-WEWDT-07	Weller-Soldering-Replacement Tip(1)
9-4280	Universal Joint 1/4 inch	9-WS175-E	Wiss - Surgical Scissors
9-WEW60P3	Weller - Soldering Iron, 3 wire	KH174	Hemostat 5 inch Straight
9-WECT5B6	Weller - Soldering Iron Tip	KH175	Hemostat 5 inch curved
9-WEWDP12	Weller - Desoldering Pump	9-Z9480121	Alignment tool (red)
93383	Flashlight Mini-Mag Lite (AAA Bat.)		
9-GH408	Tweezers		
21576	Brush - Bristle		



Table 10-2: Overview of GE-1 tool kit contents (Continued)

Tool ID	Description	Tool ID	Description
9-4516	Pliers 4 1/4 inch Diagonal		

10-5-2 GE-2 tool kit

Table 10-3: Overview of GE-2 tool kit contents

GE-2 Sears Kit (#99034)			
Tool ID	Description	Tool ID	Description
9-45381	Pliers, Arc Joint 9 1/2 inch	9-44067	Socket 1 1/16 in. for 1/2 in. drive
9-45092	Pliers, Linesman 8 1/2 inch	9-42679	Socket 10MM Hex for 1/2 in. drive (2273333)
9-42882	Punch, Pin 3/32 inch	9-44262	Extension 10 inch for 1/2 in. drive (2273405)
9-42884	Punch, Pin 5/32 inch	9-4258	3/8 inch to 1/2 inch Adapter
9-42886	Punch, Pin 1/4 inch	9-34374	3/8 inch Metric Socket Set - 12 PT
9-42973	Cold Chisel 1/2 inch	9-44311	16mm Socket 12 pt.
9-GH77	Center Punch Automatic	9-33485	Metal Socket Tray
9-GH890	File Handle, Adj.	9-33484	Metal Socket Tray
9-31276	File, Round, Bastard 8 inch	9-33484	Metal Socket Tray
9-31277	File, Half Round, Bastard 8 inch	9-52068	Tap and Drill Set
9-31263	File, Flat Mill 8 inch	9-52722	#6 Tap
21045C	Close Quarter Saw	9-52723	#8 Tap
9-44604	Wrench, Adj. 10 inch		High Speed Drill Set
9-41587	Screwdriver 5/16 inch × 8 inch		#36 Drill
9-41586	Screwdriver, Stubby 5/16 inch		#29 Drill
9-GH19512	Countersink 1/2 inch	9-44046	3/8 inch Socket Set
9-44741	12 PC Combination Wrench Set		



10-5-3 Special tools, supplies and equipment used for maintenance

Table 10-4: Overview of tool requirements for periodic maintenance

Tool / kit	Comments
Digital Volt Meter (DVM)	
Anti Static Kit	Kit includes anti-static mat, wrist strap and cables for 200 to 240V system 3M #2204 Large adjustable wrist strap 3M #2214 Small adjustable wrist strap 3M #3051 conductive ground cord
Anti Static Vacuum Cleaner	120V 230V
Safety Analyzer	The safety Analyzer tool should be calibrated and compliant with AAMI/ES1 1993 or IEC 60601 or AS/NZS 3551.
QIQ Phantom	RMI Grayscale Target Model 403GS NOTE! The use of a Phantom is not required during Care and Maintenance. Customer may use it as part of their Quality Assurance Program tests.
B/W Printer Cleaning Sheet	See printer user manual for requirements
Color Printer Cleaning Sheet	See printer user manual for requirements
Disposable Gloves	



10-6 System maintenance

10-6-1 Preliminary checks

The preliminary checks take about 15 minutes to perform. Refer to the Ultrasound system user documentation whenever necessary.

Table 10-5: System preliminary checks

Step	Item	Description
1.	Ask and Listen	Ask the customer if they have any problems or questions about the equipment.
2.	Paperwork	Fill in the top of Ultrasound Inspection Certificate (see Figure 10-5 on page 10-36). Record all probes and Ultrasound system options.
3.	Power up	<ul style="list-style-type: none"> • Turn the Ultrasound system power on and verify that all fans and peripherals turn on. • Watch the displays during power up to verify that no warning or error messages are displayed. • Where applicable, confirm that the battery is charged. If no AC Input present, use the internal battery.
4.	Probes	Verify that the Ultrasound system properly recognizes all probes.
5.	Displays	Verify proper display on the monitor.
6.	FFA (server)	Where applicable, for Warranty and Contract Customers only: <ul style="list-style-type: none"> • Verify that InSite is functioning properly. • Ensure two-way remote communications.
7.	Review Error Logs	Where applicable, Error Logs can be reviewed via system diagnostics.
8.	Diagnostics	Optional.
9.	Presets	Backup all Customer Presets to an appropriate media.
10.	Image Archive	Back up the Image Archive onto appropriate media.



10-6-2 Functional checks

NOTE: See also Chapter 4

The functional checks take about 60 minutes to perform. Refer to the Ultrasound system user documentation whenever necessary.

10-6-2-1 System checks

Table 10-6: System functional checks

Step	Item	Description
1.	B-Mode	Verify basic B-Mode (2D) operation. Check the basic Ultrasound system controls that affect this mode of operation.
2.	CF-Mode	Verify basic CF-Mode (Color Flow Mode) operation. Check the basic Ultrasound system controls that affect this mode of operation.
3.	Doppler Modes	Verify basic Doppler operation (PW and CW if available). Check the basic Ultrasound system controls that affect this mode of operation.
4.	M-Mode	Verify basic M-Mode operation. Check the basic Ultrasound system controls that affect this mode of operation.
5.	Probe Elements	Perform an Element Test on each probe to verify that all the probe elements and system channels are functional.
6.	Applicable Software Options	Verify the basic operation of all optional modes such as Contrast. Check the basic Ultrasound system controls that affect each options operation.
7.	Xmit/Recv Elements	Use the Visual Channel Utility on the loop connect to verify that all system xmit/recv channels are functional.
8.	Operator Panel test	Perform the Operator Panel Test Procedure.
9.	Keyboard	Do the interactive keyboard test.
10.	Monitor	Verify basic monitor display functions. Refer to Chapter 3 of the Basic User Manual.
11.	Software Menu check	Verify Software Menu display functions. Refer to Chapter 3 of the Basic User Manual.
12.	Peripherals	See: 4-4-33 'Peripheral checks' on page 4-63.
13.	Measurements	In measurement mode, make distance measurement, get result in result window. Verify the distance by graduate rule. Distance Accuracy should be within $\pm 5\%$. (Name result from result window Result A, result from graduate rule Result B; Distance Accuracy = (Result B-Result A)/Result A)



10-6-2-2 Peripheral/option checks

If any peripherals or options are not part of the system configuration, the check can be omitted.

Refer to the User Manual for a list of approved peripherals/options.

Table 10-7: GE approved peripheral/hardware option functional checks

Step	Item	Description
1.	Media	Verify media drive(s) read/write properly. Clean if necessary.
2.	B/W Printer	Verify hardcopy output of the B/W video page printer. Clean heads and covers if necessary.
3.	Color Printer	Verify hardcopy output of the Color video page printer. Clean heads and covers if necessary.
4.	DICOM	Verify that DICOM is functioning properly. Send an image to a DICOM device.
5.	ECG	Verify basic operation with customer
6.	Footswitch	Verify that the footswitch is functioning as programmed. Clean as necessary.
7.	DVD	Verify that the DVD is functioning properly. Clean heads and covers if necessary.

10-6-2-3 Mains cable inspection

Table 10-8: Mains Cable Inspection, As Appropriate

Step	Item	Description
1.	Unplug Cord	Disconnect the mains cable from the wall and Ultrasound system.
2.	Inspect	Inspect it and its connectors for damage of any kinds.
3.	Verify	Verify that the LINE, NEUTRAL and GROUND wires are properly attached to the terminals, and that no strands may cause a short circuit.
4.	Verify	Inlet connector retainer is functional.



10-6-2-4 Cleaning

Table 10-9: General Cleaning

Step	Item	Description
1.	Console	Remove the battery. Use a fluid detergent in warm water on a soft, damp cloth to carefully wipe the entire system. Be careful not to get the cloth too wet so that moisture does not enter the console.
2.	Probe Holder	Clean probe holders. (they may need to be soaked to remove excess gel).
3.	Monitor	Use a soft, non-abrasive folder cloth. Gently wipe the monitor face. DO NOT use a glass cleaner that has a hydrocarbon base (such as Benzene, Methy Alcohol or Methy Ethyl Ketone) on monitor with the filter (anti-glare shield).

For general cleaning of the system, we recommended to use non-abrasive soap and water solution.

Table 10-10: Compatible Chemicals for Cleaning

	Sys-tem Cabinet	Operator Control Panel	Main display	Touch screen	Probe Holder
Cleaning agents					
PDI Easy Screen Cleaning Wipe	X	X	X	X	X
70% isopropyl alcohol	X	X	X	X	X
Disinfectants ^[1]					
Tristel Wipes	X	X	X	X	X
CaviWipes	X	X	X	X	X
Protex	X	X	X	X	X
Sono Ultrasound Wipes	X	X	X	X	X
PDI Sani-Cloth Plus	X	X	X	X	X
PDI Sani-Cloth HB	X	X	X	X	X
PDI Super Sani-Cloth Plus	X	X	X	X	X
Clorox wipes	X	X	X	X	X
[1]: Effective Disinfection is always a balance between safe inactivation of infectious agents and undesirable side effects. Due to the generally uneven and irregular surface of Ultrasound consoles, a comprehensive surface disinfection process cannot be recommended by the manufacturer.					



10-6-3 Physical inspection

NOTE: These features may not be present on all Ultrasound systems.

Table 10-11: Physical checks

Step	Item	Description
1.	Labeling	Verify that all Ultrasound system labeling is present and in readable condition.
2.	Scratches & Dents	Inspect the exterior for dents, scratches or cracks.
3.	Input Power	Refer to: 10-6-2-3 'Mains cable inspection' on page 10-14.
4.	Cables & Connectors	Check all internal cable harnesses and connectors for wear and secure connector seating. Pay special attention to footswitch assembly and probe strain or bend reliefs.
5.	Shielding & Covers	Check to ensure that all EMI shielding, internal covers, air flow panels and screws are in place. Missing covers and hardware could cause EMI/RFI problems while scanning.
6.	Control Panel	Inspect keyboard and control panel. Note any damaged or missing items.
7.	Control Panel Lighting	Check for proper operation of all operator panel and Freeze Key light.
8.	Monitor	Inspect the monitor Display for scratches and bad pixels. Verify proper operation of Contrast and Brightness controls. Where applicable, confirm that the monitor arm allows: <ul style="list-style-type: none"> • swivelling the screen to the left and to the right • folding the screen to the locked position • release and adjustment backwards and forwards • can be adjusted in the up/down positions. Note: Monitor Arm movement may vary and is not applicable to all Ultrasound systems.
9.	External I/O	Check all connectors for damage.
10.	Power and System Status Indicators	Check for proper operation of all Power and System Status Indicators.
11.	Battery	Where applicable, check that the battery is not damaged, does not leak, does not emit an odor, and is not deformed or discolored. Observe all warnings and cautions for battery handling, recharging, storing, and/or disposal.

10-6-4 Optional Diagnostic Checks

Optionally you can access the diagnostic software as described in Chapter 5 or 7. View the error logs and run desired diagnostics.



10-6-4-1 View the Log

1. Review the system error log for any problems.
2. Check the temperature log to see if there are any trends that could cause problems in the future.
3. Check the Configuration Log; update if needed.



10-6-5 Probe maintenance

10-6-5-1 Probe related checks

Table 10-12: System preliminary checks

Step	Item	Description
1.	Probe Holder	Clean probe holders. (they may need to be soaked to remove excess gel).
2.	Probes	Thoroughly check the Ultrasound system probe connectors and remove dust from inside the connector sockets if necessary. Visually check for bent, damaged or missing pins.
3.	Probes	Verify that the Ultrasound system properly recognizes all probes.

10-6-5-2 Basic probe care

The Ultrasound system user manuals and various probe handling cards provide a complete description of probe care, maintenance, cleaning and disinfection. Ensure that you are completely familiar with the proper care of GE probes.

Ultrasound probes can be easily damaged by improper handling. See the User Manual and probe care cards for more details. Failure to follow these precautions can result in serious injury and equipment damage. Failure to properly handle or maintain a probe may also void its warranty.

Any evidence of wear indicates the probe cannot be used.

Do a visual check of the probe pins and Ultrasound system sockets before plugging in a probe.

The Interoperative probes often have special considerations and individual probe user manuals. For Interoperative probes also refer to their separate user manuals.



10-6-5-3 Basic probe cleaning

Refer to the User's Manual for details on probe cleaning.

To clean the probe:

1. Disconnect the probe from the ultrasound console and remove all coupling gel from the probe by wiping with a soft cloth and rinsing with flowing water.
2. Wash the probe with mild soap in lukewarm water. Scrub the probe as needed using a soft sponge, gauze, or cloth to remove all visible residue from the probe surface. Prolonged soaking or scrubbing with a soft bristle brush (such as a toothbrush) may be necessary if material has dried onto the probe surface.



Do not submerge the probe above the probe as the strain relief is not sealed. Do not allow fluid into or onto the connector of the probe.



Take extra care when handling the lens face of the Ultrasound transducer. The lens face is especially sensitive and can easily be damaged by rough handling. NEVER use excessive force when cleaning the lens face.

3. Rinse the probe with enough clean potable water to remove all visible soap residue.
4. Air dry or dry with a soft cloth.



To help protect yourself from blood borne diseases, wear approved disposable gloves. These are made of nitrile derived from vegetable starch to prevent allergic latex reactions.



Failure to follow the prescribed cleaning or disinfection procedures will void the probe's warranty.

DO NOT soak or wipe the lens with any product not listed in the User Manual. Doing so could result in irreparable damage to the probe.

Follow care instructions that came with the probe.



Disinfect a defective probe before you return it. Be sure to tag the probe as being disinfected.



10-6-5-4 Disinfecting probes

Ultrasound probes can be disinfected using liquid chemical germicides. The level of disinfection is directly related to the duration of contact with the germicide. Increased contact time produces a higher level of disinfection.



CAUTION

Review the probe care card that is packed with each probe. The following website contains the most current and up-to-date recommendations:

http://www.gehealthcare.com/usen/ultrasound/products/probe_care.html

Table 10-13: Probe Disinfectants

Disinfectant	4C-RS	E8C-RS	8C-RS	L8-18I-RS	BE9Cs-RS	6S-RS	3Sc-RS	L6-12-RS	E8Cs-RS	RAB2-6-RS	12L-RS	12S-RS	LK760-RS	RIC5-9A-RS
Aquasonic 100	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Clear image	X	X	X	X	X	X	X	X	X		X	X	X	
Haiyin		X	X	X	X	X			X		X	X		
Kendall Life Trace Ultrasound Gel	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Scan	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sonogel	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wavelength Multi-Purpose Ultrasound Gel	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CaviCide AF													X	
PCS 1000 Oxidizing Disinfectant/Cleaner													X	
PI-Spray II													X	
Acryl-Des	X	X	X	X	X	X	X	X	X	X	X	X		X
Bacillol 30 Foam	X	X	X	X	X	X	X	X	X	X	X	X		X
Surfa'Safe Premium	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Asepti-Wipe II													X	
Transeptic Spray		X			X						X			X
Bacillol AF Tissues	X	X	X	X	X	X	X	X	X	X	X	X		X



Table 10-13: Probe Disinfectants

Disinfectant	4C-RS	E8C-RS	8C-RS	L8-18i-RS	BE9Cs-RS	6S-RS	3Sc-RS	L6-12-RS	E8Cs-RS	RAB2-6-RS	12L-RS	12S-RS	LK760-RS	RIC5-9A-RS
CaviWipes 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cleanisept Wipes													X	
Cleanisept Wipes forte	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Clorox Healthcare Bleach Germicidal wipes	X	X	X	X	X	X	X	X	X	X	X	X		X
Matrix Wipes	X	X	X	X	X	X	X	X	X	X	X	X		X
Oxivir Tb Wipes	X	X	X	X	X		X	X	X	X	X			
Protex ULTRA Disinfectant Wipes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sani-Cloth Active													X	
Sani-Cloth HB Germicidal Disposable Wipe													X	
Sani-Cloth Prime Germicidal Disposable Wipe	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Septiwipes													X	
Sono Ultrasound Wipes	X	X	X	X	X	X	X	X	X	X	X	X		X
Super Sani-Cloth Germicidal Disposable Wipe	X	X	X	X	X	X	X	X	X	X	X	X		X
Tristel Trio Wipes System	X	X	X	X	X	X	X	X	X	X	X	X		X
Wet Wipe Triamin Disinfection													X	
Wip'Anios Excel	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Gigasept pearls									X	X				X
Rely+On PeraSafe									X	X				X
Sekusept Aktiv									X	X				X
Anioxyde 1000									X	X				X
Cidex	X	X	X	X	X	X	X	X	X	X	X	X		X
Cidex OPA	X	X	X	X	X	X	X	X	X	X	X	X		X
Gigasept FF neu	X	X	X	X	X		X	X	X		X			



Table 10-13: Probe Disinfectants

Disinfectant	4C-RS	E8C-RS	8C-RS	L8-18i-RS	BE9Cs-RS	6S-RS	3Sc-RS	L6-12-RS	E8Cs-RS	RAB2-6-RS	12L-RS	12S-RS	LK760-RS	RIC5-9A-RS
McKesson OPA 28	X	X	X	X	X	X	X	X	X	X	X	X		X
OPAL	X	X	X	X	X	X	X	X	X	X	X	X		X
Opaster [®] Anios	X	X	X	X	X	X	X	X	X	X	X	X		X
Revital-Ox Resert High Level Disinfectant		X	X	X	X				X		X			X
Wavicide-01	X	X	X	X	X	X	X	X	X	X	X	X		X
AniosClean Excel D	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Aniosyme X3													X	
Enzyclean II Dual Enzyme Detergent													X	
Pure Enzymatic Detergent													X	
Enzol / Cidezyme	X	X	X	X	X	X	X	X	X	X	X	X		X
Intercept Detergent	X	X	X	X	X	X	X	X	X	X	X	X		X
Polystica	X	X	X	X	X	X	X	X	X	X	X	X		X
Trophon	X	X	X	X	X	X	X	X	X	X	X	X		X
Revital-Ox Enzymatic Detergents													X	
Valsure Enzymatic Cleaner													X	



10-7 Electrical safety tests

10-7-1 Safety test overview

The electrical safety tests in this section are based on and conform to IEC 60601-1 Medical Equipment Safety Standards. They are intended for the electrical safety evaluation of cord-connected, electrically operated, patient care equipment. If additional information is needed, refer to the IEC 60601-1 documents



WARNING

THE USER MUST ENSURE THAT THE SAFETY INSPECTIONS ARE PERFORMED AT LEAST EVERY 12 MONTHS ACCORDING TO HISTORICAL DATA. ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE SAFETY INSPECTIONS MENTIONED ABOVE.



DANGER

TO MINIMIZE RISK OF ELECTRICAL SHOCK, ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE ELECTRICAL SAFETY INSPECTIONS AND TESTS.



DANGER

TO AVOID ELECTRICAL SHOCK, THE ULTRASOUND SYSTEM UNDER TEST **MUST NOT** BE CONNECTED TO OTHER ELECTRICAL EQUIPMENT. REMOVE ALL INTERCONNECTING CABLES AND WIRES. THE ULTRASOUND SYSTEM UNDER TEST MUST NOT BE CONTACTED BY USERS OR PATIENTS WHILE PERFORMING THESE TESTS.



CAUTION

Possible risk of infection. Do not handle soiled or contaminated probes and other components that have been in patient contact. Follow appropriate cleaning and disinfecting procedures before handling the equipment.



10-7-1 Safety test overview(continued)

Prior to initiating any electrical test, the Ultrasound system must be visually inspected. Perform the following visual checks:

- Check for missing or loose enclosure covers that could allow access to internal live parts.
- Examine the mains cord, mains plug and appliance inlet for damaged insulation and adequacy of strain relief and cable clamps.
- Locate and examine all associated transducers. Inspect the cables and strain relief at each end. Inspect the transducer enclosure and lens for cracks, holes and similar defects.

Test the system, peripherals and probes for leakage current. Excessive leakage current can cause injury or death in sensitive patients. High leakage current can also indicate degradation of insulation and a potential for electrical failure. Do not use probes or equipment having excessive leakage current.

To minimize the risk that a probe may shock someone the customer should:

- Not use a probe that is cracked or damaged in any way.
- Check probe leakage current:
 - Based on your facilities QA program for surface probes.
 - Based on your facilities QA program for endocavitary probes.
 - whenever probe damage is suspected.



10-7-2 Leakage current limits



WARNING

Energy Control and Power Lockout for Versana Premier.

When servicing parts of the Ultrasound system where there is exposure to voltage greater than 30 volts:



1. Follow LOCK OUT/TAG OUT procedures.
2. Turn off the breaker.
3. Unplug the Ultrasound system.
4. Maintain control of the Ultrasound system power plug.
5. Wait for at least 30 seconds for capacitors to discharge as there are no test points to verify isolation.
6. Remove/disconnect the battery, if present.

Ultrasound System components may be energized.



CAUTION

Compare all safety-test results with safety-test results of previously performed safety tests (e.g. last year etc). In case of unexplainable abrupt changes of safety-test results consult experienced authorized service personnel or GE for further analysis.

The following limits are summarized for IEC 60601-1 Medical Equipment Safety Standards. These limits are GEMS standards and in some cases are lower than the above standards listed.

Table 10-14: Chassis Leakage Current Limits - Accessible Metal Surface

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral
All (Except USA & Canada)	0.1 mA	0.5 mA	0.5 mA	0.5 mA
USA & Canada	0.1 mA	0.3 mA	0.3 mA	0.3 mA

Table 10-15: Type BF Applied Part Leakage Current Limits - Probes Surface

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
All	0.1 mA	0.5 mA	0.5 mA	0.5 mA	5.0 mA



10-7-2 Leakage current limits(continued)



Table 10-16: Type CF Applied Part Leakage Current Limits - ECG Connections

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	*Mains Applied
All	0.1 mA	0.5 mA	0.5 mA	0.5 mA	5.0 mA

NOTE: **Mains Applied refers to the sink leakage test where mains (supply) voltage is applied to the part to determine the amount of current that will pass (or sink) to ground if a patient contacted mains voltage.*

The following tests are performed at the factory and should be performed at the site. These tests are: chassis leakage current, and probe leakage current. All measurements are made with an electrical safety analyzer which should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.

Table 10-17: Equipment Type and Test Definitions

Applied Parts (AP)	Parts or accessories that contact the patient to perform their function. For ultrasound equipment, this includes transducers and ECG leads.	
Type BF	Body Floating or non-conductive ultrasound probes which are marked with the 'man in box' BF symbol. this includes all transducers.	
Type CF	Cardiac Floating or non-conductive intraoperative probes for direct cardiac contact and isolated ECG connections so marked with the 'heart in box' CF symbol.	
Sink Leakage	The current resulting from the application of mains voltage to the applied part. This test is required test for Type CF applied parts.	



10-7-3 Outlet test - wiring arrangement

Test all outlets in the area for proper grounding and wiring arrangement by plugging in the neon outlet tester and noting the combination of lights that are illuminated. Any problems found should be reported to the hospital immediately and the receptacle should not be used.

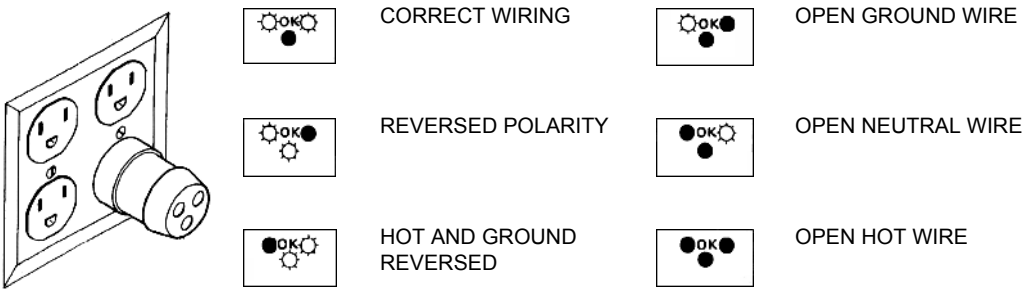


Figure 10-1. Typical alternate outlet tester

NOTE: No outlet tester can detect the condition where the Neutral (grounded supply) conductor and the Grounding (protective earth) conductor are reversed. If later tests indicate high leakage currents, this should be suspected as a possible cause and the outlet wiring should be visually inspected.

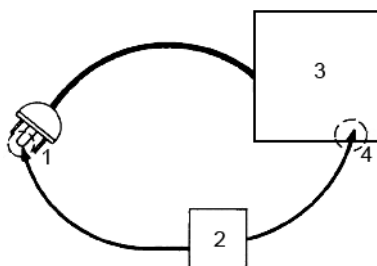


10-7-4 Grounding continuity



DANGER ELECTRIC SHOCK HAZARD. THE PATIENT MUST NOT BE CONTACTED TO THE EQUIPMENT DURING THIS TEST.

Measure the resistance from the third pin of the attachment plug to the exposed metal parts of the case. The ground wire resistance should be less than **0.2 ohms**. Reference the procedure in the IEC60601-1.



1. GROUND PIN
2. OHMMETER
3. Versana Premier
4. ACCESSIBLE METAL PART:
 - MONITOR HOUSING
 - PEAR PANEL CONNECTOR
 - ANY CASTER/WHEEL SUPPORT

Figure 10-2. Ground continuity test



10-7-5 Chassis leakage current test



DANGER ELECTRIC SHOCK HAZARD. WHEN THE METER'S GROUND SWITCH IS OPEN, DON'T TOUCH THE ULTRASOUND SYSTEM!.



CAUTION

Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

10-7-5-1 Generic procedure

The test verifies the isolation of the power line from the chassis. The testing meter is connected from accessible metal parts of the case to ground. Measurements should be made with the unit ON and OFF, with the power line polarity Normal and Reversed. Record the highest reading of current.

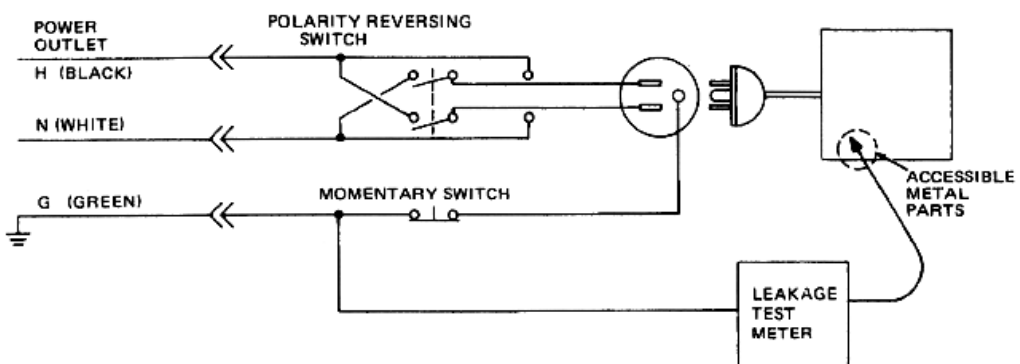


Figure 10-3. Set Up for Chassis Source Leakage Current, IEC 601-1 Clause 19 - Continuous Leakage Currents and Patient, Auxiliary Currents

When using the Microguard or a similar test instrument, its power plug may be inserted into the wall outlet and the equipment under test is plugged into the receptacle on the panel of the meter. This places the meter in the grounding conductor and the current flowing from the case to ground will be indicated in any of the current ranges. The maximum allowable limit for chassis source leakage is shown in [Table 10-14 on page 10-25](#).



10-7-5-2 Data Sheet for enclosure Source Leakage Current

The test passes when all readings measure less than the value shown in [Table 10-14 on page 10-25](#). Record all data on the PM Inspection Certificate.

Table 10-18: Typical Data Sheet for enclosure Source Leakage Current

Unit Power	Tester Polarity Switch	Tester Neutral or Ground Switch	Test 1 Speaker Cover	Test 2 Real Panel Metal Parts	Optional Test 3	Optional Test 4
Enter Name of tested peripheral here:						
ON	NORM	OPEN				
ON	NORM	CLOSED				
ON	REV	OPEN				
ON	REV	CLOSED				
OFF	NORM	OPEN				
OFF	NORM	CLOSED				
OFF	REV	OPEN				
OFF	REV	CLOSED				



10-7-6 Probe leakage current test



DO NOT USE THE PROBE IF THE INSULATING MATERIAL HAS BEEN PUNCTURED OR OTHERWISE COMPROMISED. INTEGRITY OF THE INSULATION MATERIAL AND PATIENT SAFETY CAN BE VERIFIED BY SAFETY TESTING ACCORDING TO IEC60601-1.



Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

10-7-6-1 Definition

This test measures the current that would flow to ground from any of the probes through a patient who is being scanned and becomes grounded by touching some other grounded surface.

NOTE: *Some leakage current is expected on each probe, depending on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. It is abnormal if no leakage current is measured. If no leakage current is detected, check the configuration of the test equipment.*

10-7-6-2 Tools

For needed tools, see: [10-5 'Tools required' on page 10-8.](#)



10-7-6-3 Generic procedure on probe leakage current

Measurements should be made with the ground open and closed, with power line polarity normal and reversed, and with the unit Off and On. For each combination, the probe must be active to find the worst case condition.

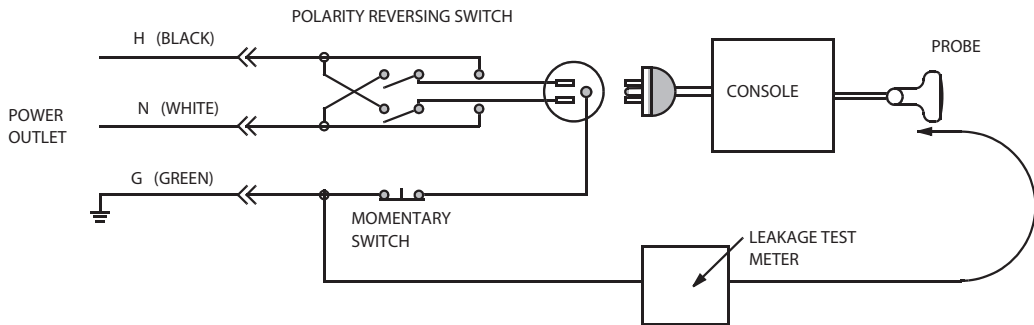


Figure 10-4. Set up for probe leakage current

NOTE: *Each probe will have some amount of leakage current, dependent on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement.*



DANGER

TO AVOID PROBE DAMAGE AND POSSIBLE ELECTRIC SHOCK, DO NOT IMMERSE PROBES INTO ANY LIQUID BEYOND THE LEVEL INDICATED IN THE PROBE USERS MANUAL. **DO NOT TOUCH THE PROBE, CONDUCTIVE LIQUID OR ANY PART OF THE UNIT UNDER TEST WHILE DOING THE TEST.**

10-7-6-4 Meter Procedure Using Probe Adapter

Follow the Safety Analyzer tool instruction to test each transducer for leakage current.

The electrical Safety Analyzer tool should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.

10-7-6-5 No Meter Procedure Using Probe Adapter

Follow the Safety Analyzer tool instruction to test each transducer for leakage current.

The electrical Safety Analyzer tool should be calibrated and compliant with AAMI/ESI 1993 or IEC 60601 or AS/NZS 3551.



10-7-6-6 Data Sheet for Transducer Source Leakage Current

The test passes when all readings measure less than the values shown in [Table 10-15 on page 10-25](#). Record all data on the PM Inspection Certificate.



CAUTION

Equipment damage possibility. Never switch the Polarity and the status of Neutral when the Ultrasound system is powered ON. Be sure to turn the Ultrasound system power OFF before switching them using the POLARITY switch and/or the NEUTRAL switch. Otherwise, the Ultrasound system may be damaged.

Table 10-19: Typical Data Sheet For Transducer Source Leakage Current

Transducer Tested:			
Unit Power	Tester Power Polarity Switch	Tester GROUND or NUETRAL Switch	Measurement
ON	NORM	OPEN	
ON	NORM	CLOSED	
ON	REV	OPEN	
ON	REV	CLOSED	
OFF	NORM	OPEN	
OFF	NORM	CLOSED	
OFF	REV	OPEN	
OFF	REV	CLOSED	



10-8 When there's too much leakage current ...

10-8-1 AC/DC Fails

Where applicable, check the AC/DC adapter and its cable.
Replace a new one if any portion is defective.

10-8-2 Chassis Fails

Check the ground on the power cord and plug for continuity.
Ensure the ground is not broken, frayed, or intermittent. Replace
any defective part.

Where applicable, tighten all grounds. Ensure star washers are
under all ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

Test the wall outlet; verify it is grounded and is free of other
wiring abnormalities. Notify the user or owner to correct any
deviations. As a work around, check the other outlets to see if
they could be used instead.

NOTE: *No outlet tester can detect the condition where the white neutral
wire and the green grounding wire are reversed. If later tests
indicate high leakage currents, this should be suspected as a
possible cause and the outlet wiring should be visually
inspected.*

10-8-3 Probe Fails

Test the probe in another connector to isolate if the fault lies with the probe or the Ultrasound system. Or Change another probe to confirm if the fail is caused by console.

NOTE: Each probe will have some amount of leakage, dependent on its design. Small variations in probe leakage currents are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. The maximum allowable leakage current for body surface contact probe differs from inter-cavity probe. Be sure to enter the correct probe type in the appropriate space on the check list.

If excessive leakage current is slot dependent, inspect the system connector for bent pins, poor connections, and ground continuity.

If the problem remains with the probe, replace the probe.

10-8-4 Peripheral Fails

Tighten all grounds. Ensure star washers are under all ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

10-8-5 Still Fails

If all else fails, begin isolation by removing the probes, external peripherals, then the on board ones, one at a time while monitoring the leakage current measurement.

10-8-6 New Unit

If the leakage current measurement tests fail on a new Ultrasound system and if situation can not be corrected, submit a Safety Failure Report to document the Ultrasound system problem. Remove Ultrasound system from operation.

10-8-7 ECG Fails

Inspect cables for damage or poor connections.



10-9 Inspection Paperwork

10-9-1 Ultrasound Inspection Forms

ULTRASOUND INSPECTION CERTIFICATE

Customer Name:		System ID:	Dispatch Number / Date Performed:	Warranty/Contract/HBS
System Type		Model Number:	Serial Number:	Manufacture Date:
Probe 1:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 2:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 3:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 4:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 5:	Frequency:	Scan Format*:	Model Number:	Serial Number:

* Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array or Other

Figure 10-5. Ultrasound Inspection Certificate

* Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array or Other



10-9-1 Ultrasound Inspection Forms(continued)

FUNCTIONAL CHECKS

Functional Check (if applicable)	OK? or N/A
B-Mode Function	
Doppler Modes Function	
CF-Mode Function	
M-Mode Function	
Applicable Software Options	
Applicable Hardware Options	
Control Panel	
LCD	
Measurement Accuracy	
GE Approved Peripherals	

PHYSICAL INSPECTION AND CLEANING

Physical Inspection and Cleaning (if applicable)	Inspect	Clean
Console		
LCD		
External I/O		
Cables and Connectors		
GE Approved Peripherals (DVD-RW, Printer)		
Labeling (see User Manual for Labeling)		

COMMENTS:

Figure 10-6. Functional Checks

ELECTRICAL SAFETY

Electrical Test Performed	Max Value Allowed	Value Measured	OK?	Comments
Outlet (correct ground & wiring config.)				
Type BF Applied Part Leakage Current Limits- Probe				
enclosure Source Leakage Current - Chassis Leakage Current Limits				
Peripheral 1 Leakage Current				
Peripheral 2 Leakage Current				

PROBES

Probe Number (from previous page)	Max Value Allowed	Max Value Measured	OK?	Comments
Probe 1:				
Probe 2:				
Probe 3:				

Final Check. All system covers are in place. System scans with all probes as expected.

Accepted by: _____

Figure 10-7. Electrical Safety



10-10 Electrical Safety Tests Log

Table 10-20: Electrical safety tests log

Electrical test performed	Max value allowed	Value measured	OK?	Comments
Outlet (correct ground and wiring config.)				
System ground continuity				
Chassis source leakage current - probe				
Chassis source leakage current - wheel				
Chassis source leakage current - monitor				
Patient lead source leakage (lead to ground)				
Patient lead source leakage (lead to lead)				
Patient lead source leakage (isolation)				
Peripheral 1 leakage current				
Peripheral 1 ground continuity				
Peripheral 2 leakage current				



Table 10-20: Electrical safety tests log (Continued)

Electrical test performed	Max value allowed	Value measured	OK?	Comments
Peripheral 2 ground continuity				
Peripheral 3 leakage current				
Peripheral 3 ground continuity				

Table 10-21: Electrical safety tests (probes) log

Probe	Max value allowed	Max value measured	OK?	Comments





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