Magmon3

Installation and Service Manual

5124576
Revision 13

Language Policy

Direction 2128126 - Language Policy For Service Documentation

ПРЕДУПРЕЖДЕНИЕ (BG)	Това упътване за работа е налично само на английски език. • Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод. • Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа. • Неспазването на това предупреждение може да доведе до нараняване на доставчика на услугата, оператора или пациента в резултат на токов удар, механична или друга опасност.
警告 (ZH-CN)	本维修手册仅提供英文版本。 • 如果客户的维修服务人员需要非英文版本，则客户需自行提供翻译服务。 • 未详细阅读和完全理解本维修手册之前，不得进行维修。 • 忽略本警告可能对维修服务人员、操作人员或患者造成电击、机械伤害或其他形式的伤 害。
警告 (ZH-HK)	本服務手冊僅提供英文版本。 • 倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。 • 除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。 • 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他的危險。
警告 (ZH-TW)	本維修手冊僅有英文版。 • 若客戶的維修廠商需要英文版以外的語言，應由客戶自行提供翻譯服務。 • 請勿試圖維修本設備，除非 您已查閱並瞭解本維修手冊。 • 若未留意本警告，可能導致維修廠商、操作員或病患因觸電、機械或其他危險而受傷。
UPOZOR-ENJE (HR)	Ovaj servisni priručnik dostupan je na engleskom jeziku. • Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod. • Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik. • Zanemarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.

VÝSTRAHA (CS)	Tento provozní návod existuje pouze v anglickém jazyce. • V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka. • Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah. • V případě nedodržování této výstrahy může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.
ADVARSEL (DA)	Denne servicemanual findes kun på engelsk. • Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse. • Forsøg ikke at servicere udstyret uden at læse og forstå denne servicemanual. • Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk stød, mekanisk eller anden fare for teknikeren, operatøren eller patienten.
WAAR-SCHUWING (NL)	Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar. • Als het onderhoudspersoneel een andere taal vereist, dan is de klant verantwoordelijk voor de vertaling ervan. • Probeer de apparatuur niet te onderhouden alvorens deze onderhoudshandleiding werd geraadpleegd en begrepen is. • Indien deze waarschuwing niet wordt opgevolgd, zou het onderhoudspersoneel, de operator of een patiënt gewond kunnen raken als gevolg van een elektrische schok, mechanische of andere gevaren.
WARNING (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.
HOIATUS (ET)	See teenindusjuhend on saadaval ainult inglise keeles. • Kui klienditeeninduse osutaja nõuab juhendit inglise keelest erinevas keeles, vastutab klient tõlketeenuse osutamise eest. • Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist. • Käesoleva hoiatuse eiramine võib põhjustada teenuseosutaja, operaatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärjel.

VAROITUS (FI)	Tämä huolto-ohje on saatavilla vain englanniksi. • Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käännöksen hankkiminen on asiakkaan vastuulla. • Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen. • Mikäli tätä varoitusta ei noudateta, seurauksena voi olla huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.
ATTENTION (FR)	Ce manuel d'installation et de maintenance est disponible uniquement en anglais. • Si le technicien d'un client a besoin de ce manuel dans une langue autre que l'anglais, il incombe au client de le faire traduire. • Ne pas tenter d'intervenir sur les équipements tant que ce manuel d'installation et de maintenance n'a pas été consulté et compris. • Le non-respect de cet avertissement peut entraîner chez le technicien, l'opérateur ou le patient des blessures dues à des dangers électriques, mécaniques ou autres.
WARNUNG (DE)	Diese Serviceanleitung existiert nur in englischer Sprache. • Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es Aufgabe des Kunden für eine entsprechende Übersetzung zu sorgen. • Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben. • Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendiensttechnikers, des Bedieners oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.
ΠΡΟΕΙΔΟΠΟΙΗΣΗ (EL)	Τοπαρόν εγχειρίδιο σέρβις διατίθεται στα αγγλικά μόνο. • Εάν το άτομο παροχής σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει υπηρεσίες μετάφρασης. • Μηνεπιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό εκτός εάν έχετε συμβουλευτεί και έχετε κατανοήσει το παρόν εγχειρίδιο σέρβις. • Εάν δεν λάβετε υπόψη την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στο άτομο παροχής σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.
FIGYELMEZTETÉS (HU)	Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el. • Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészíttetése. • Ne próbálja elkezdeni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték. • Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.

AÐVÖRUN (IS)	Þessi þjónustuhandbók er aðeins fáanleg á ensku. • Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálaþjónustu. • Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin. • Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum.
AVVERTEN-ZA (IT)	Il presente manuale di manutenzione è disponibile soltanto in lingua inglese. • Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione. • Procedere alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto. • Il mancato rispetto della presente avvertenza potrebbe causare lesioni all'addetto alla manutenzione, all'operatore o ai pazienti provocate da scosse elettriche, urti meccanici o altri rischi.
警告 (JA)	このサービスマニュアルには英語版しかありません。 • サービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。 • このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないでください。 • この警告に従わない場合、サービスを担当される方、操作員あるいは患者 さんが、感電や機械的又はその他の危険により負傷する可能性があります。
경고 (KO)	본 서비스 매뉴얼은 영어로만 이용하실 수 있습니다. • 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우, 번역 서비스를 제공하는 것은 고객의 책임입니다. • 본 서비스 매뉴얼을 참조하여 숙지하지 않은 이상 해당 장비를 수리하려고 시도하지 마십시오. • 본 경고 사항에 유의하지 않으면 전기 쇼크, 기계적 위험, 또는 기타 위험으로 인해 서비스 제공자, 사용자 또는 환자에게 부상을 입힐 수 있습니다.
BRĪDINĀ-JUMS (LV)	Šī apkopes rokasgrāmata ir pieejama tikai angļu valodā. • Ja klienta apkopes sniedzējam nepieciešama informācija citā valodā, klienta pienākums ir nodrošināt tulkojumu. • Neveiciet aprīkojuma apkopi bez apkopes rokasgrāmatas izlasīšanas un saprašanas. • Šī brīdinājuma neievērošanas rezultātā var rasties elektriskās strāvas trieciena, mehānisku vai citu faktoru izraisītu traumu risks apkopes sniedzējam, operatoram vai pacientam.

ĮSPĖJIMAS (LT)	Šis eksploatavimo vadovas yra tik anglų kalba. • Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, suteikti vertimo paslaugas privalo klientas. • Nemėginkite atlikti įrangos techninės priežiūros, jei neperskaitėte ar nesupratote šio eksploatavimo vadovo. • Jei nepaisysite šio įspėjimo, galimi paslaugų tiekėjo, operatoriaus ar paciento sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų.
ADVARSEL (NO)	Denne servicehåndboken finnes bare på engelsk. • Hvis kundens serviceleverandør har bruk for et annet språk, er det kundens ansvar å sørge for oversettelse. • Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått. • Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.
OSTRZEŻE-NIE (PL)	Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim. • Jeśli serwisant klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta. • Nie próbować serwisować urządzenia bez zapoznania się z niniejszym podręcznikiem serwisowym i zrozumienia go. • Niezastosowanie się do tego ostrzeżenia może doprowadzić do obrażeń serwisanta, operatora lub pacjenta w wyniku porażenia prądem elektrycznym, zagrożenia mechanicznego bądź innego.
ATENÇÃO (PT-BR)	Este manual de assistência técnica encontra-se disponível unicamente em inglês. • Se outro serviço de assistência técnica solicitar a tradução deste manual, caberá ao cliente fornecer os serviços de tradução. • Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica. • A não observância deste aviso pode ocasionar ferimentos no técnico, operador ou paciente decorrentes de choques elétricos, mecânicos ou outros.
ATENÇÃO (PT-PT)	Este manual de assistência técnica só se encontra disponível em inglês. • Se qualquer outro serviço de assistência técnica solicitar este manual noutro idioma, é da responsabilidade do cliente fornecer os serviços de tradução. • Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica. • O não cumprimento deste aviso pode colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques eléctricos, mecânicos ou outros.

ATENȚIE (RO)	Acest manual de service este disponibil doar în limba engleză. • Dacă un furnizor de servicii pentru clienți necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere. • Nu încercați să reparați echipamentul decât ulterior consultării şi înțelegerii acestui manual de service. • Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.
ОСТОРОЖНО! (RU)	Данное руководство по техническому обслуживанию представлено только на английском языке. • Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод. • Перед техническим обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения. • Несоблюдение требований данного предупреждения может привести к тому, что специалист по техобслуживанию, оператор или пациент получит удар электрическим током, механическую травму или другое повреждение.
UPOZOR-ENJE (SR)	Ovo servisno uputstvo je dostupno samo na engleskom jeziku. • Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilačke usluge. • Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo. • Zanemarivanje ovog upozorenja može dovesti do povređivanja servisera, rukovaoca ili pacijenta usled strujnog udara ili mehaničkih i drugih opasnosti.
UPOZORNE-NIE (SK)	Tento návod na obsluhu je k dispozícii len v angličtine. • Ak zákazníkov poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka. • Nepokúšajte sa o obsluhu zariadenia, kým si neprečítate návod na obluhu a neporozumiete mu. • Zanedbanie tohto upozornenia môže spôsobiť zranenie poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanické alebo iné ohrozenie.
ATENCION (ES)	Este manual de servicio sólo existe en inglés. • Si el encargado de mantenimiento de un cliente necesita un idioma que no sea el inglés, el cliente deberá encargarse de la traducción del manual. • No se deberá dar servicio técnico al equipo, sin haber consultado y comprendido este manual de servicio. • La no observancia del presente aviso puede dar lugar a que el proveedor de servicios, el operador o el paciente sufran lesiones provocadas por causas eléctricas, mecánicas o de otra naturaleza.

VARNING (SV)	Den här servicehandboken finns bara tillgänglig på engelska. • Om en kunds servicetekniker har behov av ett annat språk än engelska, ansvarar kunden för att tillhandahålla översättningstjänster. • Försök inte utföra service på utrustningen om du inte har läst och förstår den här service-handboken. • Om du inte tar hänsyn till den här varningen kan det resultera i skador på serviceteknikern, operatören eller patienten till följd av elektriska stötar, mekaniska faror eller andra faror.
OPOZORILO (SL)	Ta servisni priročnik je na voljo samo v angleškem jeziku. • Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod. • Ne poskušajte servisirati opreme, če tega priročnika niste v celoti prebrali in razumeli. • Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik.
DİKKAT (TR)	Bu servis kılavuzunun sadece ingilizcesi mevcuttur. • Eğer müşteri teknisyeni bu kılavuzu ingilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer. • Servis kılavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz. • Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.
ЗАСТЕРЕЖЕННЯ (UK)	Даний посібник з експлуатації доступний тільки англійською мовою. • Якщо постачальник послуг клієнта спілкується іноземною мовою, тоді клієнт зобов'язаний забезпечити переклад. • Заборонено проводити огляд обладнання без попереднього звертання до даного посібника з експлуатації і розуміння інформації, поданої у ньому. • Недотримання цього застереження може завдати шкоди здоров'ю постачальника послуг, оператора або пацієнта через ураження електричним струмом, механічну травму або інше ушкодження.

Revision history

Revision	Date	Description
13	November 2019	Routed in MyWorkshop with DOC2343806, Revision 1. Applied SIMS style to existing content. Removed the following sections and any references: • Chapter 1: 1.4 Reed Switch Part Number 2108790, 1.8 Global Modem Part Number 2245773, 1.9 Satellite Modem Part Number 2385399. • Chapter 2: 2.1 Global Modem Collector: Part 2245794-2, 2.8 Mobile Satellite Modem Collector: Part 2385399. • Chapter 3: 3.3.2 Global Modem Installation (Optional), 3.3.6 Connecting Reed Switch (All Magnets Except HFO), 3.3.7 Connecting Reed Switch (HFO Systems Only), 3.3.12 Installing MUX Box (Optional for Dialup Only). • Chapter 6: 6.1.2 Direct Network Cable Connection to Laptop and Magmon3. Added the following sections: • Chapter 1: 1.1.3 Pressure sensor. • Chapter 2: 2.2.6 Compressor interface cables. • Chapter 3: 3.3.3 Installing the pressure sensor. • Chapter 4: 4.1.1 Helium tee pressure sensor wiring diagram. • Chapter 6: 6.1.2 Connecting direct network cable to a laptop and Magmon3 using Windows 7, 6.1.3 Connecting a direct network cable to a laptop and Magmon3 using Windows 10. Updated the following sections: • Added line 8 to Table 1 in Chapter 2: 2.1 Magmon3 product structure. • Added 'measure helium supply line pressure' bullet point to Chapter 3: 3.1.1 Features. • Added step 6 to Chapter 3: 3.1.4 Installing and setting up sequence. • Updated the following flowcharts to add "If the Helium Tee Sensor needs to be installed, refer to the Helium tee Pressure Sensor wiring diagram at the end of this section": • Figure 26 LCC 1.5T/3.0T - fixed/transportable/relocatable.

(continued)		
Revision	**Date**	**Description**
		• Figure 27 LCC 1.0T/1.5T - mobile van. • Figure 29 S series and CX - 1.5T/1.0T fixed/ transportable/relocatable. • Figure 30 SX and CX - 1.0T/1.5T mobile van. • Figure 32 SIGNA 0.5T max - fixed/transportable/relocatable. • Figure 33 DV, Voyager, and Pioneer.
12	June 2016	Updated chapter 2, Product Structure. Updated chapter 3.1.1, Magmon3 Installation -Introduction. Updated chapter 4.1.8, Discovery MR750/MR450 and Optima MR450w Interconnect Map. Updated chapter 5.1.2.2, Fill mode. Updated chapter 9.1, Configuration Setup Updated chapter 11.1, Appendix. Removed chapter 12, Vendor Documents. Per SPR HCSDM00079730: Improved the graphics in the chapter on Interconnect Maps.
11	February 2015	ECR/ECO2187196 To change part classification from “Essential to Safety” to “Es- sentialto Minor”. Per SPR HCSDM00079730: Improved the graphics in the Interconnect Maps.
10	October 25, 2010	Per SPR MRIhc48551: Profiled text and sections in chapters appropriately for Class A version of the manual. Updated Table 2-10. ECO 2089099: Reed switch removed per VCP.
9	November 15, 2009	Per SCR DOC0680558: Updated Magmon3 Front Panel User Interface, Magmon3 Installation, Magmon3 Installation & Service, and Magmon3 Web Page Screen Overview.
8	June 17, 2009	Per PQR 13223043: Updated the chapter on Magmon3 Installation by adding pan-head screws to Section 2.2 Required Tools and Equipment. Per PQR 13211352: Updated Leybold and Sumitomo compressor models in Magmon3 Installation.

(continued)		
Revision	**Date**	**Description**
7	January 15, 2009	Per PQR 13128295: Updated chapter on Magmon3 Installation with references to LX, Excite and a section for installing the MR750 Heat Exchanger Cabinet. Per PQR 13224885: Updated the LCC 1.0T/1.5T Mobile Van interconnect diagram in the chapter, Interconnect Maps.
6	May 9, 2008	Updated Configuration Setup for the new compressor types. Per PQR 13128295: Changed title of Magmon3 Non-LCC Cable Collector to “Mag- mon3Non-Zero Boil-Off Cable Collector” and updated chapter on Magmon3 Installation.
5	December 21, 2006	Updated entire manual for flow and function.
4	June 22, 2006	Reworked Installation order for clarity and added basic setup procedure.
3	July 18, 2005	Changes throughout based on feedback from HII Review.
2	June 15, 2005	Changes throughout based on pilot feedback.
1	May 11, 2005	Initial release.

Contents

Chapter 1 Specifications

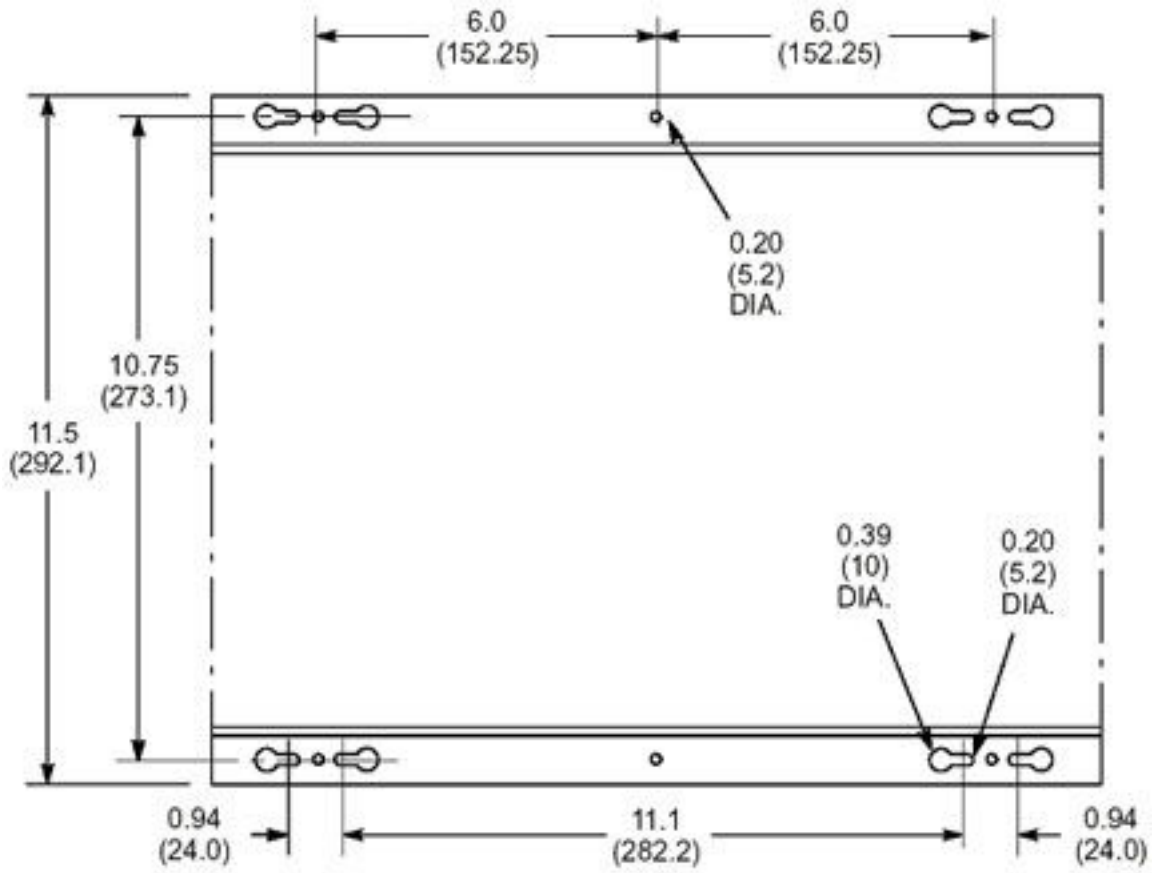
1.1 Magmon3 component specifications

1.1.1 Magmon3 component

Replacement parts			
Item	**Quantity**	**Part number**	**Manufacturer**
Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual)	1	2394952	-

Mechanical specifications	
Parameter	**Specification**
Dimensions	• Height: 10.0 inches (254 mm) • Width: 15.0 inches (381 mm) • Depth: 3.0 inches (76 mm)
Weight	8 lb (3.6 kg)
Mounting	Wall mount; for systems with GE-supplied Main Disconnect Panel (MDP), this unit mounts next to it. **NOTE** This unit should not be mounted in the exhaust path of any equipment cabinet.
Service clearance	Maintain 12 inch (304.8 mm) clearance above, below, and on both sides of the unit.

Figure 1 Magmon3 dimensions



NOTE

All dimensions in diagram are in inches. All bracketed () dimensions are in millimeters.

Environmental specifications	
Parameter	**Specification**
• Operating temperature • Nonoperating temperature	• 0 to 40°C (32 to 104°F) • -34 to 50°C (-29.2 to 122°F)
Temperature change	5°C/h
• Operating relative humidity • Nonoperating relative humidity	• 10 to 80% (noncondensing) • 10 to 90% (noncondensing)
Magnetic field	< 100 gauss
Altitude	-30 to 2133m, above sea level

Electrical specifications	
Parameter	**Specification**
Input voltage	100 to 120 VAC or 200 to 220 VAC (auto switching)
Line frequency	50 or 60 Hz (auto switching)
Nominal current	0.5A

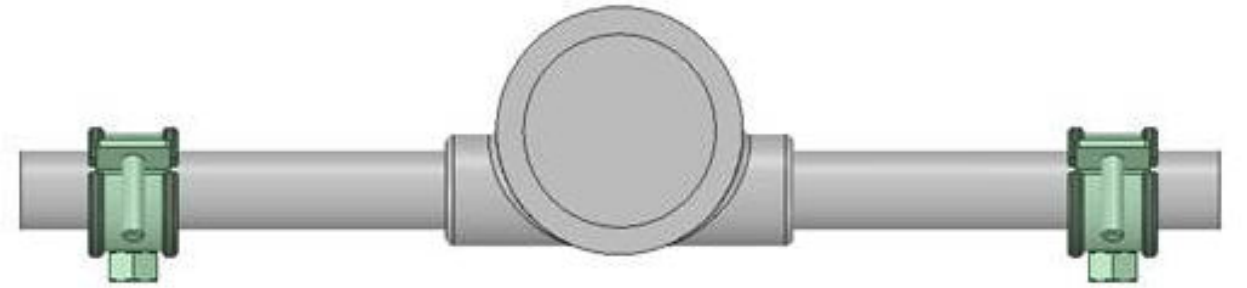
1.1.2 Water flow/temperature meter (turbine type)

Replacement parts			
Item	**Quantity**	**Part number**	**Manufacturer**
Water Flow/Temperature Meter (Turbine Type)	1	2333825	-

Mechanical specifications	
Parameter	**Specification**
Dimensions	• Height: 2.75 inches (69.9 mm) • Width: 3.70 inches (94 mm) • Depth: 2.0 inches (50.8 mm)
Weight	2.75 lb (1.3 kg)
Mounting	Horizontal on any vertical surface. **NOTE** Must not lay on floor; this will result in performance issues.
Maximum fluid pressure	200 psi
Maximum fluid temperature	107.2°C (224.96°F)
Inlet/outlet piping	1/2 inch NPT x 5 inch long brass pipe. **NOTE** Straight pipe required for non-turbulent laminar flow.
Non-wetted materials composition	• Epoxy • Lexan • PVC

(continued)	
Mechanical specifications	
Parameter	**Specification**
Wetted materials composition	• 316 stainless steel • Buna-N • Delrin • Acetal Copolymer
Flow direction	Operates with flow from either direction.
Mounting	Horizontal on any vertical surface with piping located at top. **NOTE** Must not lay on floor; this will result in performance issues.

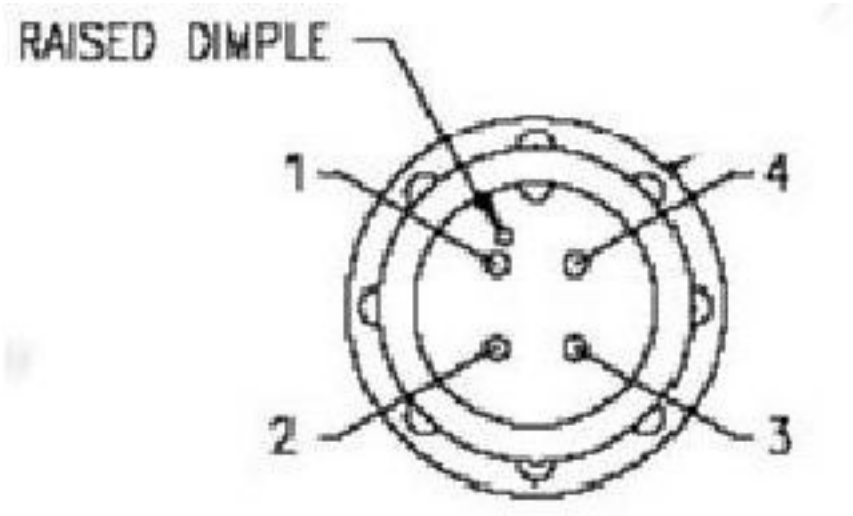
Figure 2 Flow meter mounting orientation



Environmental specifications	
Parameter	**Specification**
• Operating temperature • Nonoperating temperature	• 0 to 40°C (32 to 104°F) • -34 to 50°C (-29.2 to 122°F)
Temperature change	5°C/h
• Operating relative humidity • Nonoperating relative humidity	• 10 to 80% (noncondensing) • 10 to 90% (noncondensing)
Magnetic field	< 10 gauss
Altitude	-30 to 2133m, above sea level

Electrical specifications	
Parameter	**Specification**
Input voltage	+12 to 35 VDC, < 25 ma
Transmission distance	< 200 ft (6096 cm)
Output voltage (analog)	0 to 5 VDC, for both flow and temperature
Calibrated flow range	0 to 5 gpm (0 to 18.9 lpm)
Calibrated temperature range	32 to 100°F (0 to 37.78°C)
Accuracy	± 2% of range
Repeatability	0.5% of range
Resolution	Infinite
Response time (flow time)	2s to 90% step change
Calibration	Factory-calibrated, no service calibrations required

Figure 3 Electrical connections



Pin 1	+ Positive DC supply
Pin 2	Common ground
Pin 3	Flow sensor analog output
Pin 4	Temperature sensor analog output

1.1.3 Pressure sensor

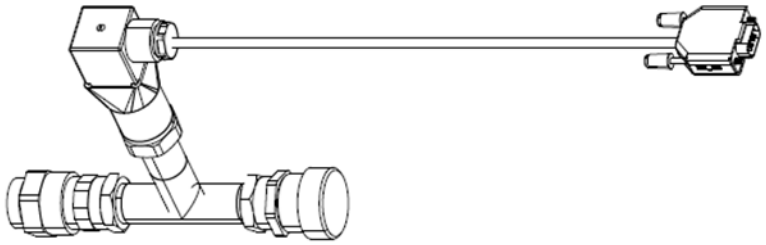
The helium supply line pressure sensor kit has mechanical and electrical components. The main sub-assembly is the mechanical pressure sensor fitted on a helium tee, which plugs into the supply port of

the compressor. The helium supply line then connects to the other end of the tee. The pressure value is sent out as a linear analog voltage value in 0 to 5 V DC range corresponding to the pressure being measured. It is a three-wire connection that sends the signal back to Magnet Monitor port J15.

This is an optional kit and compatible with all products that have a Magnet Monitor and CSW-71/F-50 compressor.

Replacement parts			
Item	**Quantity**	**Part number**	**Manufacturer**
Helium Tee Transducer	1	5815364	-
MM3 Interface Cable	1	5815365 for non-DV systems	-
		5815366 for DV systems	-

Figure 4 Helium tee transducer



1.1.4 Pressure transducer

1.1.4.1 Pressure transducer (2299843 and 2299843-2)

Out of catalog item. Manufacturer name: SUNX.

The manufacturer is responsible for the design and specifications of this unit. Any changes to specifications can be viewed on their website. Search for model DP2-41N.

Replacement parts			
Item	**Quantity**	**Part number**	**Manufacturer**
Pressure Transducer	1	2299843 and 2299843-2	SUNX

Mechanical specifications	
Parameter	**Specification**
Application	For air or noncorrosive gases
Dimensions	• Height: 1.181 inches (30 mm) • Width: 1.760 inches (44.7 mm) • Depth: 1.378 inches (35 mm)
Weight	4.2 oz (120g)
Pressure port	1/8 inch female NPT (port orientation defined by part number)
Pressure	Positive pressure measurement
Rated pressure range	0 to 14.5 psi (0 to 100 kPa)
Resolution	0.015 psi (0.1 kPa)
Max pressure	71 psi (490 kPa)

Environmental specifications	
Parameter	**Specification**
• Operating temperature • Nonoperating temperature	• -10 to 50°C (14 to 122°F) • -10 to 60°C (14 to 140°F)
• Operating relative humidity • Nonoperating relative humidity	• 35 to 85% (noncondensing) • 35 to 85% (noncondensing)

Electrical specifications	
Parameter	**Specification**
Input voltage	12 to 24 VDC +10% and -15%
Ripple P-P	< 10%
Analog voltage output	1 to 5 VDC (NPN open collector transistor)
Response time	> 2.5 ms
Short circuit protection	Incorporated

Product features	
Feature	**Description**
3.5-digit red LED display	0.394 inch (10 mm) high characters. The unit shows measured pressure, settings, error messages, and key-protected status
Displayable pressure range	-0.725 to 14.5 psi (-5.0 to 100 kPa)
Sample rate	4 times per second
Analog bar display	LED bar shows in steps of 10% full scale
Operation indicators:	
• Comparative output 1 • Comparative output 2	• Orange LED illuminates when output 1 is on • Green LED illuminates when output 2 is on

Electrical connections: DB-9 female	
Pin number	**Signal name**
3	Common ground
6	Analog output signal
8	+12 VDC input

Figure 5 HFO mounting orientation

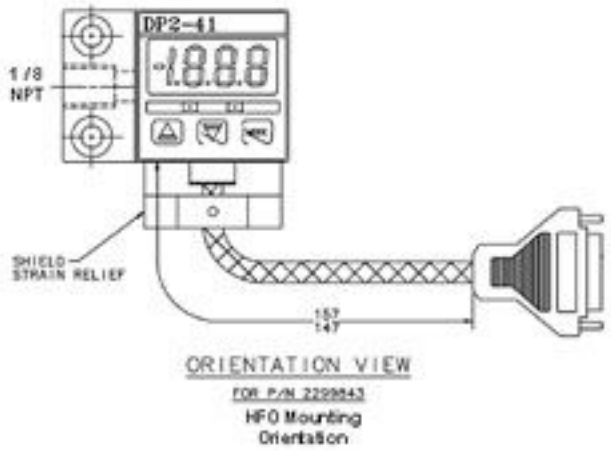
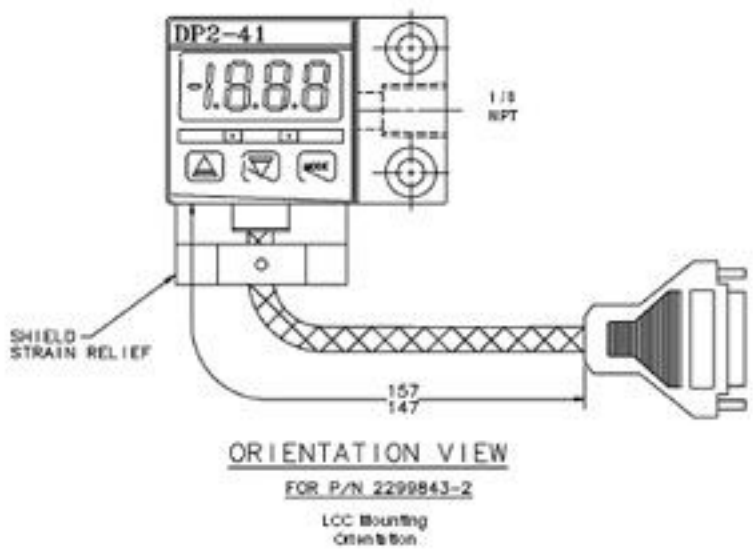


Figure 6 LCC mounting orientation



1.1.4.2 Pressure transducer (5192503)

The manufacturer is responsible for the design and specifications of this unit. Any changes to specifications can be viewed on their website. Search for model S-10.

Replacement parts			
Item	**Quantity**	**Part number**	**Manufacturer**
Pressure Transducer	1	5192503	WIKA

Figure 7 Pressure transducer

Mechanical specifications	
Parameter	**Specification**
Application	Hydraulics and pneumatics, test equipment
Dimensions	• Case OD: 27 mm • Height: 311 mm
Weight (minus cable)	0.4 lb

(continued)	
Mechanical specifications	
Parameter	**Specification**
Pressure port	1/4 inch NPT
Pressure	Positive pressure measurement
Rated pressure range	0 to 15 psi
Max pressure	70 psi

Environmental specifications	
Parameter	**Specification**
Temperature	-40 to 125°C
Input voltage	12 to 24 VDC +10% and -15%
Analog voltage output	1 to 5 VDC (NPN open collector transistor)
Response time	< 2.5 ms
Short circuit protection	Incorporated

Electrical connections: DB-9 female	
Pin number	**Signal name**
3	Common ground
6	Analog output signal
8	+12 VDC input

1.1.5 Remote alarm box

The remote alarm box is used on HFO and 7.0T systems. It is optional for all other systems.

Replacement parts			
Item	**Quantity**	**Part number**	**Manufacturer**
Remote Alarm Box	1	2266628	-

Mechanical specifications	
Parameter	**Specification**
Dimensions	• Width: 3 inches (76.2 mm) • Length: 3 inches (76.2 mm) • Depth: 1.5 inches (38.1 mm)
Mounting	• Near the operator workspace table; in view of the operator • Table top surface or wall mount surface with Velcro

Figure 8 Remote alarm box

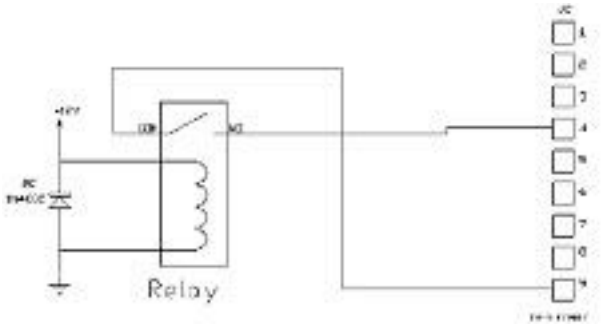
Environmental specifications	
Parameter	**Specification**
• Operating temperature • Nonoperating temperature	• 10 to 40°C (50 to 104°F) • -34 to 50°C (-29 to 122°F)
Temperature change	5°C/h
• Operating relative humidity • Nonoperating relative humidity	• 10 to 80% (noncondensing) • 10 to 90% (noncondensing)
Noise	< 50 dB

(continued)	
Environmental specifications	
Parameter	**Specification**
Magnetic field	< 100 gauss
Altitude	-30 to 2133m, above sea level

Electrical specifications	
Parameter	**Specification**
Input voltage	12 VDC ± 10%
Transition time	• Rise time of 10 µs or less • Fall time of 1 ms or less
Output relay contacts	1A at a maximum

Electrical connections	
Pin	**Signal**
Input connector J1; DB-9 pin; male	
2	12 VDC
9	Common ground
Output connector J2; DB-9 pin; female	
4	Relay contact (normally open contact)
9	Relay contact common

Figure 9 Output relay and connector schematic



Functional specifications		
Device	**Parameter**	**Specification**
Audible device	Audio tone	Frequency range 1000 to 3000 Hz
	Audible level	50 dBA to 90 dBA; measured 1m from audible device
	Pulsing frequency	Pulse on/off at a rate of 1 Hz ± 20%
Visual indicator	Type	LED
	Color	Red
	Intensity	Noticeable at 20 ft with a conical viewing angle of ± 5 degrees
	Pulsing frequency	Pulse on/off at a rate of 1 Hz ± 20%
	Reset function	When the 12 VDC input signal is removed, the LED will be extinguished
Output relay	Non-Alarm mode	Contact closure when 12 VDC is applied to input J1 pin 2
	Alarm mode	N/O contact when 12 VDC is removed from input J1 pin 2
Silence button	Alarm mode	When depressed, will silence the audible device when in alarm

1.1.6 RUO pre-amplifier

The RUO pre-amplifier is a dual channel differential input, single ended output device. The RUO pre-amplifier also incorporates the necessary interconnections to route stimulus currents to the sensors located in the coldhead and magnet sleeve.

Replacement parts			
Item	**Quantity**	**Part number**	**Manufacturer**
RUO Pre-Amplifier	1	2219341	-

Figure 10 RUO pre-amplifier

Mechanical specifications	
Parameter	**Specification**
Dimensions	• Width: 2 inches (50.8 mm) • Length: 3.75 inches (95.25 mm) • Depth: 1.5 inches (38.1 mm)
Weight	5 oz (142G)
Mounting	• Surface mount with Velcro • On top of the magnet near the coldhead

Environmental specifications	
Parameter	**Specification**
• Operating temperature • Nonoperating temperature	• 0 to 40°C (32 to 104°F) • -34 to 50°C (-29.2 to 122°F)
Temperature change	5°C/h
• Operating relative humidity • Nonoperating relative humidity	• 10 to 80% (noncondensing) • 10 to 90% (noncondensing)
Noise	< 50 dB

(continued)	
Environmental specifications	
Parameter	**Specification**
Magnetic field	< 1500 gauss
Altitude	-30 to 2133m, above sea level

Electrical specifications	
Parameter	**Specification**
Input voltage	± 12 VDC
Gain per channel	65 ± 1%
Channel to channel isolation	≥ 60 dB
Output noise	≤ 50 µV rms
Bandwidth	3 db bandwidth > 10 KHz

1.1.6.1 Connectors and input/output signals

1.1.6.1.1 Connectors and input/output signals

Input connector J1; to/from sensors; type DB15; female		
Pin	**Signal description**	**Signal level**
1	Stage 1 diode positive	10 µA constant current
2	Stage 1 diode negative	
3	Stage 2 diode positive	10 µA constant current
4	Stage 2 diode negative	
5	RUO (1) source positive	10 µA constant current
6	RUO (1) source negative	
7	RUO (1) signal positive	0 to ± 20 mV DC
8	RUO (1) signal negative	
9	No connection	N/A
10	No connection	N/A
11	No connection	N/A
12	RUO (2) source positive	10 µA constant current

(continued)		
Input connector J1; to/from sensors; type DB15; female		
Pin	**Signal description**	**Signal level**
13	RUO (2) source negative	
14	RUO (2) signal positive	0 to ± 20 mV DC
15	RUO (2) signal negative	

Output connector J2; to/from Magmon; type DB15; male		
Pin	**Signal description**	**Signal level**
1	Stage 1 diode positive	10 µA constant current
2	Stage 1 diode negative	
3	Stage 2 diode positive	10 µA constant current
4	Stage 2 diode negative	
5	RUO (1) source positive	10 µA constant current
6	RUO (1) source negative	
7	RUO (1) output	0 to ± 2.5 VDC
8	Signal ground	0 VDC
9	No connection	N/A
10	No connection	N/A
11	No connection	N/A
12	RUO (2) source positive	10 µA constant current
13	RUO (2) source negative	
14	RUO (2) output	0 to ± 2.5 VDC
15	RUO (2) signal negative	0 VDC

1.1.7 Uninterruptable Power Supply (UPS)

Out of catalog item. Manufacturer name: Powerware.

The manufacturer is responsible for the design and specifications of this unit. Any changes to specs can be viewed on their website. Due to continuing product improvement programs, specifications are subject to change without notice.

The Powerware 9120 UPS provides maximum power quality and backup power protection in the 700 - 3000 VA range and is the ideal power management solution for networks, Web servers, and telecommunications equipment.

While offering basic surge protection and backup power, the Powerware 9120 UPS additionally offers the best UPS power protection against all nine common power quality problems.

Replacement parts			
Item	**Quantity**	**Part number**	**Manufacturer**
Uninterruptable Power Supply (UPS)	1	2276094	Powerware

Product snapshot	
Parameter	**Specification**
Model number	PW9120/700
Power rating	700 VA
Voltage	120 and 230V
Frequency	50 and 60 Hz auto sensing
Configuration	Tower
Input connection	5-15P
Output receptacles	(4) 5-15R
Dimensions	• Height: 9.6 inches (243 mm) • Width: 6.2 inches (158 mm) • Depth: 16.2 inches (412 mm)
Weight	29 lb (13.2 kg)

Electrical input	
Parameter	**Specification**
Nominal voltage	120 VAC and 230 VAC
Input voltage range	• 120V: 80 to 144 VAC • 230V: 120/140/160 to 276 VAC
Input power factor	> .95%
Operating frequency	50/60 Hz auto sensing
Frequency range	45 to 65 Hz
Input protection	Fuse or circuit breaker

Electrical output	
Parameter	**Specification**
On utility voltage regulation	± 2% of nominal
On battery voltage regulation	± 3% of nominal
Nominal output voltage	Same as selected input voltage
Output voltage waveform	Sine wave
Output voltage distortion	< 3% THD
Output protection	Electronic overload sensing and circuit breaker protection
Efficiency	• Online mode: > 86% • Hi-Efficiency mode: > 90%

Battery	
Parameter	**Specification**
Internal battery type	Sealed, lead-acid; maintenance free
EBM battery type	Sealed, lead-acid; maintenance free
On battery run times	Refer to Powerware website
Battery replacement	Hot-swappable internal and external batteries
Recharge time	< 4 hours to 90% capacity
Start-on-battery	Allows start of UPS without utility input

Communications	
Parameter	**Specification**
User interface	LCD ***Status*** page
Audible alarms	UPS alarm conditions, including: on-battery, low battery, over-load, UPS fault
Network transient protector	In and out jack for all models; UL497A tested
REPO port	Meets NEC code 645-11 intent and UL requirements
Communications	1 RS232 serial port; 1 communications slot; 1 USB port
Communications cable	6 ft communications cable included
Power management software	Powerware Software Suite CD. Refer to website for CD

General	
Parameter	**Specification**
Topology	True online, double-conversion
Diagnostics	Full system self-test on power up
UPS bypass	Automatic on overload or UPS failure < 4 ms
Transfer time to battery	0 msq
Overload capacity	• 125% for 10 min before transfer to bypass • 150% for 10s before transfer to bypass

Environmental and safety specifications	
Parameter	**Specification**
Safety certifications	UL1778;cUL22.2 NO.107.1
EMI compliance	FCC part 15, class B (700-1500), class A (2000-3000) 230 V, EN 50091-2 class B (700-1500), class A (2000-3000)
Operating temperature	0 to 40°C (32 to 104°F)
Storage temperature	-15 to 50°C (5 to 122°F)
Storage temperature	0 to 25°C (32 to 77°F)
Relative humidity	0% to 95% noncondensing
Immunity	• EEE C62.41 • IEC 61000-4 -2, -3, -4, -5
Network transient protector	UL497A
Audible noise at 1 meter	• 700-1000 VA: <45dB • 1500 VA: <50dB • 2000-3000 VA: <52dB
Altitude	3000m (10,000 ft) without deteriorating

Page intentionally left blank

Chapter 2 Product structure

2.1 Magmon3 product structure

The hardware and cable collectors in the following table and its related documents may be used for taking inventory of parts received prior to installation. If any parts are found to be missing, submit a *Missing In Shipment* report to receive parts. Information can be found in the front material of the installation manual. If any received part is found to be defective, code as DOA and order a replacement.

Table 1 Top level shipping collectors

Line	Collector part number	Description	Collector contents
1	2222520-3	Magmon3 - LCC Fixed Site, Transportable, and Relocatable Collector Used on forward production LCC 1.5T and LCC 300 magnets	• Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual), with power cord and laptop network crossover table (2394952). • RUO Pre-Amplifier (2219341). • Magmon3 LCC Cable Collector (2350809-2).
2	2222520-4	Magmon3 - LCC Mobile Collector Used on forward production LCC 1.5T magnets	• Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual), with power cord and laptop network crossover table (2394952). • RUO Pre-Amplifier (2219341). • Magmon3 LCC Cable Collector (2350809-2). • Uninterruptable Power Supply (UPS) (2276094). • Run 939 - MDP-UPS out to MSM4 Cable (2276569). • Magmon3 Remote Alarm Collector (5180301).

Top level shipping collectors continued			
Line	**Collector part number**	**Description**	**Collector contents**
3	2222520-5	Magmon3 - Non-LCC Fixed Site, Transportable and Relocatable Collector [Non-LCC Magnet Types: S2 / S3 {including Magnishield} / S4 / S5 / 1.0T SX / 1.0T; 1.5T CX / 0.5T Max] Used on HD upgrades and installed base GE magnets with no magnet monitor	• Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual), with power cord and laptop network crossover table (2394952). • Magmon3 LCC Cable Collector (2350809-2).
4	2222520-6	Magmon3 - HFO Fixed Site Collector Used on forward production 0.7T high field open magnets	• Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual), with power cord and laptop network crossover table (2394952). • RUO Pre-Amplifier (2219341). • Magmon3 HFO Cable Collector (2265809-3). • Magmon3 Remote Alarm Collector (5180301). • Uninterruptable Power Supply (UPS) (2276094).
5	2404412	Magmon3 - GEMSO 7.0T Fixed Site Collector Used on forward production 0.7T GEHCO magnets	• Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual), with power cord and laptop network crossover table (2394952). • RUO Pre-Amplifier (2219341). • Magmon3 GEMSO 7.0T Cable Collector (2350809-4). • Water Flow/Temperature Meter (Turbine Type) (two each) (2333825). • Remote Alarm Box (2266628). • Lock Coil Timer (2404712). • MRU (46-294231G1). • Instrumentation Box (2404413).

Top level shipping collectors continued			
Line	**Collector part number**	**Description**	**Collector contents**
6	5267626	Magmon3 - MR750, MR750w, MR450, MR450w Collector Used on 3.0T and 1.5T systems	• Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual), with power cord and laptop network crossover table (2394952). • RUO Pre-Amplifier (2219341). • Magmon3 LCC Cable Collector (2350809-2). Refer to the latest revision of the *Magmon3 Installation and Service Manual* (5124576), available from the online documentation library.
7	Please order the three part numbers listed to the right	Magmon3 – Multi-Vendor. Used on Siemens and Philips systems	• Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual), with power cord and laptop network crossover table (2394952). • Pressure Transducer (5192503). • Multi-Vendor Magmon3 Cable Collector (5695587). When installing on supported non-GE equipment, please refer to one of the following three documents for proper installation instructions, available from the online documentation library: • DOC1841381: Siemens Avanto Espree MM3 Installation. • DOC1841385: Philips Intera MM3 Installation. • DOC1841387: Siemens Symphony MM3 Installation.
8	Please order the three part numbers listed to the right	Helium Supply Line Pressure Sensor Kit	• 5815364: Helium Tee Transducer • 5815365: MM3 Interface Cable for non-DV systems • 5815366: MM3 Interface Cable for DV systems

2.2 Collectors

2.2.1 Magmon3 cable collector

Magmon3 MR750/MR450/MR450w cable collector contents (5193795)					
Item	**Part number**	**Cable run/ item**	**From**	**To**	**Comments**
Run M3023 SPW-J117 to Mag-FJ2, 14000 mm	5357236	M3023	SPW-J117	MAG-FJ2	Secondary penetration wall (SPW) to magnet.
Run E3023 SPW-J117 to MON-J8, 17000 mm	5351557	E3023	SPW-J117	MON-J8	SPW to monitor.
Run E3022, MON-J7 to SPW-J116, Instrumentation Box	5351627	E3022	MON-J7	SPW-J116	To SPW instrumentation box.
Run E3024, MON-J9 to MON-FJ4 and MON-FJ3, Flow Monitoring	5352885	E3024	MON-J9	MON-FJ4 and MON-FJ3	Flow monitoring.
Run E3026, HEC-FL-Temp to MON-FJ3, Compressor Interface	5352519	E3026	HEC-FL-Temp	MON-FJ3	To compressor interface.
Run E3020 Pen-J13 to Mon-J10, 17000 mm	5351365	E3020	PEN-J13	MON-J10	Pen cabinet to monitor.
Run E3025, CRY to MON-FJ4, Flow Monitor-Sumitomo	5351806	E3025	CRY	MON-FJ4	To flow monitor-Sumitomo.
Run M3022, SPW-J116 to MAG-P403, 14000 mm	5351746	M3022	SPW-J116	MAG-P403	SPW to magnet.
Run E3034 MON-J5 to Network, 30000 mm	5351608	E3034	MON-J5	Network	Monitor to network.

(continued)

Magmon3 MR750/MR450/MR450w cable collector contents (5193795)					
Item	**Part number**	**Cable run/ item**	**From**	**To**	**Comments**
Power Cord IEC 60320 C13 to NEMA 5-15P 72 inches long	5115594-3	-	Power Cord IEC 60320 C13	NEMA 5-15P	
Magnet Room Interface Cable	5352964	830	Magnet interfaces	Cable interface, Run 829	To magnet room interface.

2.2.2 Magmon3 GEMSO 7.0T cable collector

Magmon3 GEMSO 7.0T cable collector contents (2350809-4)					
Item	**Part number**	**Cable run/ item**	**From**	**To**	**Comments**
15 Conductor, Female-Male, 60 ft long	46-271603G29	823	MSM1-J10	MR2-A11-J24	System cabinet.
Run 827 FJ3 to FJ4 and MS5A5	46-328578P1	827	FJ3	FJ4 and MS5A5	Quantity two of Run 827; FE to mark the second one as Run 827b.
		827b	FJ3b	FJ4b and MS8A5	
Magnet Room Interface 830 Cable	2222797	830	PP3-J9	MS1 A2-J2	To RUO pre-amp.
				MSM2-J1	To pressure transducer.
Run 915 MSM1A2-J1 to FJ6	2263160	915	FJ6	MSM2-J1	Remote alarm box.
Run 916 MSM1-J7 to FJ1, FJ5 and FJ6	2263159	916	MSM1-J7	• FJ1 • FJ5 • FJ6	
Run 942 Ethernet Cable	2271497	942/1077	MSM1-J5	Site network	Customer provides wall receptacle.
CoolPak Compressor Interface Cable	2404555	1278	FJ4a (827a)	MS5-A1-JR	Quantity two Run 1278; FE to mark the second one as 1278b.
		1278b	FJ4b (827b)	MS8-A1-JR	

(continued)

Magmon3 GEMSO 7.0T cable collector contents (2350809-4)					
Item	**Part number**	**Cable run/ item**	**From**	**To**	**Comments**
25-pin (12 T.P. +1) Female-Female (100 ft long) (two coldheads: Run 1301 and Run 1302)	46-271600G37	1301	MSM1-J8	PP3-J9	There are two coldheads, one for each run: Run 1301 is for coldhead 1 (PE); Run 1302 is for coldhead 2 (SE).
25-pin (12 T.P. +1) Female-Female (100 ft long) (two coldheads: Run 1301 and Run 1302)	46-271600G37	1302	FJ7 (1307)	PP3-J10	There are two coldheads, one for each run: Run 1301 is for coldhead 1 (PE); Run 1302 is for coldhead 2 (SE).
Compressor 2 Magmon Cable	2404562	1307	MSM1-J12	FJ7 (1302)	For SE coldhead #2.
				FJ3b (827b)	For SE compressor #2.
Temp Sensors 2 - Filter Cable	2404554	1308	PP3-J10	MS1-A3-J4	To service end coldhead.
Compressor 1 Magmon Cable	2404553	1309	MSM1-J9	• Lock coil timer • FJ3a (827a)	For PE compressor #1.
9-pin (4 T.P.+1) Female-Male (100 ft long)	46-271609G37	1310	Lock coil timer	PP3-J2	Mezzanine room pen panel.
9-pin Female-9-pin Male (Cable)	2404561	1311	PP3-J2	Lock (1)	To magnet instrumentation box.
25-pin (12 T.P. +1) Female-Male (100 ft long)	46-271601G37	1312	FJ5 (916)	PP3-J11	
He Sensors and Heaters (Cable)	2404558	1313	PP3-J11	LHe (1)	To magnet instrumentation box.
Pre-Amp Coldhead 1 Cryostat Cable	5183297	1410	MS1-A2-J1	MS1-A1-J6	Patient end coldhead.
				MS1-A4-J2	Vacuum port, left side on service end.
				MS1-A4-J3	Vacuum port, right side on patient end.

2.2.3 Magmon3 HFO cable collector

Magmon3 HFO cable collector contents (2265809-3)					
Item	**Part number**	**Cable run/ item**	**From**	**To**	**Comments**
Run 823 MSM1-J10 TO MR2-A11-J24 Cable	2263200-41	823	MSM1-J10	MR2-A11-J24	
Run 824 PP1-J10 TO FJ1 Cable	46-328000G975	824	FJ1	PP1-J10	
Run 825 PP1-J48 TO MSM1-J8 Cable	2263200-40	825	MSM1-J8	PP1-J48	
Run 826 FJ3 TO MSM1-A1-J9	46-328000G978	826	MSM1-J9	FJ3	
Run 827 FJ3 to FJ4 and MS5A5	46-328578P1	827	FJ3	FJ4 and MS5A5	Quantity two of Run 827; FE to mark the second one as Run 827b.
		827b	FJ3b	FJ4b and MS8A5	
Run 829 MS1-FJ2 TO PP1-J48	46-328000G976	829	PP1-J48	MS1-FJ2	
Run 830 Magnet Room Interface Cable	2279237	830	Magnet room interface	-	Used for monitoring two coldheads.
Coldhead Adapter Cable, Shielded	2271499	832	Coldhead adaptor cable	-	
Run 833 FJ4 TO MS5-A1-A6-JR Cable	46-328000G981	833	FJ4	MS5-A1-A6-JR	Quantity two of Run 833. Same cable used for each compressor.
		833b	FJ4b	MS8-A1-A6-JR	
Run 913 MS1-A1-A4-P302-3 TO PP1-J62 Cable	2263158	913	PP1-J62	MS1-A1-A4-P302-3	
Run 914 PP1-J62 TO FJ5 Cable	2262699	914	FJ5	PP1-J62	

(continued)

Magmon3 HFO cable collector contents (2265809-3)					
Item	**Part number**	**Cable run/ item**	**From**	**To**	**Comments**
Run 919 MS1-A1-A4-P302-1 TO PP1-J10 Cable	2264859	919	PP1-J10	MS1-A1-A4-P302-1	
Run 939 - MDP-UPS out to MSM4 Cable	2276569	939	MDP-UPS OUT	MSM4	
Run 942 Ethernet Cable	2271497	942	MSM1-J5	Network wall jack to OW1-A12-J7	
		Operator Workspace OW1	MSM1-J5		
Compressor 2 Magmon Cable	2404562	1307	MSM1-J12	FJ3 and FJ4	For second compressor.
UPS Input Cable Strain Relief	2279530	-	Strain relief - UPS input power cable		Used on MDP for cable entry.
UPS Output Cable Strain Relief	2279530-2	-	Strain relief - UPS output power cable		Used on MDP for cable entry.
I/F Panel Cable Screwlock Connector	46-265067P1	-	Screwlock connector		(Quantity 20) for joining cable connectors together.
Water Flow/ Temperature Meter (Turbine Type)	2333825	-	Water flow/temperature meter		(Quantity two) One for each compressor.

2.2.4 Magmon3 LCC cable collector

Magmon3 LCC cable collector contents (2350809-2)					
Item	**Part number**	**Cable run/item**	**From**	**To**	**Comments**
Run 823 MSM1-J10 to MR2-A11-J24	46-328000G979	823	MSM1-J10	MR2-A11-J24	
Run 824TR PP1-J10 to FJ1	46-317359G975	824TR	PP1-J10	To FJ1	

(continued)

Magmon3 LCC cable collector contents (2350809-2)					
Item	**Part number**	**Cable run/item**	**From**	**To**	**Comments**
Run 825TR PP1-J48 to MSM1-A1-J8	46-317359G977	825TR	PP1-J48	To MSM1-A1-J8	
Run 826 FJ3 TO MSM1-A1-J9	46-328000G978	826	FJ3	To MSM1-A1-J9	
Run 827 FJ3 to FJ4 and MS5A5	46-328578P1	827	FJ3	FJ4 & MS5A5	
Run 828 MS1-A3-A1-J403 to PP1-J10	46-328000G974	828	MS1-A3-A1-J403	PP1-J10	
Run 829 MS1-FJ2 TO PP1-J48	46-328000G976	829	MS1-FJ2	PP1-J48	
Magnet Room Interface 830 Cable	2222797	830	Magnet room interface		
Run 831 FJ1 to MSM1-A1-J7	46-328000G980	831	FJ1	MSM1-A1-J7	
Run 833 FJ4 TO MS5-A1-A6-JR Cable	46-328000G981	833	FJ4	MS5-A1-A6-JR	For Sumitomo compressor.
Run 942 Ethernet Cable	2271497	942	MSM1-J5	Network wall jack	
Water Flow/ Temperature Meter (Turbine Type)	2333825	Lake Monitor; water flow/temperature sensor assembly; turbine type			
I/F Panel Cable Screwlock Connector	46-265067P1	Screwlock connector to join cable connectors (quantity 10)			

2.2.5 Magmon3 non-zero boil-off cable collector

Magmon3 non-zero boil-off cable collector contents (2350809-3)					
Item	**Part number**	**Cable run/item**	**From**	**To**	**Comments**
Run 823 MSM1-J10 to MR2-A11-J24	46-328000G979	823	MSM1-J10	MR2-A11-J24	
Run 824TR PP1-J10 to FJ1	46-317359G975	824TR	PP1-J10	FJ1	
Run 825TR PP1-J48 to MSM1-A1-J8	46-317359G977	825TR	PP1-J48	MSM1-A1-J8	
Run 826 FJ3 TO MSM1-A1-J9	46-328000G978	826	FJ3	MSM1-A1-J9	
Run 827 FJ3 to FJ4 and MS5A5	46-328578P1	827	FJ3	FJ4 & MS5A5	
Run 828 MS1-A3-A1-J403 to PP1-J10	46-328000G974	828	MS1-A3-A1-J403	PP1-J10	
Run 829 MS1-FJ2 TO PP1-J48	46-328000G976	829	MS1-FJ2	PP1-J48	
Mag Room Interface	2108726	830	Magnet room interface	-	
Run 831 FJ1 to MSM1-A1-J7	46-328000G980	831	FJ1	MSM1-A1-J7	
Water Flow/ Temperature Meter (Turbine Type)	2333825	-	-	-	
Pressure Transducer	2299843 and 2299843-2	-	-	-	SUNX.
Pressure Transducer RF Shield	2369032	-	-	-	Secure with two screws.
#4-40 X .25LG, Round Head, Brass Screws	46-260793P11	-	-	-	Quantity two, use on RF copper shield.
Nipple, Pipe, Brass, .125 NPT Sch.40 x 1.50 Long	46-294167P98	-	-	-	Adapts pressure transducer to plumbing.

(continued)					
Magmon3 non-zero boil-off cable collector contents (2350809-3)					
Item	**Part number**	**Cable run/item**	**From**	**To**	**Comments**
0.25 inch Union Tee	46-252294P1	-	-	-	Swagelok part B-400-3.
0.25 inch Swagelok Port Connector	2109440	-	-	-	Swagelokpart B-401-PC.
0.25 inch OD Union Elbow	5180922	-	-	-	Swagelok part B-400-9.
Male Brass Tube Adapter, 0.25 inch OD x 0.125 inch NPT	5181130	-	-	-	Swagelok part B-4- TA-1-2.
J24 Cable Magnet Monitor, System Cabinet - TPS	2204485	-	• Connector A (15 Pin sub D, MR2 A11 J24) • Connector B (SMA Plug, MR2 IPG J9) • Connector C (BNC Plug, MR2 PDU J5)		Use in system cabinet with TPS.

2.2.6 Compressor interface cables

The compressor interface cable must be ordered separately. This cable is not included in the cable collector.

Compressor interface cables		
Item	**Part number**	**Use with**
Run 833 FJ4 TO MS5-A1-A6-JR Cable	46-328000G981	Sumitomo compressor.
Run A6 JR F50 Compressor Remote Port Adaptor	5761761	Sumitomo compressor.
Leybold Compressor Adaptor Cable, 8~ 9-Pin Sub-D TO Burndy Connector	2116875	Leybold RW4000 compressor.
CoolPak Compressor Interface Cable	2404555	Leybold CoolPak compressor.

2.2.7 Magmon3 remote alarm collector

Magmon3 remote alarm collector contents (5180301)				
Item	**Part number**	**Cable run/item**	**From**	**To**
Remote Alarm Box	2266628	-	-	-
Run 915 MSM1A2-J1 to FJ6	2263160	Cable 915	MSM1A2-J1	FJ6
Run 916 MSM1-J7 to FJ1, FJ5 and FJ6	2263159	Cable 916	MSM1-J7	FJ1, FJ5, FJ6

2.2.8 Multi-Vendor Magnet Monitoring Cable Kit

Multi-Vendor Magnet Monitoring Cable Kit contents (5695587)		
Item	**Part number**	**Grainger number**
1/8 inch M x Mini Valve 3 Handle Pkg	-	1PZB2
Brass Connector, CompxF, ¼ inch x 1/8 inch, PK10	-	29229
Hing Clamp KF-25 Vacuum Fittings, ISO-KF Flange Size NW-25, Aluminum	-	P101199
Centering Ring KF-25 Vacuum Fittings, ISO_KF Flange Size NW-25, Stainless Steel & Viton® O-ring	-	P101243
TeeKF-25 Vacuum Fittings, ISO-KF Flange Size NW-25, Stainless Steel	-	P101210
Adapter KF-25 to 1/8 NPT-Female, Flange Size ISO-KF NW-25, Stainless Steel	-	P101309
Nipple, Pipe, Brass, .125 NPT Sch.40 x 1.50 Long	46-294167P98	-
Brass Connector, CompxF, ¼ inch, PK10	-	2P230
Polyethylene Tubing	-	4HM13
SS Swagelok Tube Fitting, Female Branch Tee, 8 mm Tube OD x 8 mm Tube OD x 1/8 inch Female NPT	-	SS-8M0-3TTF
Tubing, 6 mm inch ID, 8 mm inch OD, 2m	-	4NTK2
Soft Copper Tubing	-	3P665
Male Brass Tube Adapter, 0.25 inch OD x 0.125 inch NPT	5181130	-
0.25 inch Union Tee	46-252294P1	-

(continued)

Multi-Vendor Magnet Monitoring Cable Kit contents (5695587)		
Item	**Part number**	**Grainger number**
Plastic Sleeve, Comp, ¼ inch, PK10	-	1VCZ6
Brass Insert, Comp, ¼ inch, PK10	-	2P207
Snoop Liquid Leak Detector or Bird Dog Quart Spray (DOG-1Q) or Big Blu Microleak Detector (RT100S or RT100G) or Leak-Tec	46-252065P71	-
Water Flow/Temperature Meter (Turbine Type)	2333825	-
Brass Swagelok Tube Fitting, Union Tee, 1/4 inch Tube OD	-	B-400-3
Brass Connector, CompxF, ½ inch, PK10	-	2P234
Brass Insert, Comp, ½ inch, PK10	-	2P209
Plastic Sleeve, Comp, ½ inch, PK10	-	1VCZ9
Run 825TR PP1-J48 to MSM1-A1-J8	46-317359G977	-
Run 826 FJ3 TO MSM1-A1-J9	46-328000G978	-
Run 827 FJ3 to FJ4 and MS5A5	46-328578P1	-
Mag Room Interface	2108726	-
Teflon Tape	-	4X227
Cable Tie, Standard, 7.9 inches, Natural, PK100	-	36J149
Cable Tie, Standard, 11.8 inches, Natural, PK100	-	36J153
Drywall Anchor, Self Drill, #6-10, PK100	-	11K352
Ethernet Cable, 15 ft long	-	6YTH5
Sheet Metal Screw, Pan, #8, 1-1/2 inches	-	1LY65

Page intentionally left blank

Chapter 3 Installation and upgrades

3.1 Installing Magmon3

3.1.1 Features

The Magmon3 consists of the front panel display, user keypad hardware, and software used for the following:

- Measure helium vessel level
- Measure helium vessel pressure
- Provide helium vessel pressure control on magnets that have recondenser systems, such as LCC and HFO magnets
- Measure coldhead and magnet shield/recondensor temperatures
- Measure coldhead cycling (for HFO systems)
- Measure helium supply line pressure
- Monitor two coldheads and two compressors
- Measure water flow and temperature for the water-cooled compressor(s)
- Monitor status of compressors
- Auto restart the compressor(s) after interruption in power or cooling
- Detect the loss of the magnet field

3.1.2 Compatibility

3.1.2.1 Magnet compatibility

The Magmon3 is designed to interface with the following GE-manufactured magnets:

- S2 through S5 - 1.5T
- MR Max - 0.5T (if installed on SIGNA System)
- Compact Magnet - 0.5T (if installed on SIGNA System)
- SX - 1.0T (including Mobile)
- CX - 1.0T / 1.5T (including Mobile)
- LCC - 1.0T / 1.5T (including Mobile)
- LCC - RB 1.5T
- LCC - RD 1.5Tw

- LCC_HM 1.5T (DVw -1.5T)
- LCC_UA 3.0T (DVw -3.0T)
- LCC300 - 3.0T
- HFO - 0.7T
- GE Oxford - 7.0T
- Multi-vendor Siemens and Philips

3.1.2.2 Shield cooler/cryocooler compressor compatibility

The Magmon3 is designed to interface with the following compressors:

- Balzer water cooled
- Leybold models: RW4000, RW4200, RW6000, RW6200, CP4000, CP4200, and CP6000
- Sumitomo models: CSW71, CSA-71, CNA-31, CNA-61, F50, F50s, F70, and HC10

NOTE

A water flow/water temperature sensor is externally installed in the coolant supply line except for air cooled compressors.

3.1.3 System and parts structure

The Magmon3 device, sensors, and cables are shipped with SIGNA product line systems. See 2.2 Collectors on page 23.

3.1.3.1 Optional parts

The Magmon3 Kit structures provide most of the devices and cables needed during installation. However, one or more of the following items may be required, depending on system requirements and needs. Additional parts may be needed for non-zero boil-off magnet. All are stocked and can be ordered through normal GPRS channels.

Additional parts for non-zero boil-off magnet		
Part number	**Description**	**Where used**
46-328000G981	Run 833 FJ4 TO MS5-A1-A6-JR Cable	Sumitomo CSW71, CSA-71, CNA-31, CNA-61, F50, F70, and HC10 compressors
2116875	Leybold Compressor Adaptor Cable, 8~ 9-Pin Sub-D TO Burndy Connector	Leybold RW4000, RW4200, RW6000, and RW6200 compressors
2404555	CoolPak Compressor Interface Cable	Leybold CoolPak (CP) 4000, 4200, 6000, 6200, and 6200D compressors

Additional parts not related to shield cooler system		
Part number	**Description**	**Where used**
2394952	Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual)	All GE magnets, S2 forward
46-318042P1	Lakeshore Meter Cable x 11 ft long, Coldhead Sleeve to Rear Pedestal	All GE magnets, S2 through CX
2204485	J24 Cable Magnet Monitor, System Cabinet - TPS	LX systems cabinet with TPS chassis
46-296816P1	Adapter, BNC TEE, 50 OHM Amphenol #31-200 - All Center Conductors are Silver Plated (REV TK, 11/91). Has Rexolite Insulation	LX systems cabinet with TPS chassis
46-265067P1	I/F Panel Cable Screwlock Connector	All system cabinets
2322581	J24 Cable Magnet Monitor	Excite systems cabinet with MGD chassis
2271497	Run 942 Ethernet Cable	All magnets
46-271920P3	25-pin penetration panel filter, Male-Female Adaptor, Tin Plated Steel (4-40 Female Screwlocks Included) 100VDC Working Voltage	All magnets; use when 25-pin filter is not available on pen panel
46-221754P3	RFI Penetration Panel Filter Gasket Used with 25-pin Sub-D HDF or HDP, Metal Shell Connectors. Bright Tin Plated Brass, .006 THK	All magnets; use when 25-pin filter is not available on pen panel

3.1.3.2 Additional cables

Additional cables for sites where the penetration wall is more than 60 ft away from the Magmon:

- 25-pin (12 T.P.+1) Female-Male (10 ft long) (46-271601G19)
- 25-pin (12 T.P.+1) Female-Male (20 ft long) (46-271601G21)
- 25-pin (12 T.P.+1) Female-Male (30 ft long) (46-271601G23)
- 25-pin (12 T.P.+1) Female-Male (40 ft long) (46-271601G25)
- 25-pin (12 T.P.+1) Female-Male (50 ft long) (46-271601G27)

3.1.4 Installing and setting up sequence

Use the recommended sequence of steps for installing a new Magmon3:

1. Review inventory of all hardware prior to installation. See 2.2 Collectors on page 23.
2. Install the Magmon3 unit. See 1.1 Magmon3 component specifications on page 1.

3. Install the remote alarm box (not used on all systems). See 1.1.5 Remote alarm box on page 10 and 1.1 Magmon3 component specifications on page 1.
4. (**For 7.0T systems**) Physically install the lock coil timer. Refer to Direction 2357818, *GEHCO 7.0T/900 High Field Magnet and Cryogen Subsystems*.
5. Install the water flow/temperature meter(s). See 1.1.2 Water flow/temperature meter (turbine type) on page 3 and 1.1 Magmon3 component specifications on page 1.
6. If available, install the helium pressure sensor tee on the helium supply line. See 1.1.3 Pressure sensor on page 5 and 1.1 Magmon3 component specifications on page 1.
7. Install the pressure transducer on the magnet (installed base upgrades only). See 1.1.4 Pressure transducer on page 6 and 1.1 Magmon3 component specifications on page 1.
8. Install and connect Magmon3 system cables. See 4.1 Interconnect maps on page 57.
9. Apply AC power to the Magmon3. See 4.1 Interconnect maps on page 57.

   NOTE

   On OpenSpeed, TwinSpeed and SIGNA 7.0T, there are dedicated 115 VAC outlets inside the Main Disconnect Panel (MDP) for powering the Magmon and multiplexer box. For all other systems, the Magmon3 will plug into customer-provided 7 x 24 wall outlets.
10. Review the front panel keypad and user display. See 5.1.1 Introduction on page 69.
11. Connect a laptop to the Magmon3. See 6.1 Connecting to Magmon3 with a laptop on page 75.
12. Set the date and time on the Magmon3. See 9.1.1 Setting the date and time on page 97.
13. Select the correct magnet type. See 9.1.2 Setting the magnet type on page 98.
14. Establish the correct network settings on the Network page. See 9.1.4 Setting the network IP configuration on page 102.
15. Click ***Logout*** on the top left side of the web page to activate the new settings.
16. Wait at least 10 minutes, then check for alarms on the front panel as indicated by the alarm LED and the ***Alarms*** button. See 5.1.1 Introduction on page 69.

3.2 Tools and test equipment

Tools and test equipment			
Item	**Quantity**	**Part number**	**Manufacturer**
Safety Glasses	1 pair	-	-
Pair: Nonferrous Safety Shoes	1 pair	-	-
Pair: Cut-Resistant Gloves	1 pair	-	-

(continued)

Tools and test equipment			
Item	**Quantity**	**Part number**	**Manufacturer**
Restricted Access Control Kit (contains two plastic warning signs for posting at site during installation and service activity)	1	46-271138G1	-
Nonmagnetic Titanium Service Tool Kit, Small Set	1	5113258	-
Nonmagnetic Tool Kit	1	2385097	-
Nonferrous Metric Ruler	1	-	-
Helium Resistance Box	1	46-265286G1	-
Digital Voltmeter (DVM)	1	46-194427P284	-
Wrist Grounding Strap	1	46-198094P1	-
Shallow Container (to catch water after disconnecting the hose to the Shield Cooler Compressor)	1	-	-
Tools and hardware to mount Magmon to wall: • Power Drill • Drill Bits • Wall Anchor System	1 of each	-	-
Laptop Computer (minimum requirement is Windows 2000 with Internet Explorer or Netscape Navigator)	1	-	-
Crossover Network Cable (supplied with every Magmon3 device)	1	2394952	-
M4 x 8 Phillips Pan-Head Screws for mounting to Heat Exchange Cabinet (HEC), not included	1 to 6	-	-

3.3 Installing hardware

3.3.1 Magmon3 wall installation

For MR750, MR450, and MR450w systems, the Magmon3 should be attached to the heat exchange cabinet (HEC).

Tools and test equipment			
Item	**Quantity**	**Part number**	**Manufacturer**
Tools and hardware to mount Magmon to wall: • Power Drill • Drill Bits • Wall Anchor System	1 of each	-	
Nonmagnetic Tool Kit	1	2385097	-
Nonmagnetic Titanium Service Tool Kit, Small Set	1	5113258	-
Nonferromagnetic Tape Measure, 6 ft (2m) Long, Minimum or Nonferrous Metric Ruler	1	-	-
Safety Glasses	1 pair	-	-
Safe Skin Nitrile Glove, Large	1 pair	2207303-6	-

The Magmon3 unit is designed for wall mounting. The location of the unit within the equipment room on new system installations should be shown on the customer's architectural drawings. For SIGNA OpenSpeed, SIGNA TwinSpeed and SIGNA 7.0T systems, the Magmon3 device is mounted next to the Main Disconnect Panel (MDP) because there are 120 VAC receptacles inside the MDP designated for Magmon3.

- For systems where the GE MDP is not included, the customer is required to provide a dedicated circuit that will supply the Magmon with 7 x 24 AC power.
- For installed base systems receiving a Magmon3 for the first time, make sure the location complies with the equipment specifications for gauss levels and service clearance. See 1.1.1 Magmon3 component on page 1.
- For installed base systems that already have a Magmon2 (SHeM manufactured by Granite) and are upgrading to a Magmon3, mark new hole locations on the wall because the mounting hole patterns are different. For mounting hole dimensions, see 1.1.1 Magmon3 component on page 1.

Figure 11 Magmon3 mounting on HEC

Anchor the Magmon to the wall using all applicable codes for the site. For customers without the GE MDP, make sure a non-switched 120/240 VAC power is within 6 feet of the mounting location of the Magmon. The Magmon3 automatically adjusts to line voltage and line frequency, so no further adjustments are required.

- Do not connect the AC power cord to the Magmon3 until all cabling is completed (the Magmon3 does not have an ***ON-OFF*** switch for power control).
- If preferred, the Magmon3 may be plugged into a 220 VAC outlet. Obtain a power cord with the appropriate connector.

3.3.2 Installing the water flow/temperature meter

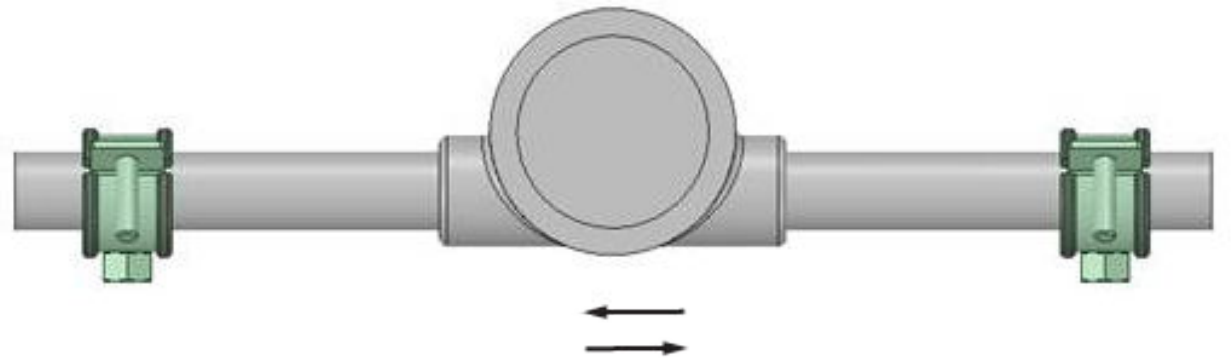
The turbine style water flow/temperature meter is designed to be installed in the supply waterline for all compressors except air cooled compressors.

Tools and test equipment			
Item	**Quantity**	**Part number**	**Manufacturer**
Safety Glasses	1 pair	-	-
Pair: Cut-Resistant Gloves	1 pair	-	-
5 Gallon Pail	1	2239133	-
Electric Hand Drill	1	-	-
Drill Bits	As required	-	-
Mounting Clamps	2 per flow meter	-	-
Wall Anchor System	2 per flow meter	-	-
Hand Tools, Screws, Socket Drive	As required	-	-

Consumables			
Item	**Quantity**	**Part number**	**Manufacturer**
Clean Rags	3 to 5	-	-

The flow meter must be mounted horizontally with the inlet and outlet piping located at the top. This orientation allows any trapped air in the lines to pass through the meter cavity. Do not remove the five-inch length of copper pipe attached to inlet and outlet ports of the meter. This straight length of pipe is required to minimize turbulent flow through the meter, which impacts the performance of the meter. The flow meter is bi-directional; it does not matter which end is used for the inlet and outlet.

Figure 12 Flow meter orientation



1. Mount the flow meter to any vertical surface. Do not lay the meter flat on the floor, which will result in excessive impeller wear and degrade the performance of the unit over time.
2. Shut off the water flow to the coldhead compressor, making sure to shut off both the supply and return lines to minimize water spillage.
3. Put a 5 gallon pail under the inlet water line hose to catch any water that may run off. Cut the hose far enough back from the compressor to allow connections to be made to the hose barb connectors on the water flow meter.
4. Connect the cut hose to the inlet and outlet sides of the water flow meter and secure with a hose clamp.
5. Turn on the water supply and return line valves; check all fittings for leaks and repair leaks as necessary.

⚠CAUTION

HAZARDOUS CHEMICALS

If water from the compressor spills, clean it up following hospital procedures; the water may contain chemicals, such as glycol.

3.3.3 Installing the pressure sensor

The pressure sensor senses the pressure inside the helium supply line going to the coldhead.

Required conditions
The Magnet Monitor is set up and configured for normal operation without being set up to read helium supply line pressure.

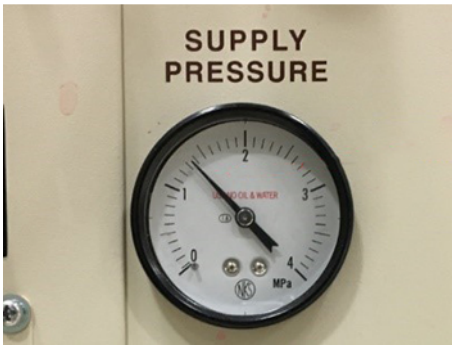
The pressure sensor is mounted on one leg of a sealed helium tee. The other two legs have standard Aeroquip fittings that can mate with the F-50 compressor supply port and supply line Aeroquip fitting. The pressure transducer has a linear transfer function that converts 0 ~ 500 psi input pressure to 0 ~ 5 V DC out voltage signal. This 0 ~ 5 V DC signal is A2D converted inside the Magnet Monitor and an LUT is used to convert this to PSI or MPa values. This plan assumes that the installation is being done on an HDxt system.

1. If on, turn off the F-50 compressor using the ***MAIN POWER*** switch and let it sit in the ***off*** condition for 1 minute.

Figure 13 MAIN POWER switch

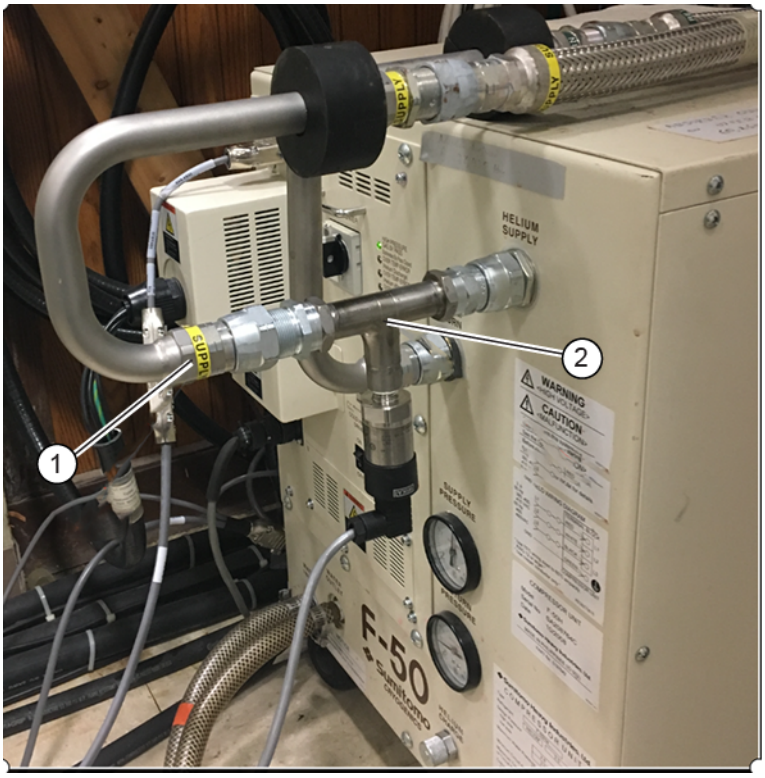
2. After 1 minute, check the static pressure on the SUPPLY PRESSURE gauge of the compressor's supply line. If the pressure is out of spec, correct as required by either filling the helium or removing the gas.

Figure 14 SUPPLY PRESSURE gauge



3. If connected, disconnect the helium supply line.
4. Install the helium tee on the helium supply port. Depending on your system, connect the supply line in one of two ways:
   - install the U adapter at the other end of the helium tee and connect the supply line to it, or
   - connect the supply line directly to the helium tee

Figure 15 Helium tee and U adapter connection



1	U adapter
2	Helium tee

5. Connect the MM3 Interface Cable (5815365 for non-DV systems or 5815366 for DV systems) to the measuring port of the helium tee.
6. Wire the other ends of the MM3 Interface Cable to the Magnet Monitor and the HEC (if the system is a DV system) or flow meter (if the system is a non-DV system). For more information, see 4.1 Interconnect maps on page 57.

3.3.4 Installing the pressure transducer

The pressure transducer ships already installed on all forward production magnets. This procedure is intended for installed base magnets where a pressure transducer is not installed.

1. Locate the pressure transducer and assorted plumbing fittings in the Magmon3 Upgrade Kit.
2. Attach the pressure transducer to the vent plumbing on the magnet just after the mechanical pressure gauge, using the appropriate plumbing adaptors.
3. Leak-test the plumbing fitting and correct any leaks as needed.

3.3.5 Connecting magnet room cables (all systems)

The pressure transducer, and magnet and coldhead temperature sensors generate signals incorporated into a cable that enters the magnet room through the penetration panel. These signals aid in assessing boil off, magnet quench, and proper maintenance of vessel pressures before, during, and after a helium fill. Most of the hardware installation can be performed while the customer is using the system. Magmon3 can be shut down and worked on while the SIGNA system is running.

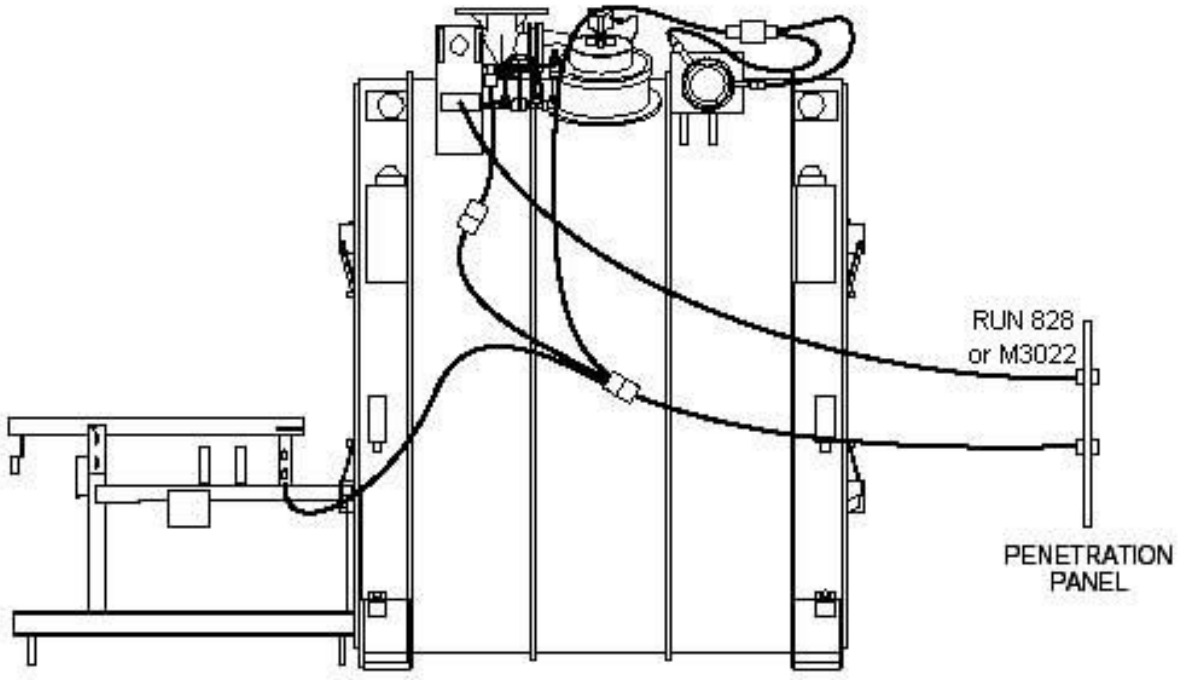
The magnet room is needed for about 1 hour to install cables and sensors. Remove the twist locks around the cables before connecting cables in the magnet room.

NOTE

The 3 to 4 hours of installation time in the equipment room do not require the system to be down.

1. Use the appropriate interconnect map for the magnet system on which you are working. See 4.1 Interconnect maps on page 57.

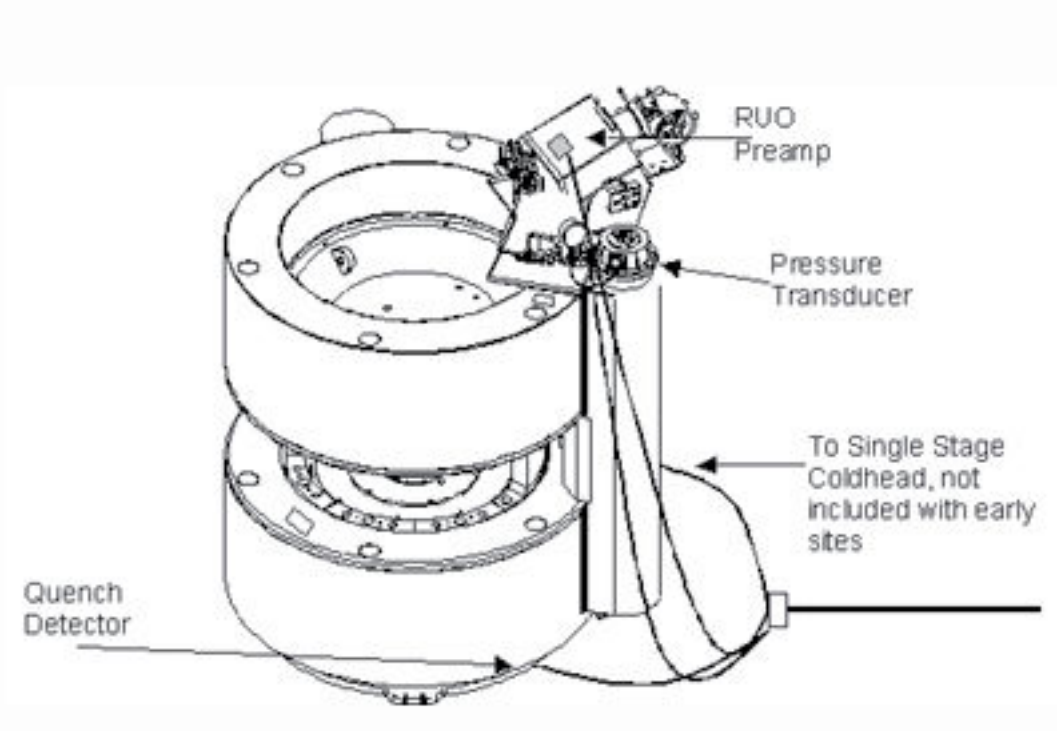
Figure 16 LCC and DVw magnet room cabling



2. For LCC cable routing, see Figure 16 on page 45.

3. For typical HFO cable routing, see Figure 17 on page 46.

Figure 17 HFO magnet room cabling



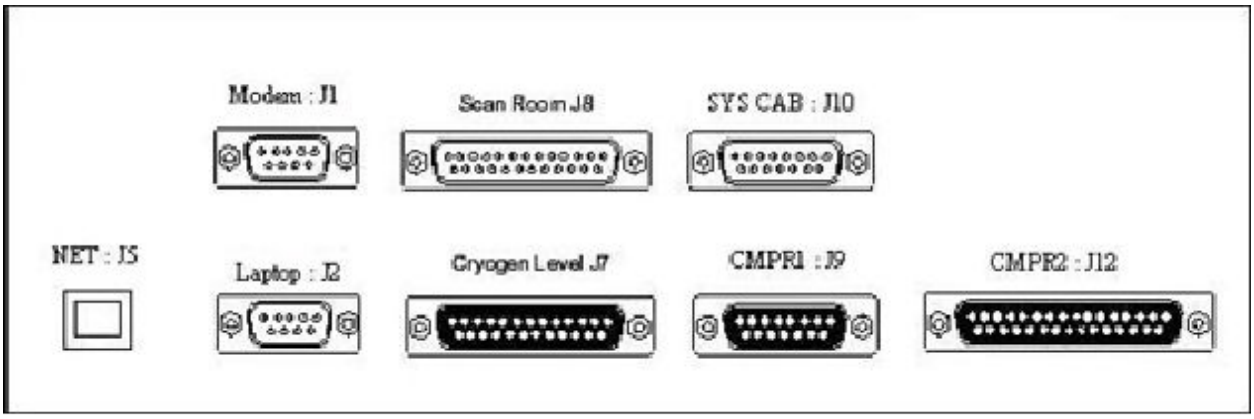
NOTE

Do not coil the cables under the rear pedestal. Serpentine any excess cable in the cable trough so it will not interfere with scanning.

3.3.6 Connecting equipment room cables (all systems)

Refer to *Interconnect maps* and use the appropriate interconnect map for the magnet system on which you are working.

Figure 18 Magmon3 interface panel connector locations



1. Install and route cable from the Magmon3 J7 to the pen panel using the run number identified on the interconnect map.
2. Install and route cable from the Magmon3 J8 to the pen panel using the run number identified on the interconnect map.
3. Install and route cable from Magmon3 J9 to the coldhead compressor using the run number identified on the interconnect map.

   NOTE

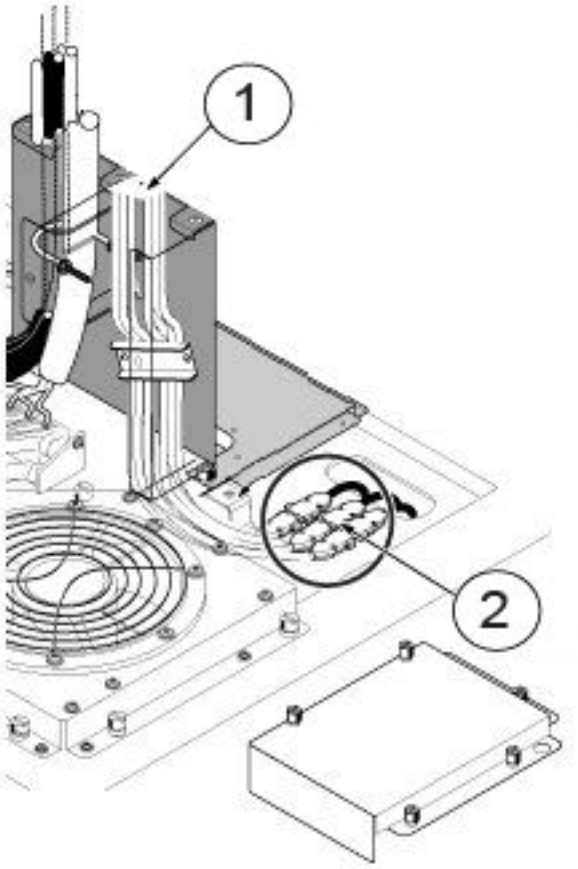
   For nonzero boil-off magnets, the compressor interface cable must be ordered separately. See 2.2.5 Magmon3 non-zero boil-off cable collector on page 29 for part numbers.

4. (**For HFO only**) Install and route cable from Magmon3 J12 to the second coldhead compressor using the run number identified on the interconnect map.
5. Install and route cable from Magmon3 J10 to the system cabinet using Run 823.
6. Connect the power cord between Magmon3 and the customer-supplied 24 x 7 power source.

3.3.7 Connecting Magmon3 to system cabinet (SIGNA HDe 1.5T)

1. Connect the MSM1-A1-J10 end to Magmon3.

Figure 19 Connect run 823 (view from top of system cabinet)



1	Signal cables (Run 823, 2034, 2036, 2045, 2041, and 2044 cables)
2	Run 823 connected to J303

2. Route the cable to the top of the system cabinet.
3. Connect the MR2-A11-J24 end of Run 823 to J303 (Run 2045 cabinet monitor, Magmon3-out cable).

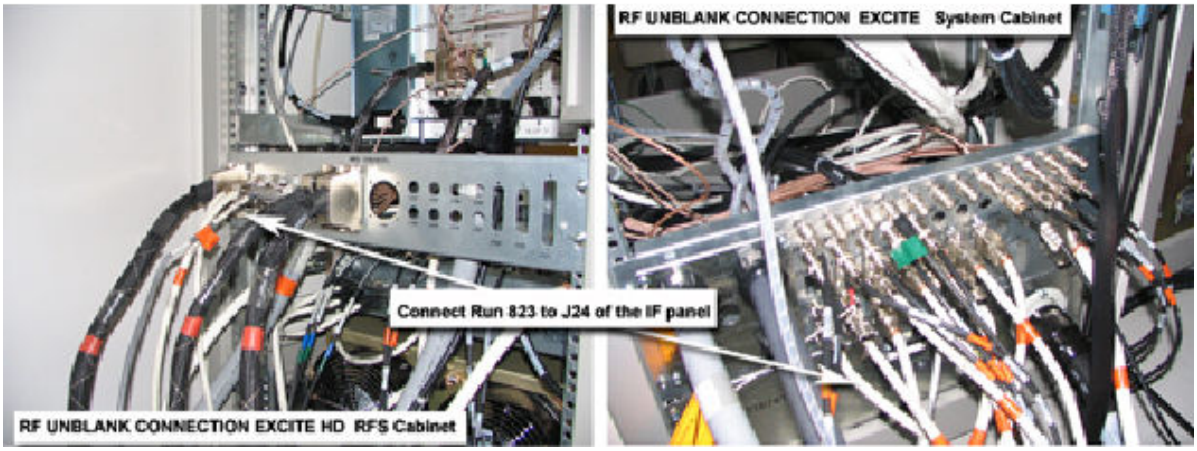
NOTE

For an HDe system, an unblank signal line is included in Run 2045 cabinet monitor, Magmon3-out cable.

3.3.8 Connecting Magmon3 to system cabinet (LX and Excite-based systems)

1. Connect the MSM1-A1-J10 end to Magmon3.

Figure 20 Connect run 823



2. Route the cable to the interface panel at the lower rear of the system cabinet/RF system cabinet.
3. (**For Pre-Excite Systems**) It may be necessary to install a pair of connector joiners in an empty 15-pin opening (J24, if available) on the interface panel.
4. Connect the MR2-A11-J24 end of Run 823 to the above.
5. For run X (no number) internal to an LX system cabinet:

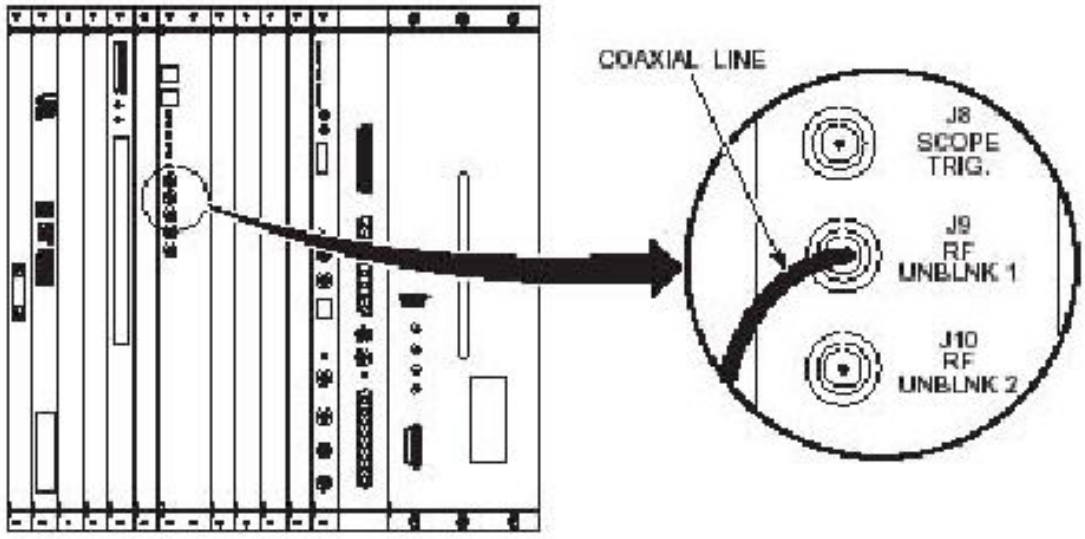
NOTE

All Excite system cabinets have the internal cable pre-installed prior to shipping to the customer.

a. Connect the MR2-A11-J24 end to the interface panel connectors installed above.

b. Carefully thread the MR2-IPG-J9 end through to the front of the system cabinet and connect to J9 (RF UNBLANK1) of the IPG board on the front of the cabinet.

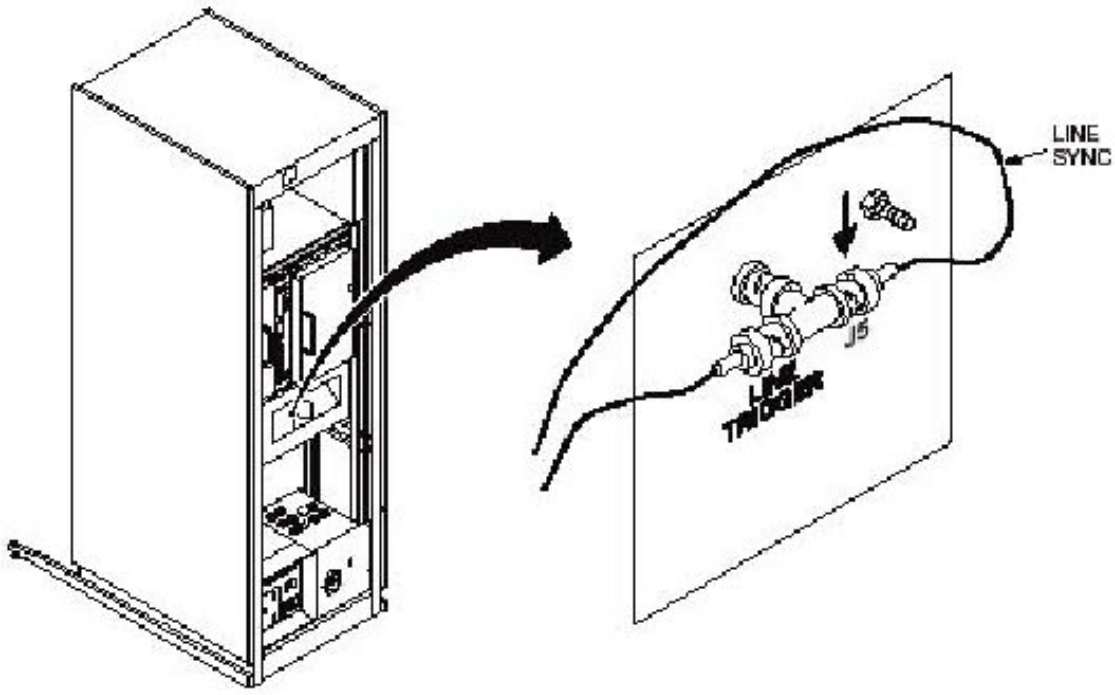
Figure 21 RF unblank connection



c. At MR2-PDU-J5 in the system cabinet, remove the existing cable and replace it with a BNC Tee.

d. Connect the existing cable and the MR2-PDU-J5 end of run X to the BNC Tee.

Figure 22 Line sync connection



e. Install the jumper plug on the back of the Tyme Board in position J5.

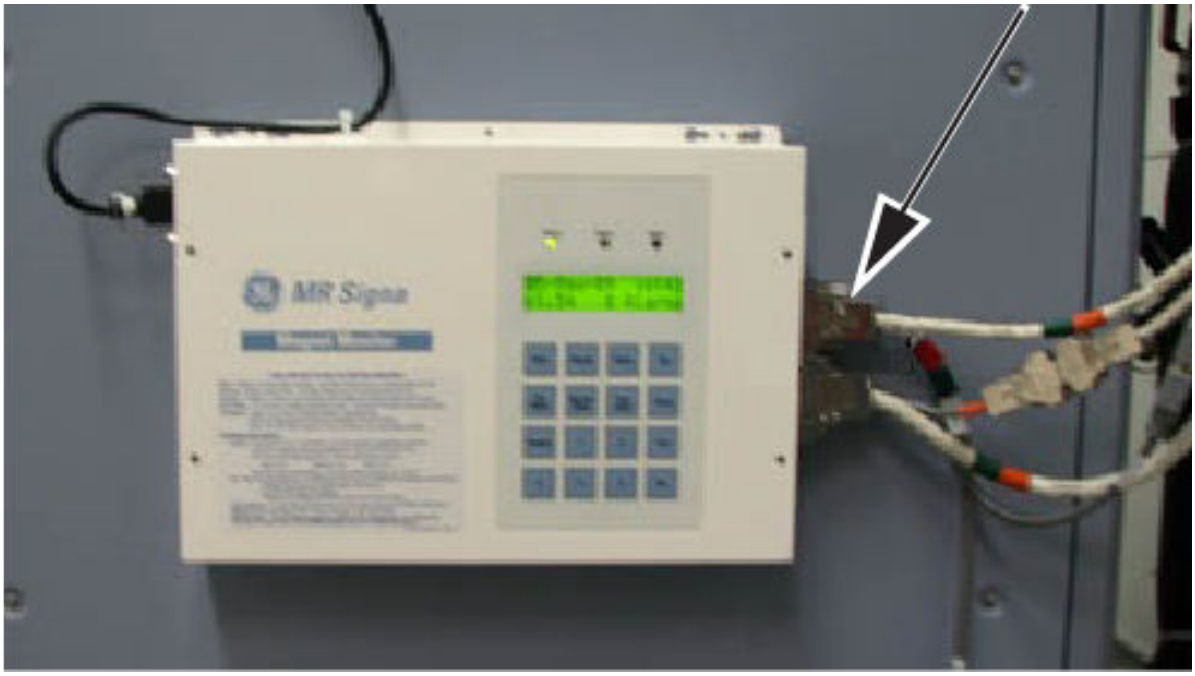
NOTE

This jumper plug eliminates the low helium message displayed on the console. Some of the early sites may not have the jumper plug. Pins 4 and 6 of Connector J5 (Cryomon) can be shorted on the Tyme Board to eliminate the message.

3.3.9 Connecting Magmon3 to system cabinet (MR750, MR450, and MR450w systems)

1. Connect the MON-J10 end of Run E3020 to Magmon3.

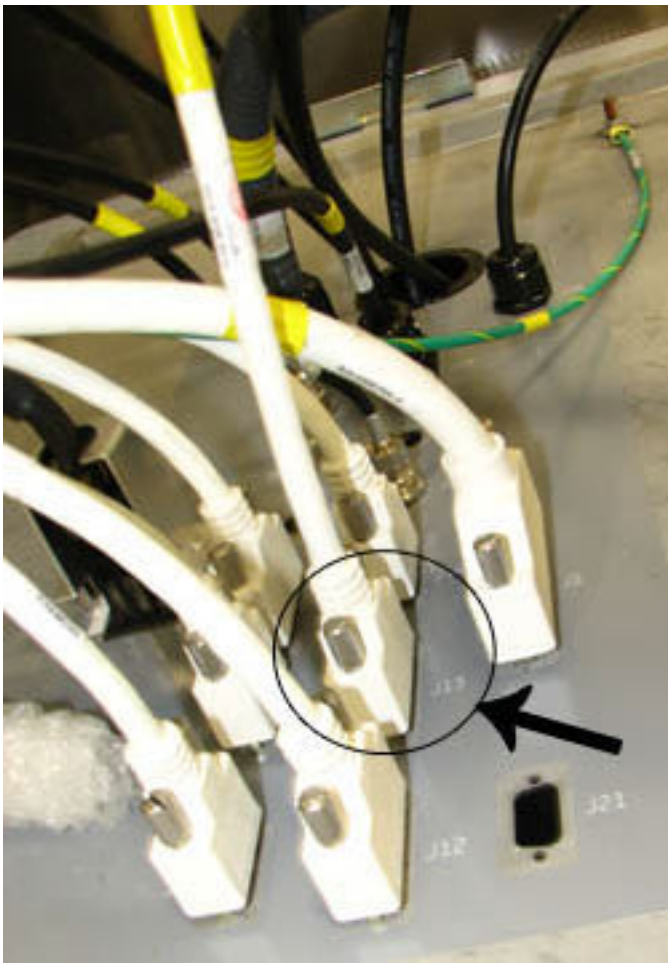
Figure 23 Connect MON-J10 to Magmon3



2. Route the cable to the interface panel at the top of the system cabinet/RF system cabinet.

3. Connect the PEN-J13 end of run E3020 to the interface panel.

Figure 24 Connect PEN-J13 to the interface panel



3.3.10 Installing Magmon3 UPS on HFO (optional for Twin and 3.0T)

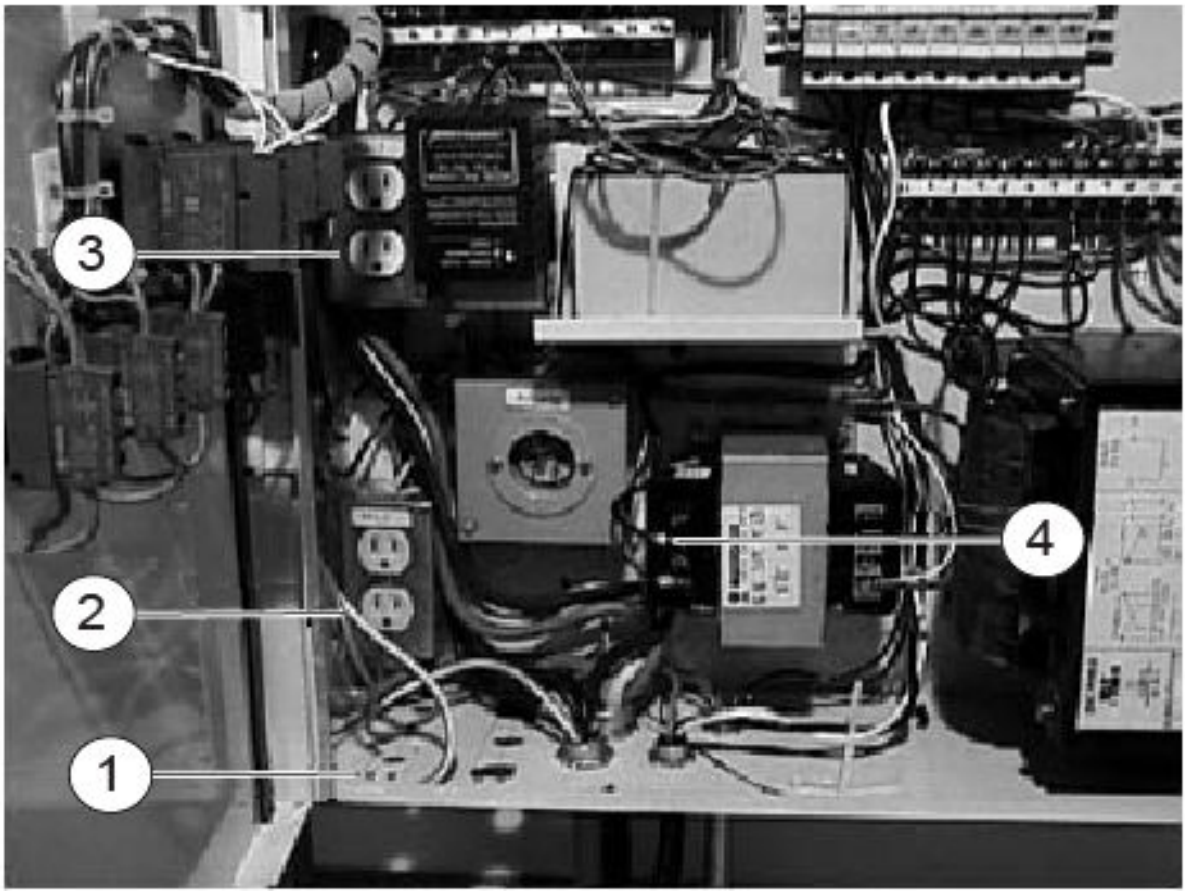
1. Remove the AC jumper between J1 and J2 in the Main Disconnect Panel (MDP).
2. Locate the ***UPS In*** and ***UPS Out*** labels.
3. Put the ***UPS In*** label over outlet ***J2*** and the ***UPS Out*** label over outlet ***J1***.
4. Put the UPS near the MDP and the Magmon.

5. Connect the power cable (provided with the UPS) to the MDP AC outlet labeled ***UPS Out***.

NOTE

The cable must be routed through the bottom of the MDP cabinet.

Figure 25 MDP connections



1	Holes for routing cables
2	Output to Magmon3
3	UPS In
4	Run 939 to UPS Out

6. Find cable Run 939 provided with the Magmon Cable Kit and connect it from the UPS output to the MDP AC outlet labeled ***UPS Input***.

NOTE

The AC outlet in the MDP is a male connector. The cable must be routed through the bottom of the MDP cabinet.

7. Connect the Magmon AC power cable to the MDP AC outlet labeled ***Magnet Monitor Output***.

   NOTE

   The cable must be routed through the bottom of the MDP cabinet.

8. Connect the customer phone line to the UPS phone in connection.
9. Connect the provided strain reliefs for the power cables routed through the MDP panel (included in the Magmon Cable Kit).

3.3.11 Installing the remote alarm box

The remote alarm box (optional for all other magnet types) is shipped with HFO 0.7T and the 7.0T Magmon3 Kits. See 1.1.1 Magmon3 component on page 1 for hardware specifications.

1. Refer to *Interconnect maps* and use the appropriate interconnect map for the magnet system on which you are working.
2. Choose an appropriate place on or near the operator workspace table for locating the remote alarm box.
3. Mount the remote alarm box in this location.
4. Route cable Run 915 from the Magmon3 to the remote alarm box.
5. Install the adapter cable Run 916 to Magmon3 J7.
6. Connect the other ends of the Run 916 as defined on the interconnect map.

3.4 Power up and helium level verification

3.4.1 Power up

1. Make sure all cabling and connections to the Magmon3, broadband (if network connection is used), and the magnet are correct.
2. Power up the Magmon3 by plugging the power cable into Magmon3 J2.

   NOTE

   If used, the UPS does not require a serial connection to the Magmon3. The Magmon3 monitors magnet parameters to determine if power is lost.

3.4.2 Verifying helium level

No calibration is required, but the helium reading verification check should be done every year. Make sure the Magmon3 helium level reading is tracking properly by doing the following tasks:

1. Obtain the helium meter calibration box.
2. Observe the helium readings for the vessel.

3. Disconnect the helium level cable (located on the magnet interconnect box) from the magnet.
4. Connect the helium meter calibration box to the cable going to P302-Upper and adjust the resistance on the helium meter calibration box to the resistance/helium values.

Table 2 Resistance/helium specifications

Resistance	Value nominal	Value specification
0 ohms	100%	98 to 100%
230 ohms	66.4%	63.4 to 69.4%
460 ohms	32.7%	29.7 to 35.7%
686 ohms	0.0%	0 to 3%

5. Press ***Sample*** on the Magmon.
6. Make sure the helium reading is within the resistance/helium value specifications.
7. For noncompliant devices, replace the unit.

Page intentionally left blank

Chapter 4 Interconnect maps

4.1 Interconnect maps

Figure 26 LCC 1.5T/3.0T - fixed/transportable/relocatable

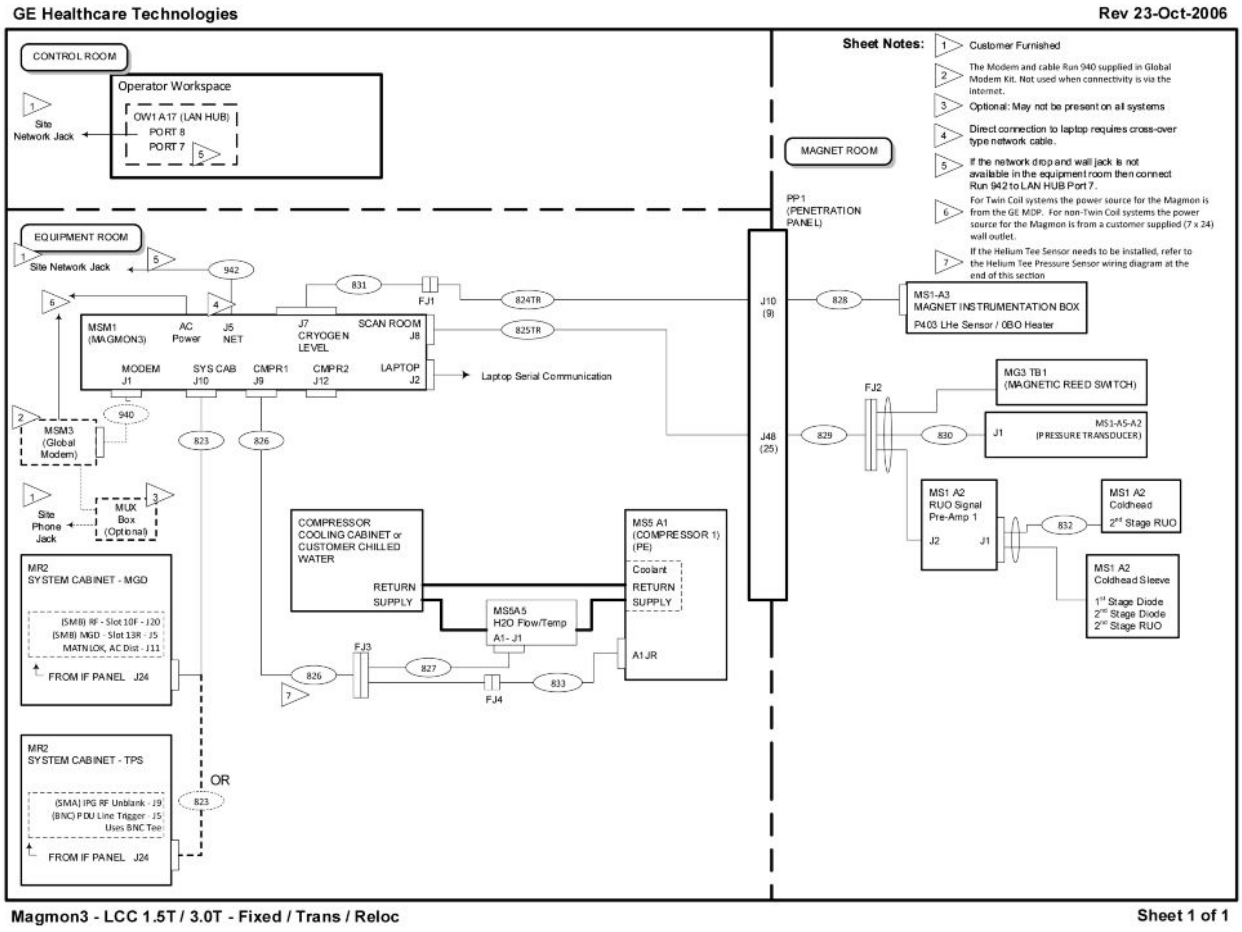


Figure 27 LCC 1.0T/1.5T - mobile van

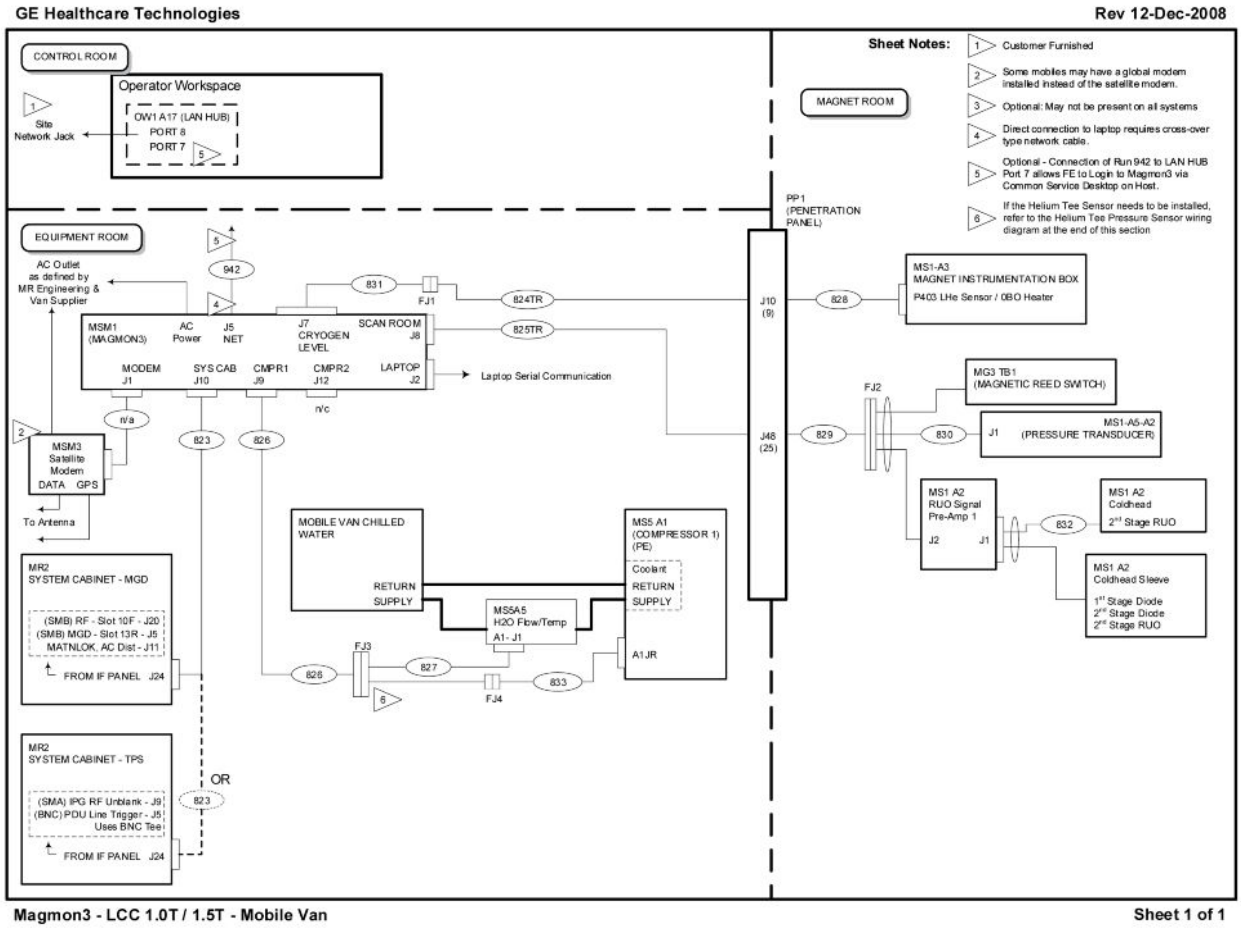


Figure 28 HFO 0.7T - fixed

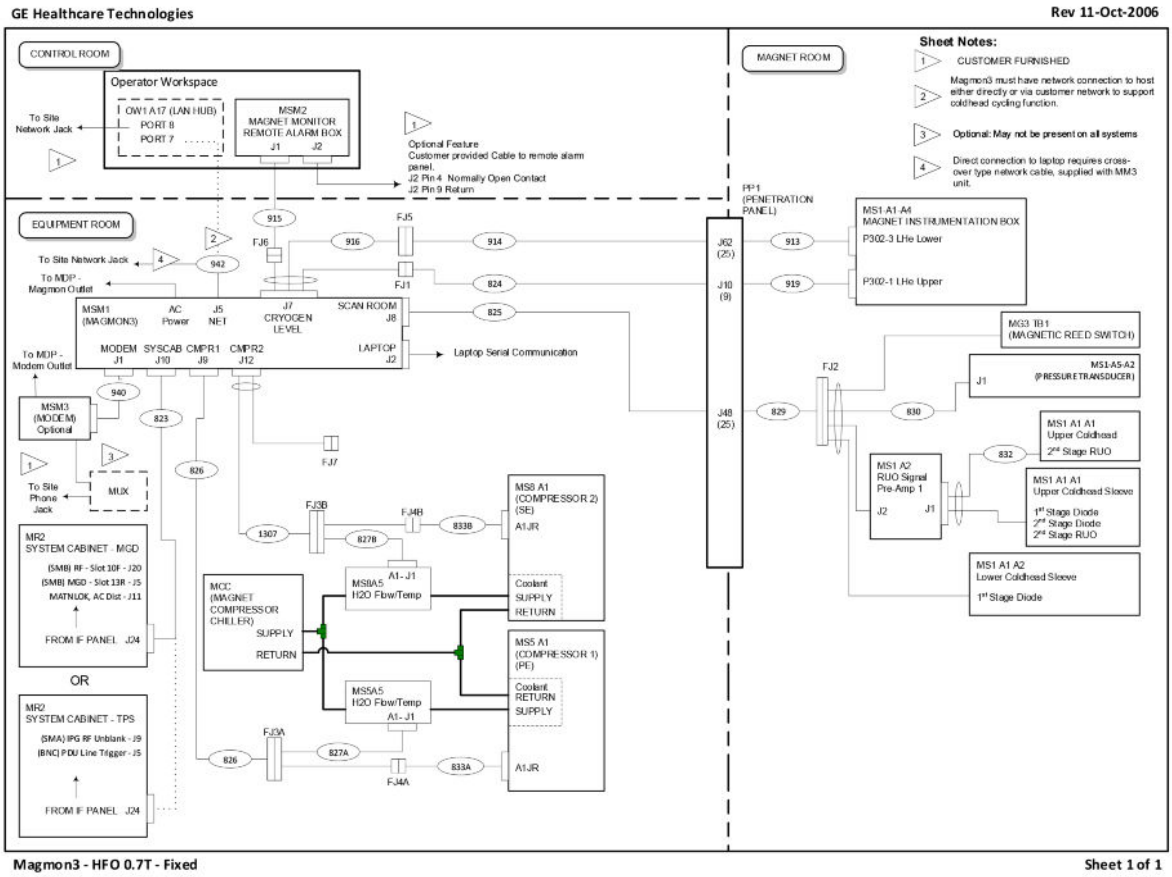


Figure 29 S series and CX - 1.5T/1.0T fixed/transportable/relocatable

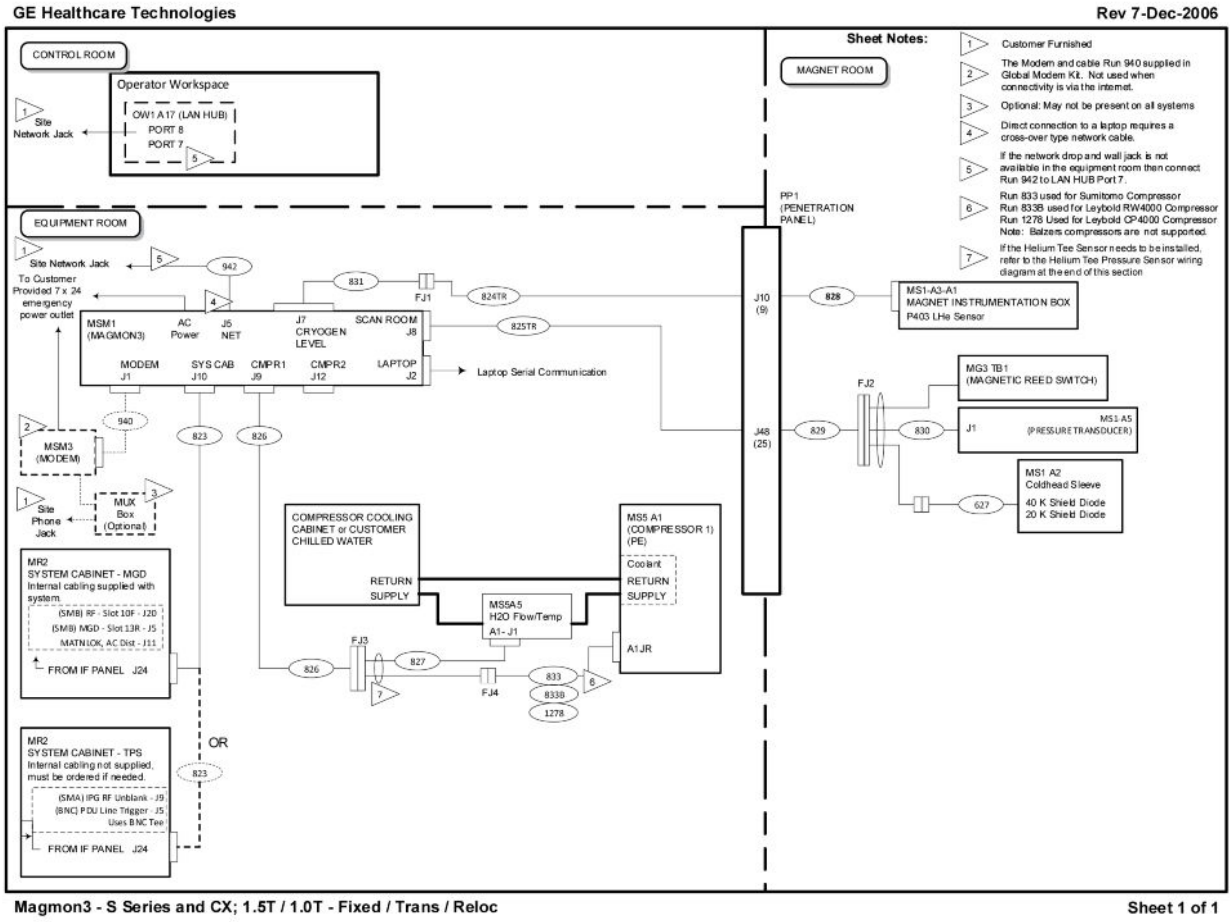


Figure 30 SX and CX - 1.0T/1.5T mobile van

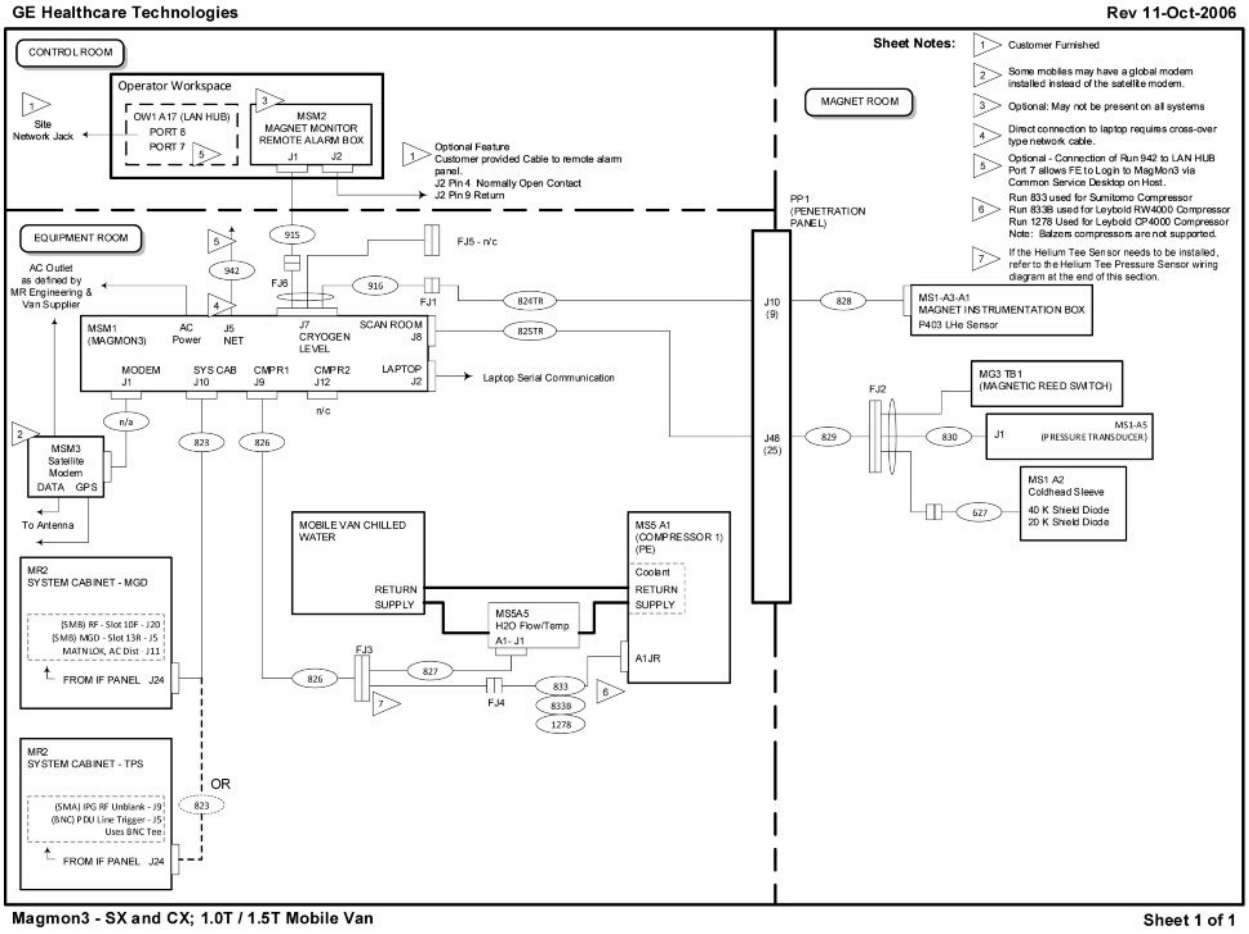


Figure 31 GEMSO 7.0T - forward production

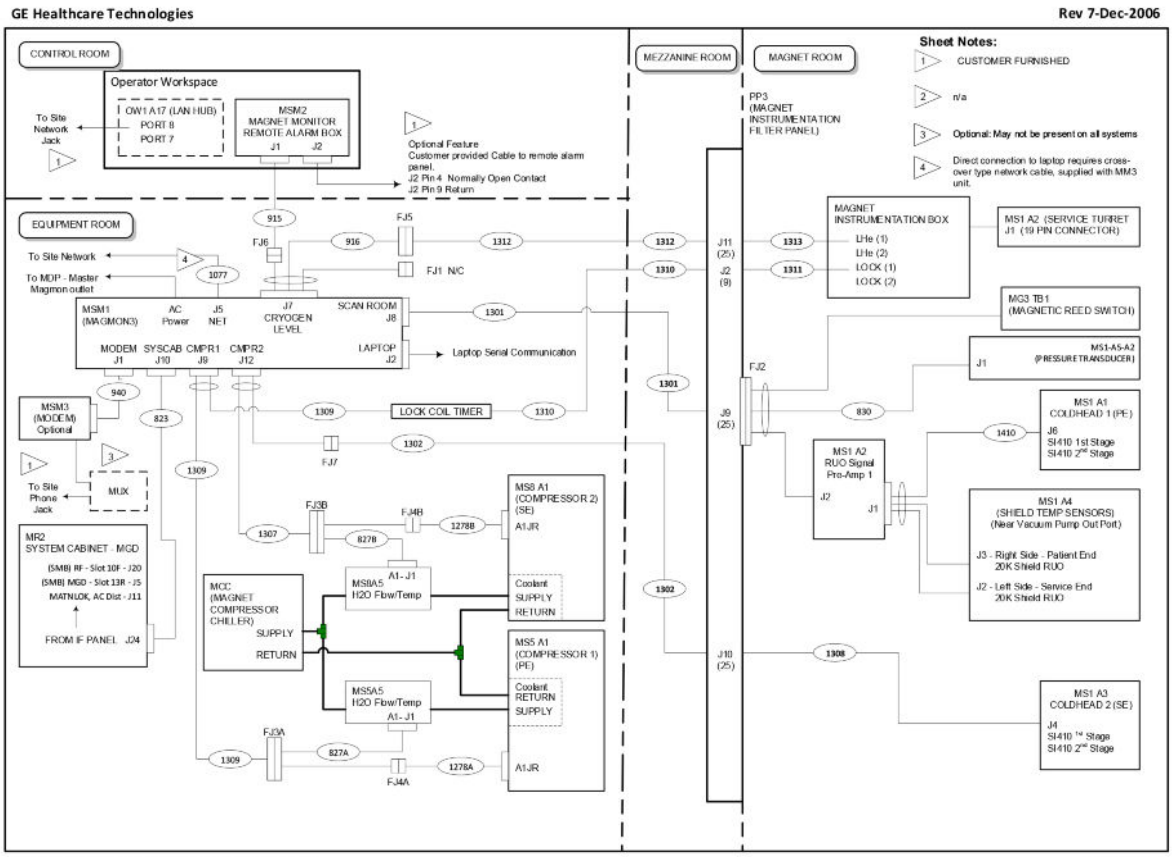


Figure 32 SIGNA 0.5T max - fixed/transportable/relocatable

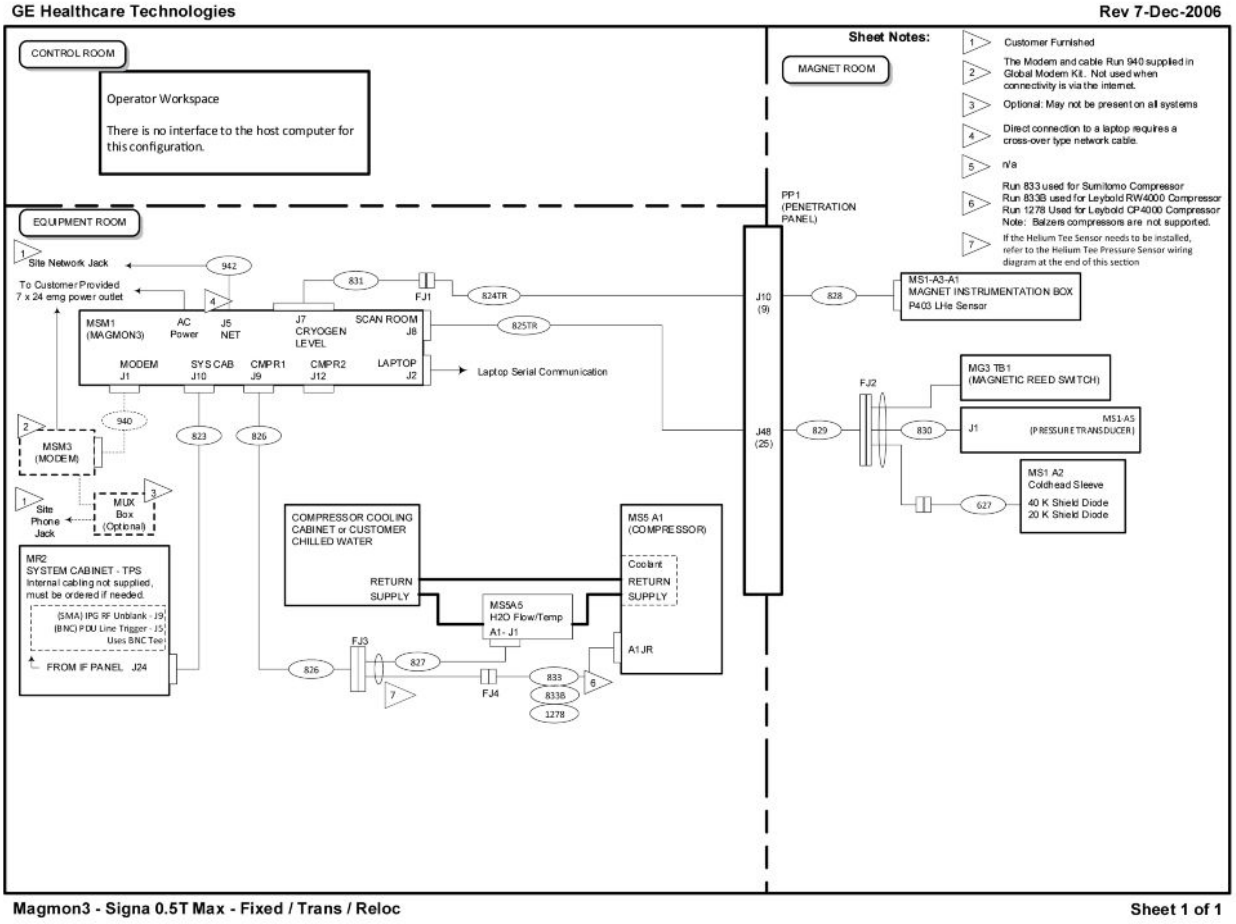
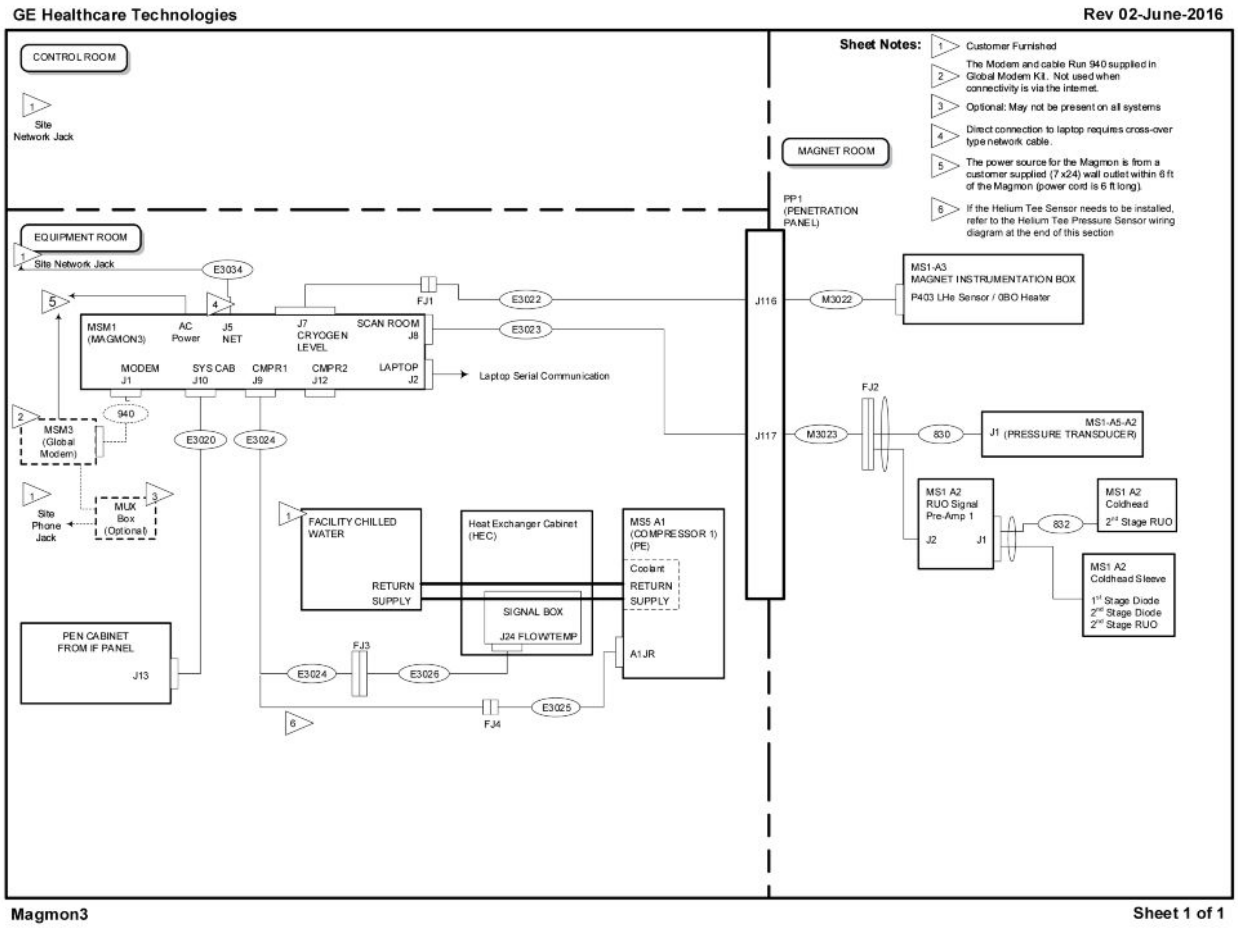


Figure 33 DV, Voyager, and Pioneer

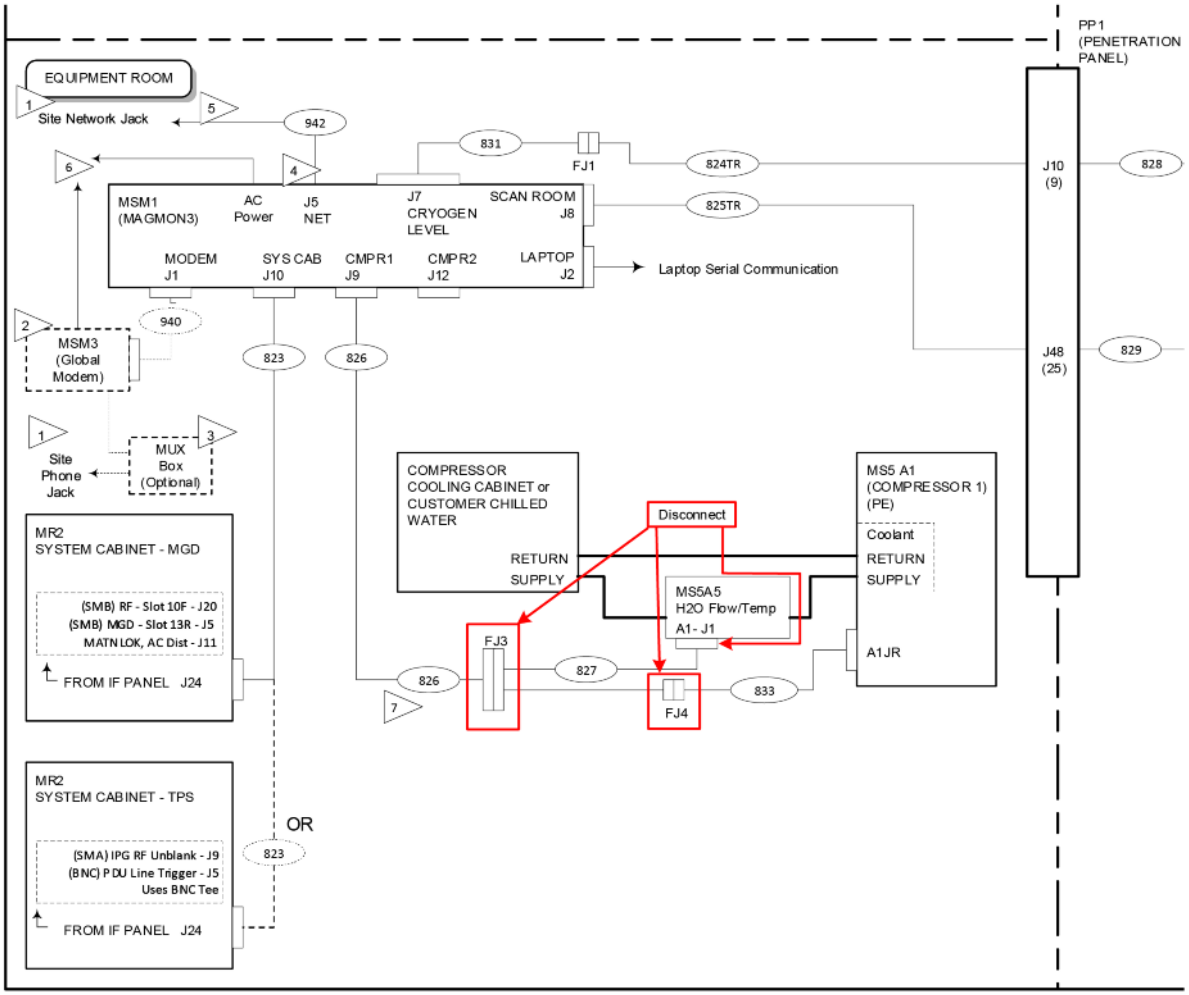


Helium tee pressure sensor wiring diagram

If you are installing the helium tee pressure sensor, do the following:

1. **(For HD)** Disconnect the existing Magnet Monitor pigtail cable and install the new cable.

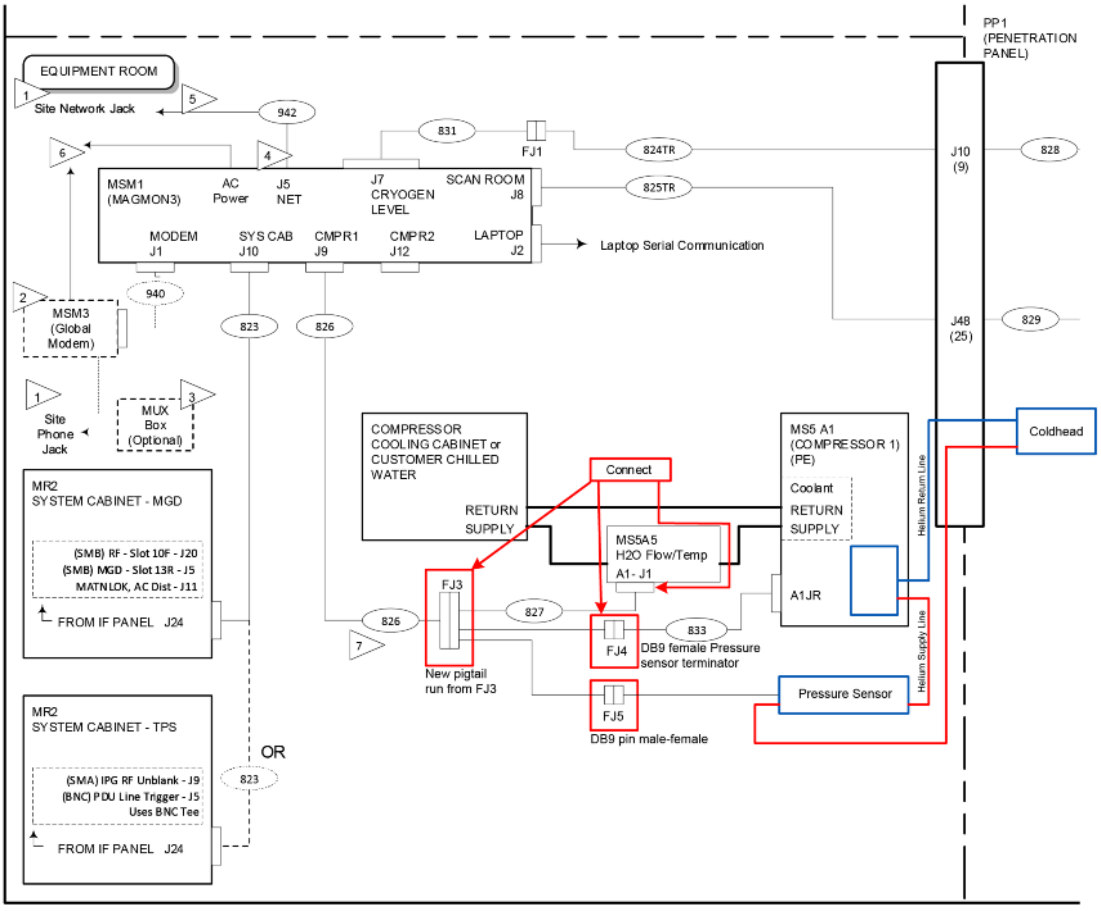
Figure 34 (For HD) Disconnecting the pigtail cable



a. Disconnect cable Run 827 at FJ3, FJ4, and the water flow and temperature sensor.

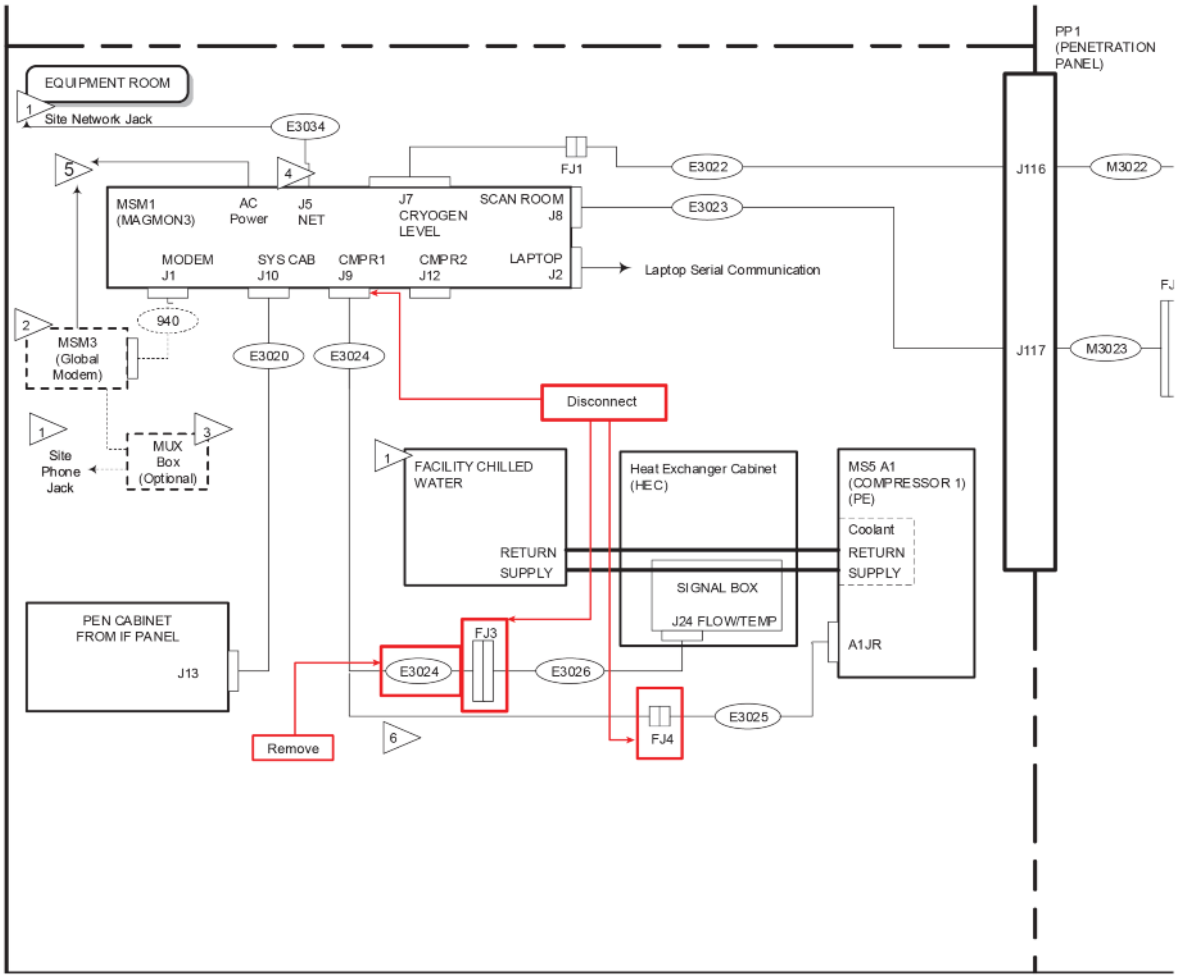
b. Install the new pigtail cable supplied with the kit as shown below.

Figure 35 (For HD) Connecting the pigtail cable



2. **(For DV)** Disconnect the existing Magnet Monitor pigtail cable and install the new cable.

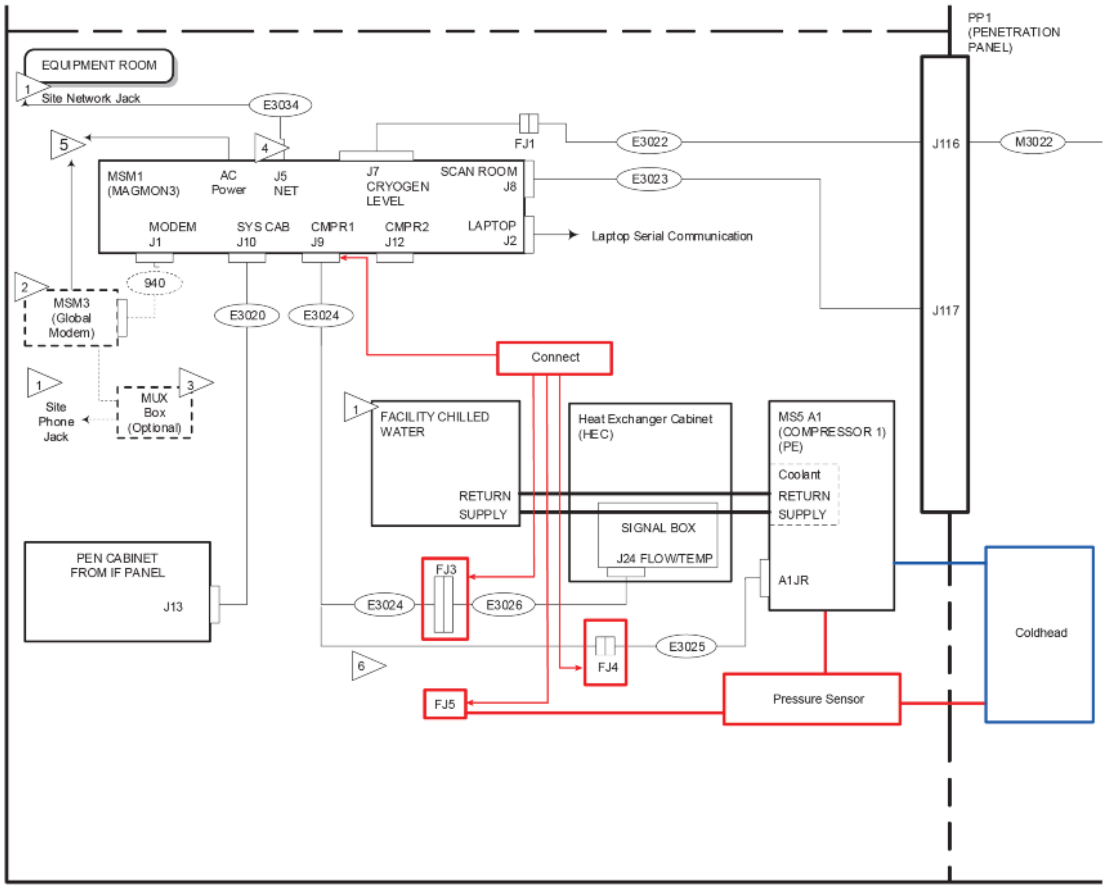
Figure 36 (For DV) Disconnecting the pigtail cable



a. Disconnect cable Run E3024 at FJ3, CMPR1 at J9, and FJ4.

b. Install the new pigtail cable supplied with the kit as shown below.

Figure 37 (For DV) Connecting the pigtail cable



Chapter 5 Front panel user interface

5.1 Magmon3 front panel user interface

5.1.1 Introduction

The front panel of the Magmon3 unit is made up of the following elements:

- LEDs showing AC power, heater activity, and alarm activity.
- LCD display for user interaction.
- 16-button softkey pad.

This user interface provides easy access and viewing of the software revision, date/time, real-time sensor data, and fault codes. Other features include the setting of Fill modes and Service modes through predefined access codes.

Figure 38 Magmon3 front panel user interface

5.1.2 Using the Magmon3 front panel

5.1.2.1 Softkey buttons

Alarms

Pressing ***Alarms*** causes the Magmon3 to show a list of current fault codes. Press ***Up*** and ***Down*** to scroll through the list of items. You can only update items in this list by exiting from the Alarm menu and then re-entering the menu. The ***Alarm*** LED is lit if there are any fault codes to view.

NOTE

The Magmon3 tracks potential faults over a 10-minute period before the software activates the ***Alarm*** LED and updates the fault codes to minimize false reporting due to noisy transients.

Call InSite

Pressing ***Call InSite*** causes the Magmon3 to immediately connect to InSite and upload any unsent data. Press ***Yes*** to confirm the action.

NOTE

This is only applicable to systems that are remotely monitored while on a GE service contract.

Data

Pressing ***Data*** causes the Magmon3 unit to show a list of sensor parameters and real-time data. Press ***Up*** and ***Down*** to scroll through the list of items. A single item can be displayed indefinitely and the Magmon3 will update that value (except for the He level) once per minute.

NOTE

Leaving the He level parameter on the page will not force the Magmon3 to sample a new He level value each minute. You must press ***Sample*** to get a single reading or put the device in Fill mode to obtain a sample every minute.

NOTE

Cycling through the ***Data*** button entries will show the current IP address and InSite2 connection status.

Home

Pressing ***Home*** puts the display into normal operating mode. In this mode, the display will cycle through the following information.

NOTE

When you complete another operation, it is best to return to the Home display.

Table 3 Home display

Page	Display	
1	Date	Time
	Software revision	Number of alarms
2	He level	
	x.xx%	
3	He pressure	
	x.xxx psi	

Sample

Pressing ***Sample*** causes the Magmon3 to initiate a helium level sample and read the current helium level. It may take up to 90 seconds to update the display for the new level(s).

5.1.2.2 Fill mode

Pressing ***Fill Mode*** allows you to select one of three options: ***Pre-Fill Mode***, ***Fill Mode***, or ***Ramp Mode***. The password for all Fill mode selections is **1524**.

5.1.2.2.1 Pre-Fill mode

Pre-Fill mode is used for LCC-type magnets prior to a helium fill. This option will change the pressure control settings that are used for heater cycling. The end result is the magnet's helium vessel pressure is reduced from 4 psi down to approximately 1.0 psi as long as the cryogen cooler cabinet coldhead and recondensor are functioning normally.

NOTE

Pre-Fill mode will run for up to 7 days.

If you press ***Fill Mode*** before the time period expires, Pre-Fill mode is automatically exited and the Fill mode functions take over.

If the time period expires or you intentionally exit Pre-Fill mode using the soft keypad, the software will automatically put heater cycling into a post-fill operation. During post-fill, the operating parameters for pressure control are changed and the heater will be activated for an extended period of time, allowing the magnet's helium vessel pressure to return to its normal operating state. When in post-fill, heater cycling will not activate any heater alarms for 48 hours.

NOTE

Pre-Fill mode should only be used for LCC, LCC-RD, LCC-RB, DVw, and LCC300 magnet types.

5.1.2.2.2 Fill mode

Fill mode performs the following functions:

- Exits Pre-Fill mode (if necessary).
- Disables the pressure control function for heater cycling (for LCC and HFO magnets).
- Initiates a helium level sample once every minute and refreshes the LCD display information.

You must select and initiate Fill mode before inserting the fill line stinger into the magnet. When the filling operation is complete, you will exit the Fill mode option and the software will automatically go into a post-fill operation. During post-fill, the operating parameters for pressure control are changed and the heater will be activated for an extended period of time, allowing the magnet's helium vessel pressure to return to its normal operating state. When in post-fill, heater cycling will not activate any heater alarms for 48 hours.

5.1.2.2.3 Ramp mode

Ramp mode does the following functions:

- Sets Magmon3 to Fill mode code 4.
- Shows the Ramp mode message on the front display.
- Holds the magnet pressure at 2.0 PSI and samples helium level every 20 minutes.
- Ramp mode times out after 10 hours.

You must select and initiate Ramp mode before inserting the ramp probes into the magnet. When the magnet ramping is completed, exit Ramp mode option. During post-fill, the operating parameters for pressure control are changed and the heater will be activated for an extended period of time, allowing the magnet's helium vessel pressure to return to its normal operating state. When in post-fill, heater cycling will not activate any heater alarms for 48 hours.

5.1.2.3 Service mode

Pressing ***Service Mode*** allows you to select one of these options:

- Web mode for configuration setup of the unit, using either a DHCP address (same IP) or a fixed IP address.
- Service mode (for GE Service only).

5.1.2.3.1 Web mode

You must put the Magmon3 into Web mode to use the configuration tool's web interface. Any user, whether a GE employee or not, can connect and log on to the interface with a laptop or the system host computer. Once you are logged in, the configuration settings of the Magmon3 can be changed and saved.

When you press ***Service Mode***, you must know what form of Web mode to enter. Pressing ***Service Mode*** repeatedly will cycle the display through these options:

- Web mode - Same IP: Magmon3 connected to a network and configured as DHCP or a pre-configured static IP address.
- Web mode - Fixed IP: Enables the web interface and forces the Magmon3 IP address to 192.168.0.1.

Press ***Yes*** when the correct option is shown to place the Magmon3 in Web mode. No password entry is required.

NOTE

The unit will remain in Web mode for 45 minutes, after which time it will terminate the connection. Web mode will also be terminated if the AC power to the unit is cycled off, then on.

When you are in Web mode, press ***Data*** repeatedly until the IP address is displayed. Write the address down, since you will need it when setting up your laptop or host computer to connect to the unit.

When you are in Web mode, you can now attempt to connect to the unit. See 6.1 Connecting to Magmon3 with a laptop on page 75.

Page intentionally left blank

Chapter 6 Laptop connection

6.1 Connecting to Magmon3 with a laptop

6.1.1 Connecting through the building network

This procedure is used to log on to Magmon from the service browser on the customer's scanner or from a laptop attached to the customer's network.

Required conditions
Magmon3 was previously configured for network operation using a direct connection between this device and a laptop.
Magmon3 has been successfully communicating over the building network.
Magmon3 is connected to the building network through Magmon3 - J5 port.

1. Find the IP address assigned to the Magmon3 by pressing ***Data*** then ***Up*** repeatedly until the IP address appears.
2. Write down the IP address for use later.
3. Press ***Service Mode*** repeatedly until the display shows ***Start Web Mode? (Yes/No) Same IP***.
4. Press ***Yes*** to activate Web mode.
5. Connect the laptop to the building network using a CAT5-type network cable.
6. Open a web browser session on the laptop.
7. Type the Magmon3's IP address (recorded earlier) into the laptop browser's address bar and click ***Go***.

   Figure 39 Go button

   The browser should display the ***Magmon3 Service Login*** page.

See 7.1 Logging on to Magmon3 on page 93.

6.1.2 Connecting a direct network cable to a laptop and Magmon3 using Windows 7

Use this procedure for this condition:

- First-time setup of the Magmon3.

Required conditions
Laptop connected directly to Magmon3 - J5 port using a crossover CAT5-type network cable.

1. On the laptop's desktop, right-click on ***My Network Places***.

   Figure 40 My Network Places button

2. Select ***Properties*** from the menu.

   The ***Network Connections*** window opens.

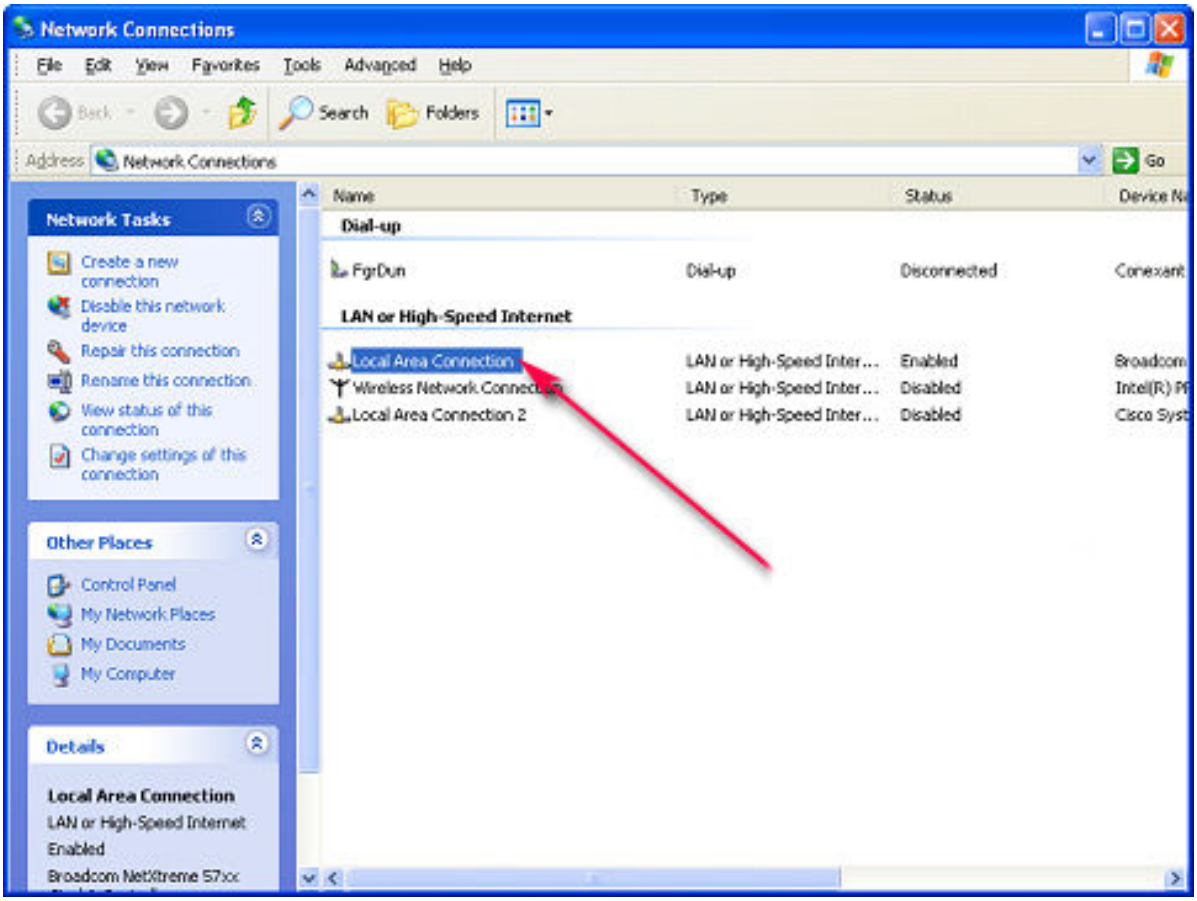
3. If the wireless network connection is enabled, right-click on ***Wireless Network Connect*** and select ***Disable***.

4. Double-click ***Local Area Connection***. The ***Local Area Connection Status*** window opens.

   NOTE

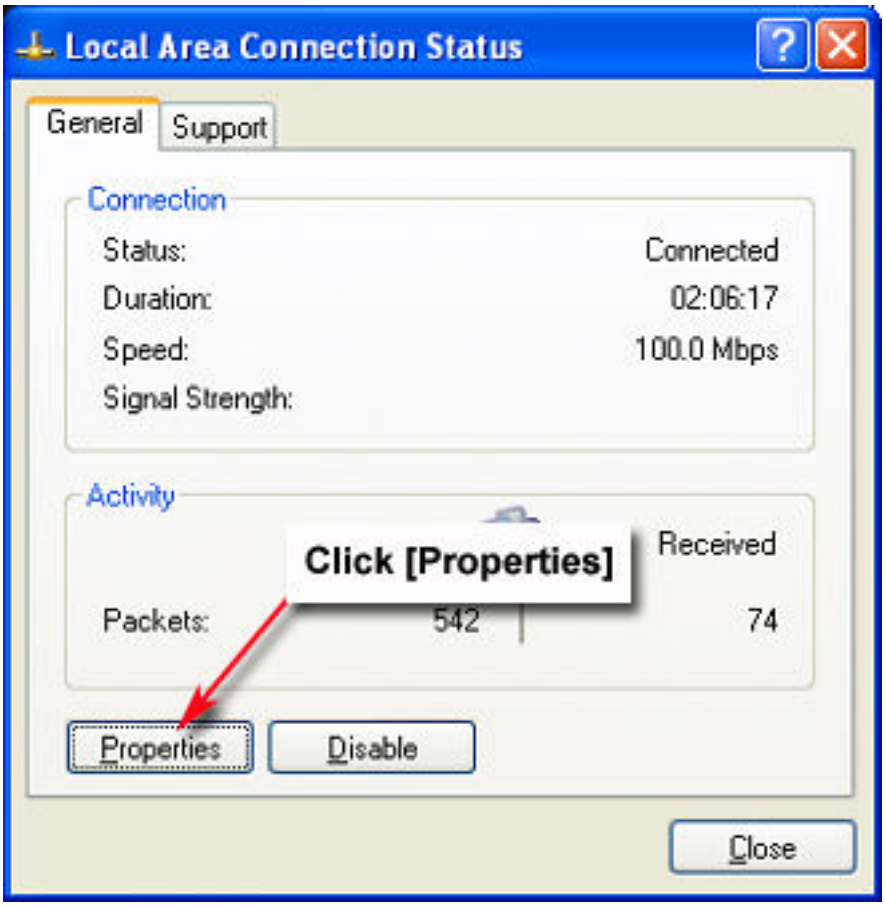
   Depending on the laptop's configuration, the ***Local Area Connection Properties*** window may appear. See Figure 43 on page 79. If it does, proceed to Step 6 on page 78.

Figure 41 Local Area Connection option



5. Click ***Properties*** to open the ***Local Area Connection Properties*** window.

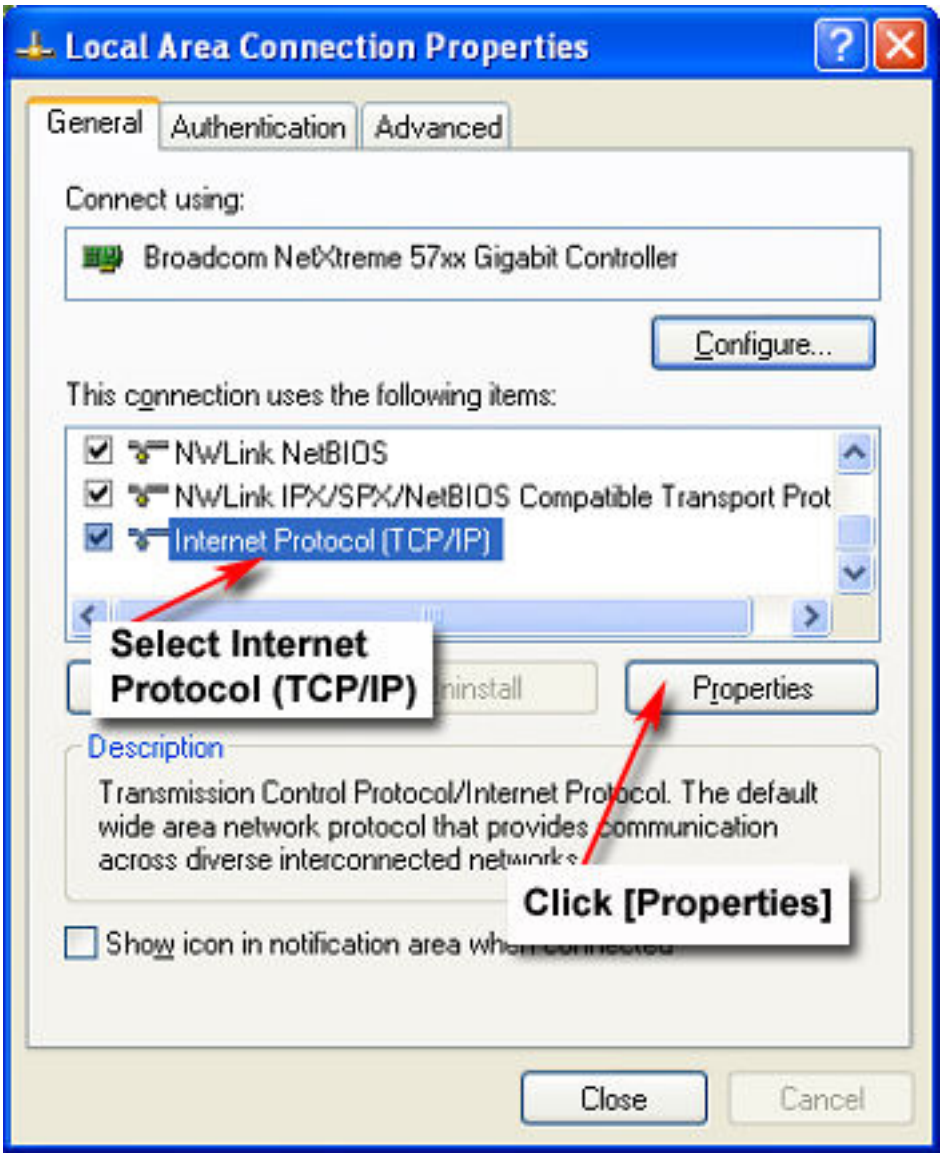
Figure 42 Properties button



6. Select ***Internet Protocol (TCP)/IP).***

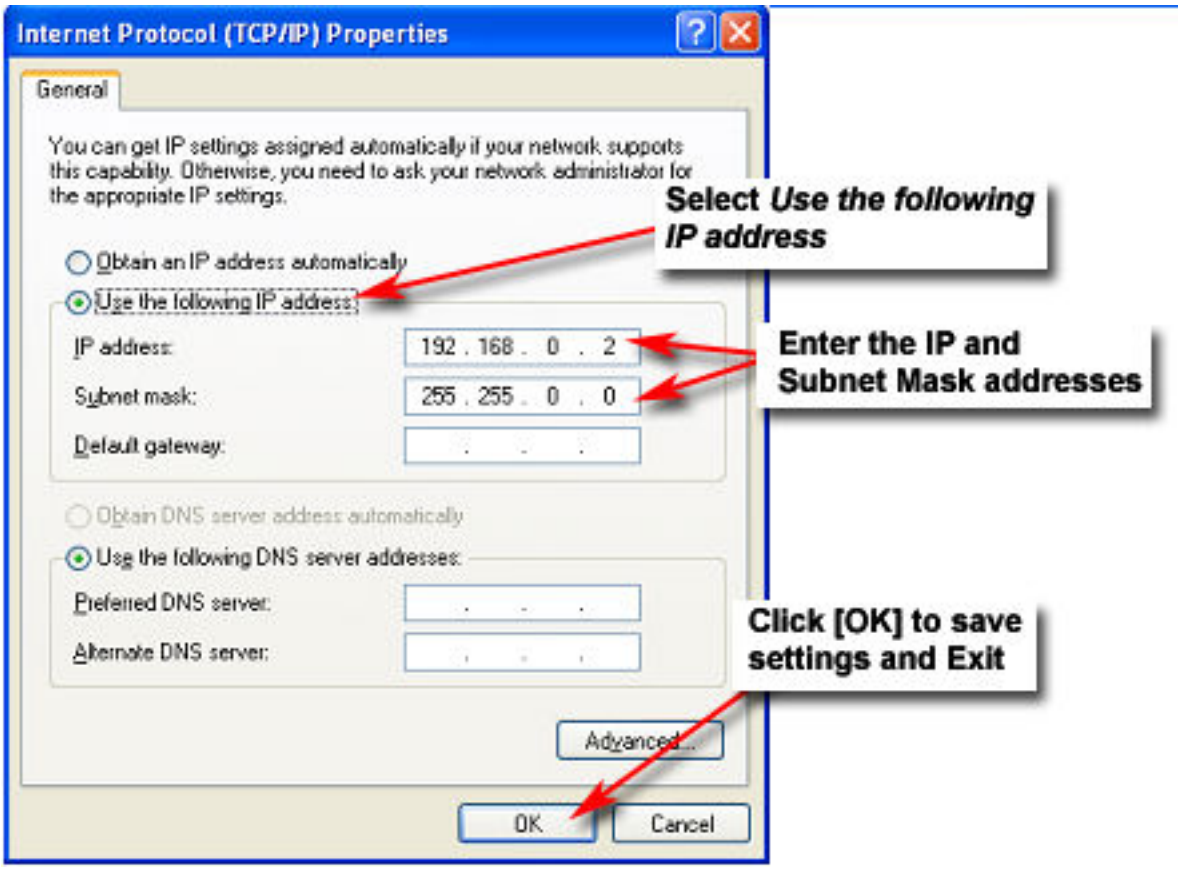
7. Click ***Properties***. The ***Internet Protocol Properties*** window opens.

Figure 43 Local Area Connection Properties window



8. In the ***Internet Protocol (TCP/IP) Properties*** window, select ***Use the following IP address***.

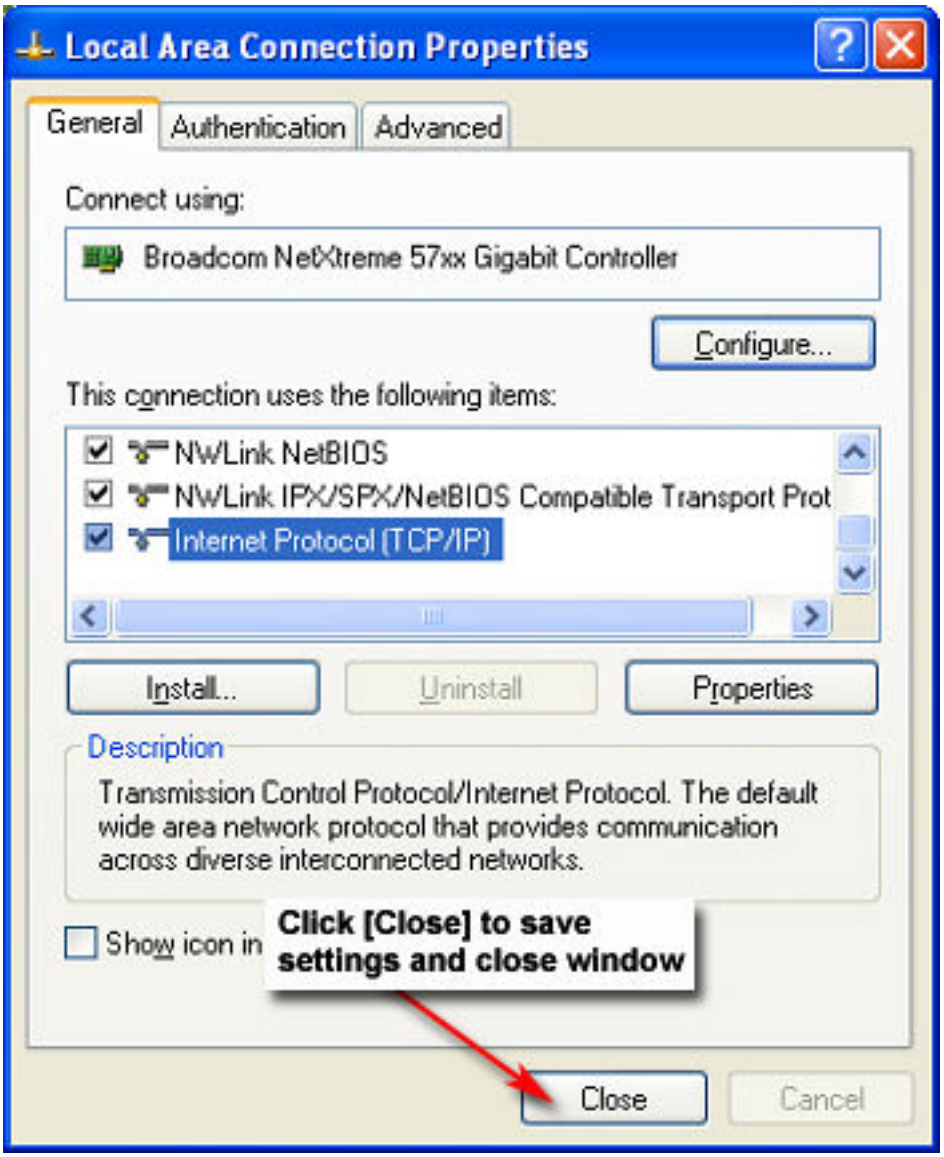
Figure 44 Internet Protocol Properties (TCP/IP) window



9. Enter the following information:
   - ***IP address***: `192.168.0.2`
   - ***Subnet mask***: `255.255.0.0`
10. Click ***OK*** to save settings and exit.

11. Click ***OK*** or ***Close*** to save the new local area connection properties. This may take a few minutes.

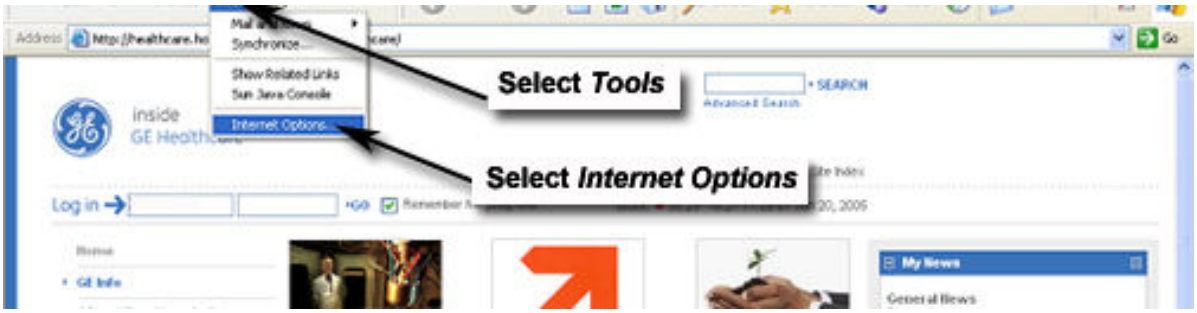
Figure 45 Close Local Area Connection Properties window



12. Make sure to close the ***Local Area Connection Status*** window.
13. From the laptop's desktop, launch Internet Explorer.

14. In Internet Explorer, select ***Tools*** > ***Internet Options***.

Figure 46 Internet Explorer menu selections



15. In the ***Internet Options*** window, click the ***Connections*** tab.

Figure 47 Internet Options window - Connections tab

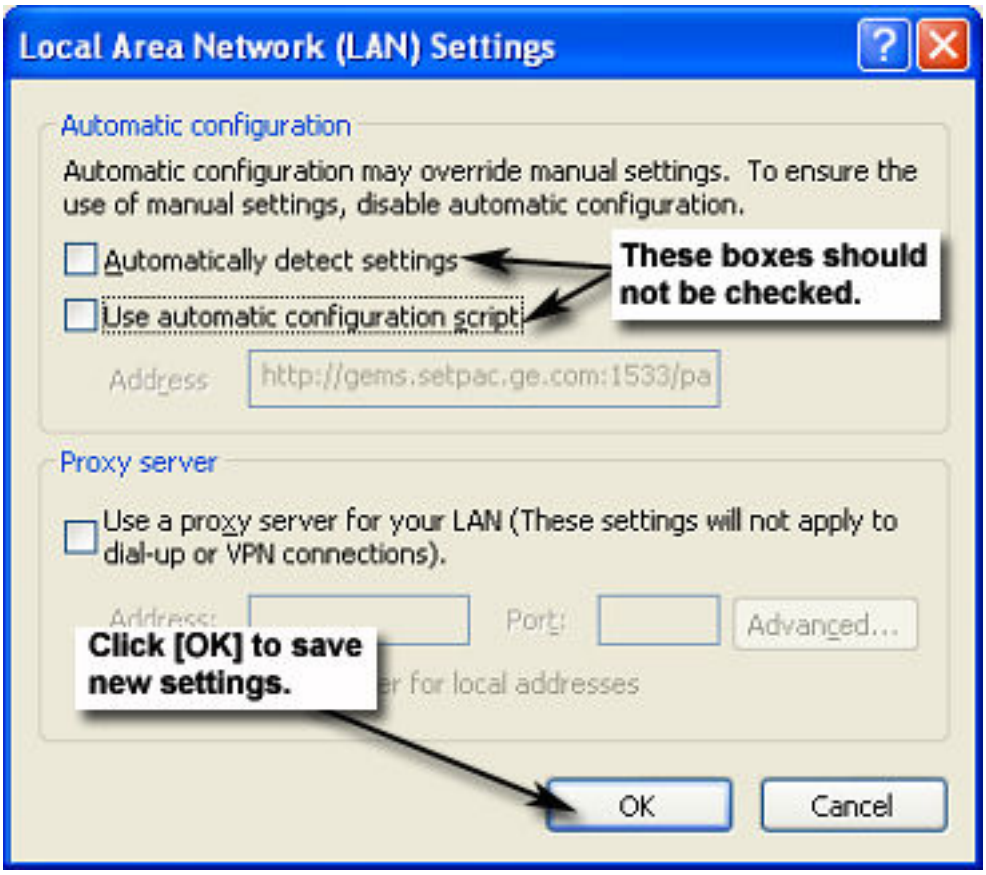
16. Click ***LAN Settings***.

Figure 48 LAN Settings button

17. When the ***Local Area Network (LAN) Settings*** window opens, make sure the ***Automatically detect settings*** and ***Use automatic configuration script*** options are not selected.

18. Click ***OK*** to save the LAN settings.

Figure 49 Local Area Network (LAN) Settings window



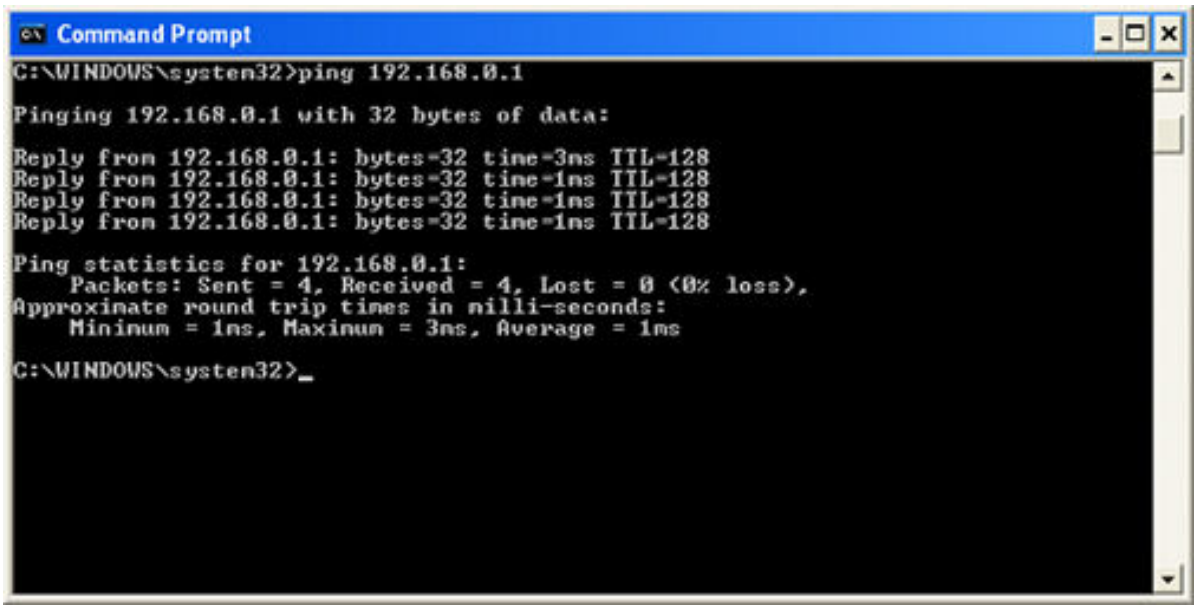
19. Click ***OK*** to save all settings and close the ***Internet Options*** window.
20. On the laptop, click ***Start***.
21. Enter **CMD** to open a ***Command Prompt*** window.

NOTE

As an alternative, click ***Start*** and select ***All Programs*** > ***Accessories*** > ***Command Prompt***.

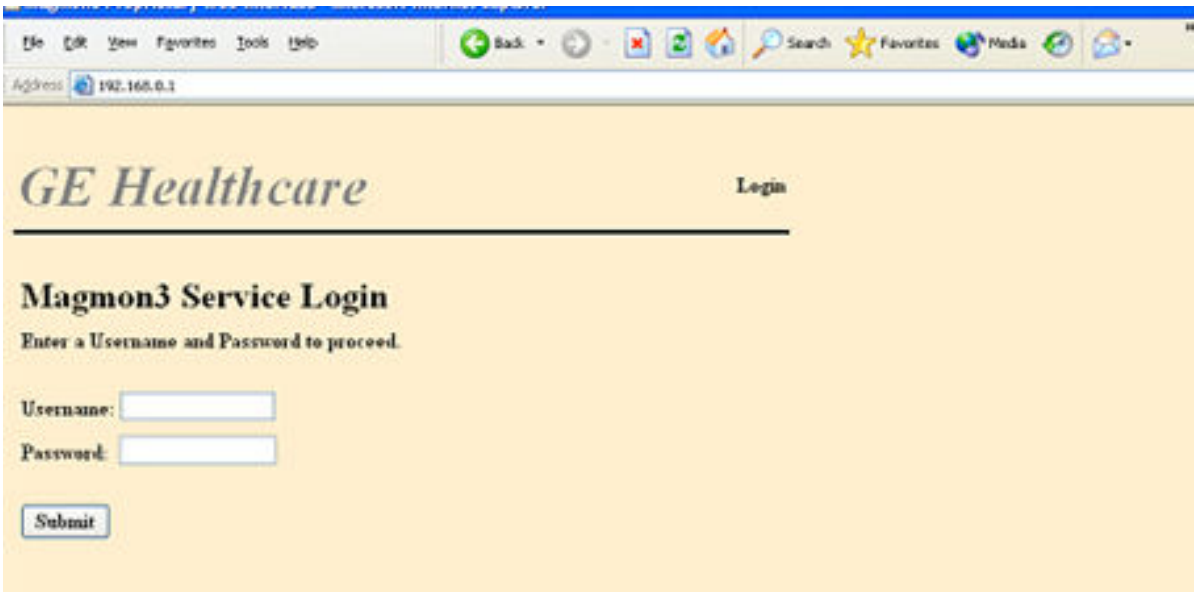
22. Type **`ping 192.168.0.1`** and press ***Enter***. If the Magmon3 unit responds, close the ***Command Prompt*** window and proceed to the next step. If not, recheck your settings.

Figure 50 Command Prompt window



23. Return to Internet Explorer.
24. Enter the Magmon3's IP address **`192.168.0.1`** in the ***Address*** field.
25. Click ***Go***. The ***Magmon3 Service Login*** window appears.

Figure 51 Magmon3 Service Login window



Review log on modes for further instructions. See 7.1 Logging on to Magmon3 on page 93.

6.1.3 Connecting a direct network cable to a laptop and Magmon3 using Windows 10

Use this procedure for this condition:

- First-time setup of the Magmon3.

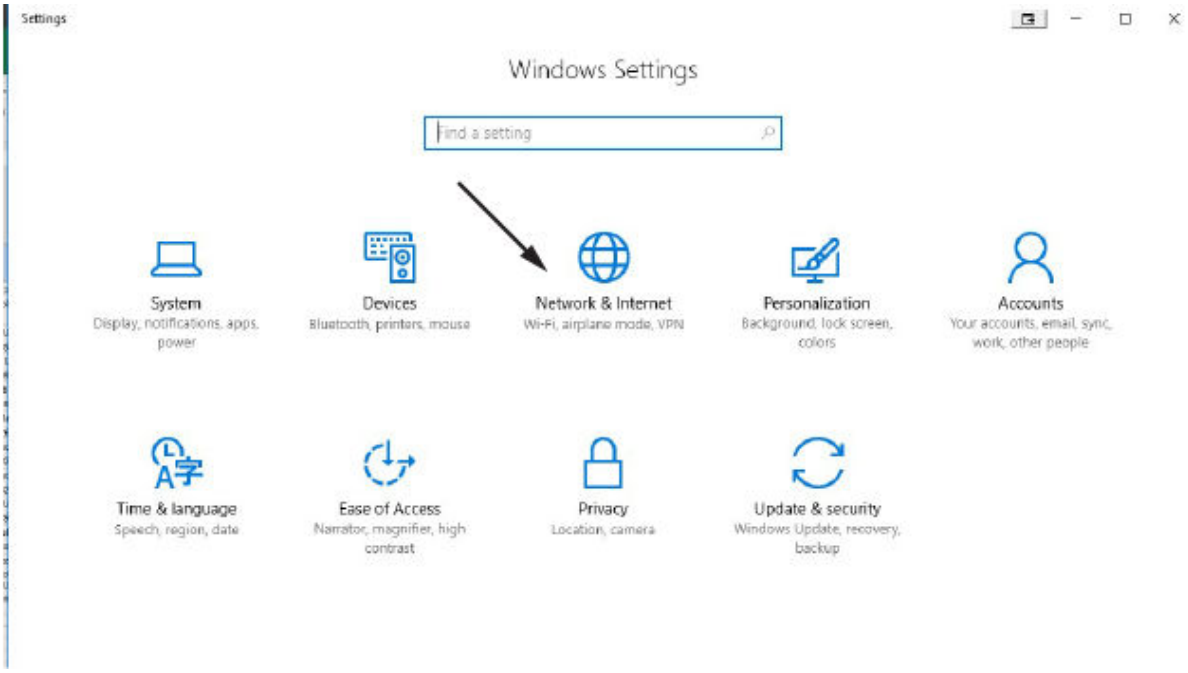
Required conditions
Laptop connected directly to Magmon3 - J5 port using a crossover CAT5-type network cable.

1. Click the ***Settings*** icon.

Figure 52 Settings icon

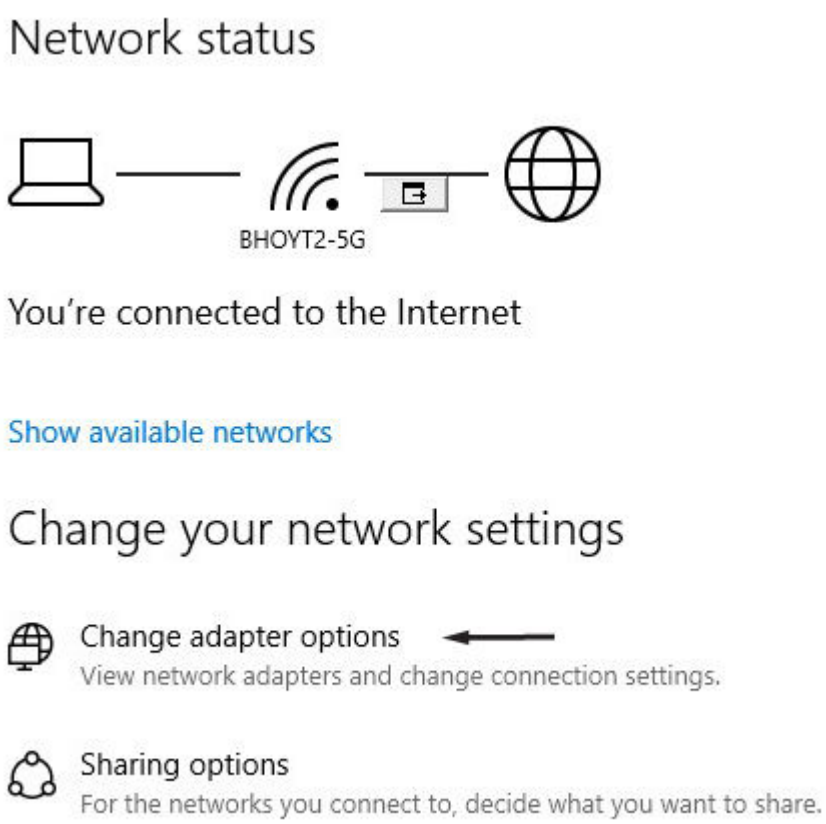
2. On the ***Windows Settings*** page, click ***Network & Internet***.

Figure 53 Windows Settings - Network & Internet option



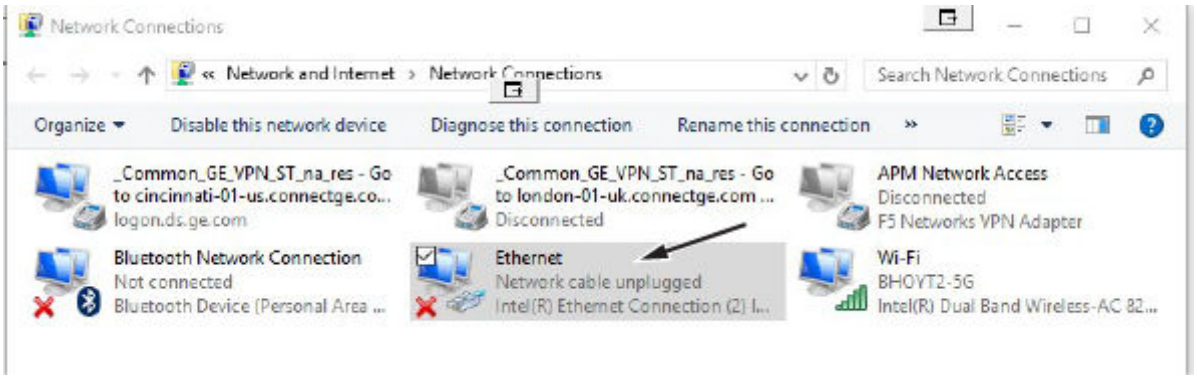
3. Double-click ***Change adapter options***.

Figure 54 Network status - Change adapter options



4. Double-click ***Ethernet***.

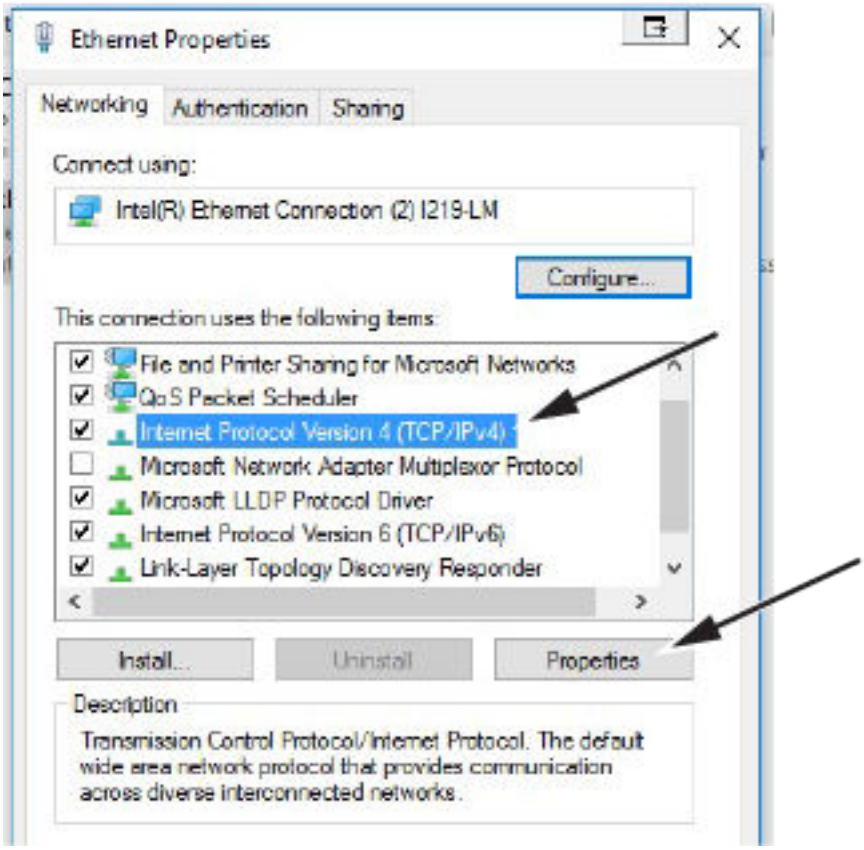
Figure 55 Network Connections - Ethernet option



5. Select ***Internet Protocol Version 4 (TCP/IPv4)***.

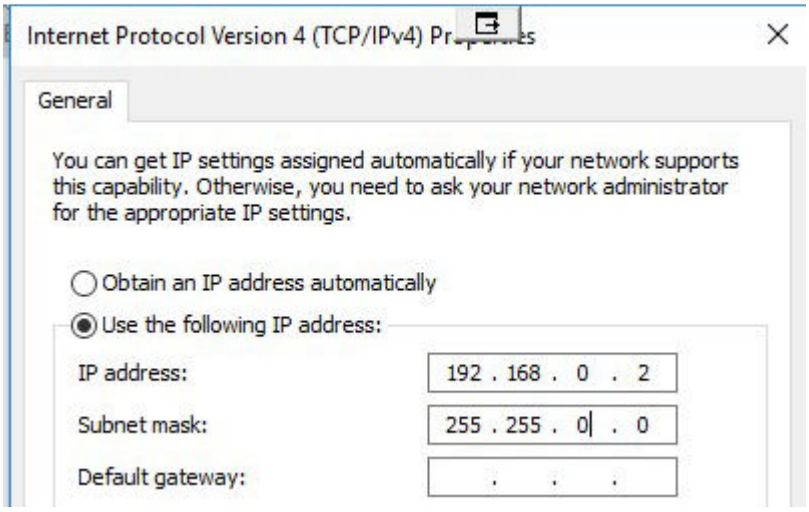
6. Click ***Properties***.

Figure 56 Ethernet Properties



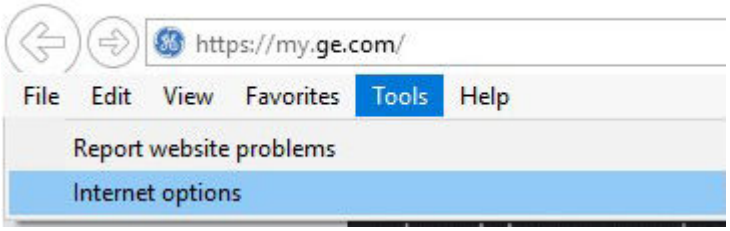
7. On the ***Internet Protocol Version 4 (TCP/IPv4) Properties*** window, select ***Use the following IP address***.

Figure 57 Use the Following IP Address option



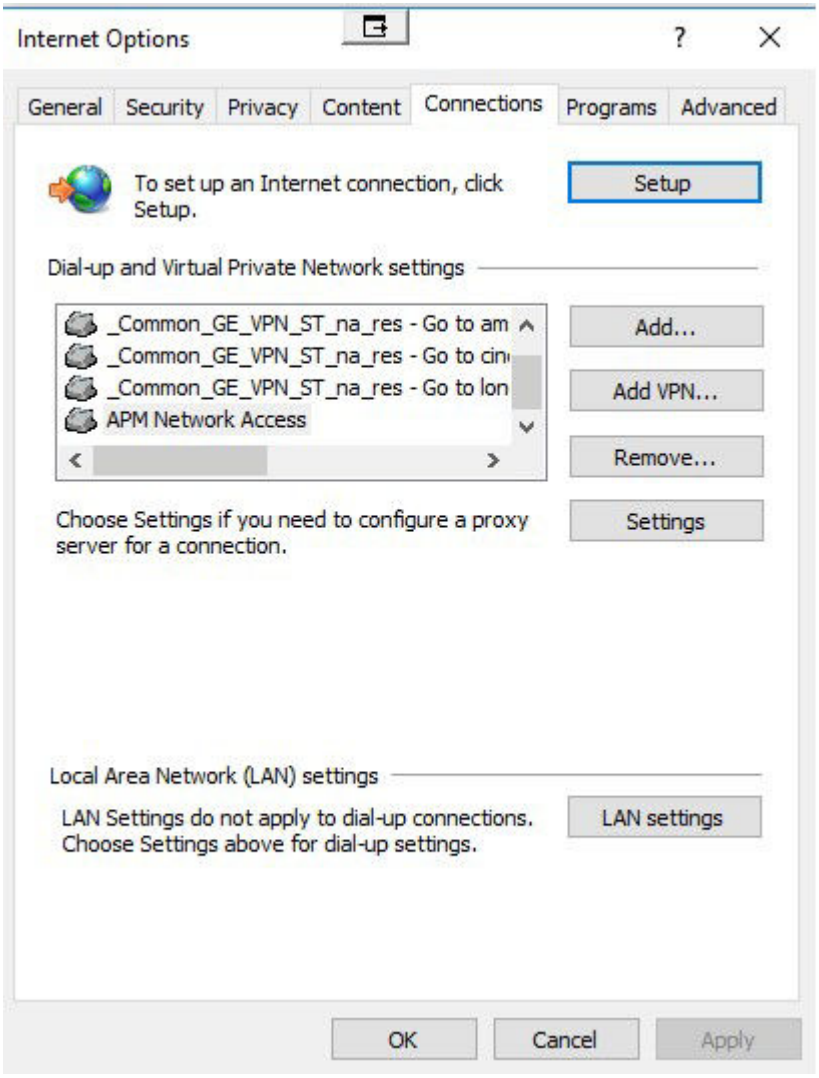
8. Enter the following information:
   - ***IP address***: `192.168.0.2`
   - ***Subnet mask***: `255.255.0.0`
9. To save settings and exit, click ***OK***.
10. To save the new local area connection properties, click ***OK*** or ***Cancel***. This may take a few minutes.
11. Close the ***Ethernet Properties*** window.
12. From the laptop's desktop, launch Internet Explorer 11.
13. Click ***Tools*** > ***Internet options***.

Figure 58 Internet options



14. Click the ***Connections*** tab.

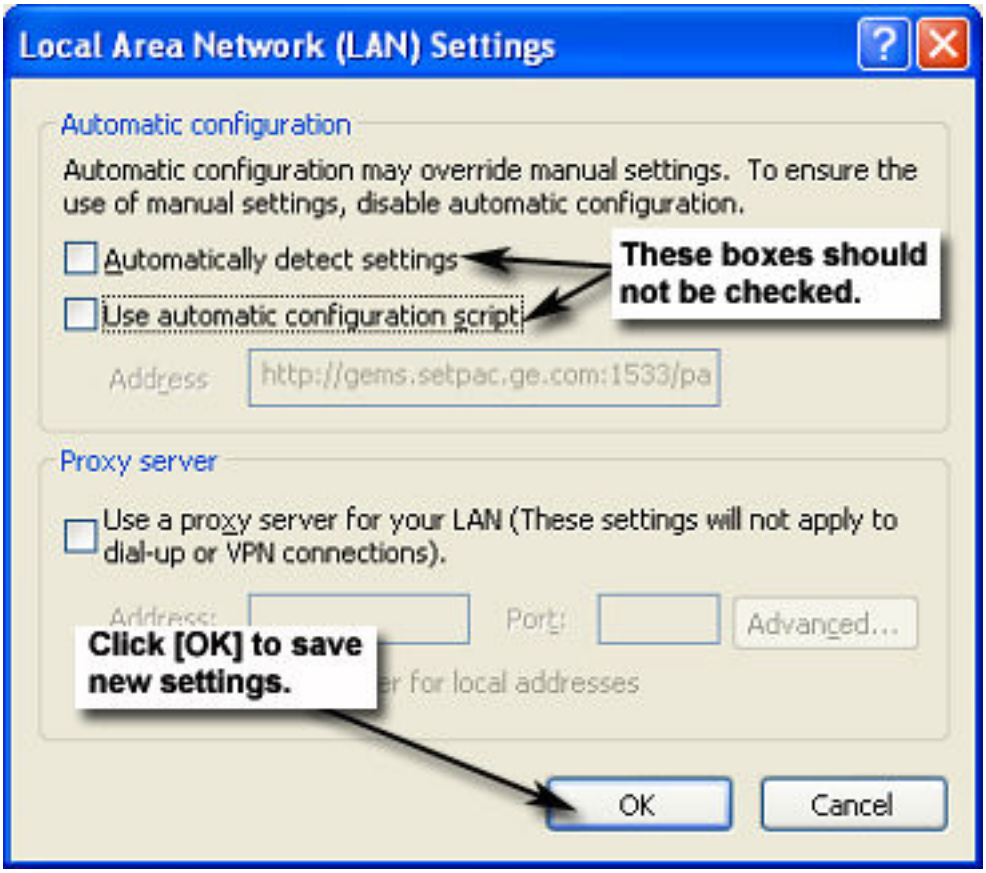
Figure 59 Connections tab



15. Click ***LAN Settings***.

16. On the ***Local Area Network (LAN) Settings*** page, make sure the ***Automatically detect settings*** and ***Use automatic configuration script*** fields are **not** selected.

Figure 60 Local Area Network (LAN) Settings window



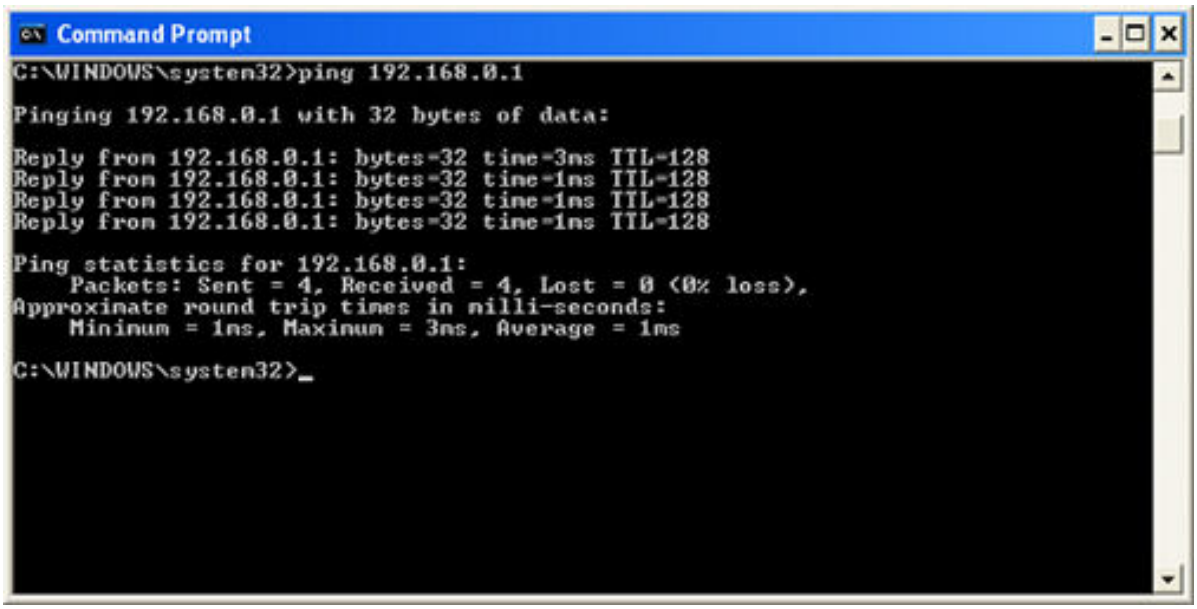
17. To save the LAN settings and close the ***Internet Options*** page, click ***OK***.
18. Click ***OK*** again to save all settings and close the ***Internet Options*** page.
19. On the laptop, click the middle icon to open Cortana search.

Figure 61 Cortana search icon

20. Type **`Command Prompt`** and click the ***Command Prompt*** icon to launch the app.

21. Type **`ping 192.168.0.1`** and press ***Enter***. If the Magmon3 unit responds, close the ***Command Prompt*** page and proceed to the next step. If not, recheck your settings.

Figure 62 Command Prompt page



22. Return to Internet Explorer.
23. Enter the Magmon3's IP address **`192.168.0.1`** in the ***Address*** field.
24. Press ***Enter***. The ***Magmon3 Service Login*** page appears.

Chapter 7 Login information

7.1 Logging on to Magmon3

All Magmon3 units are pre-configured by the manufacturer in non-proprietary mode before the units ship to GE. Customers not on a GE service contract will need access to the unit to be able to perform some configuration tasks in the event of a hardware failure where the Magmon3 would need replacement.

Required conditions
Laptop is directly connected to the Magmon3 using either a network crossover cable or a serial cable.
Laptop communication is configured to support either network or serial connection.
Laptop is communicating with the Magmon3 unit and the log on page displayed on the laptop's web browser.

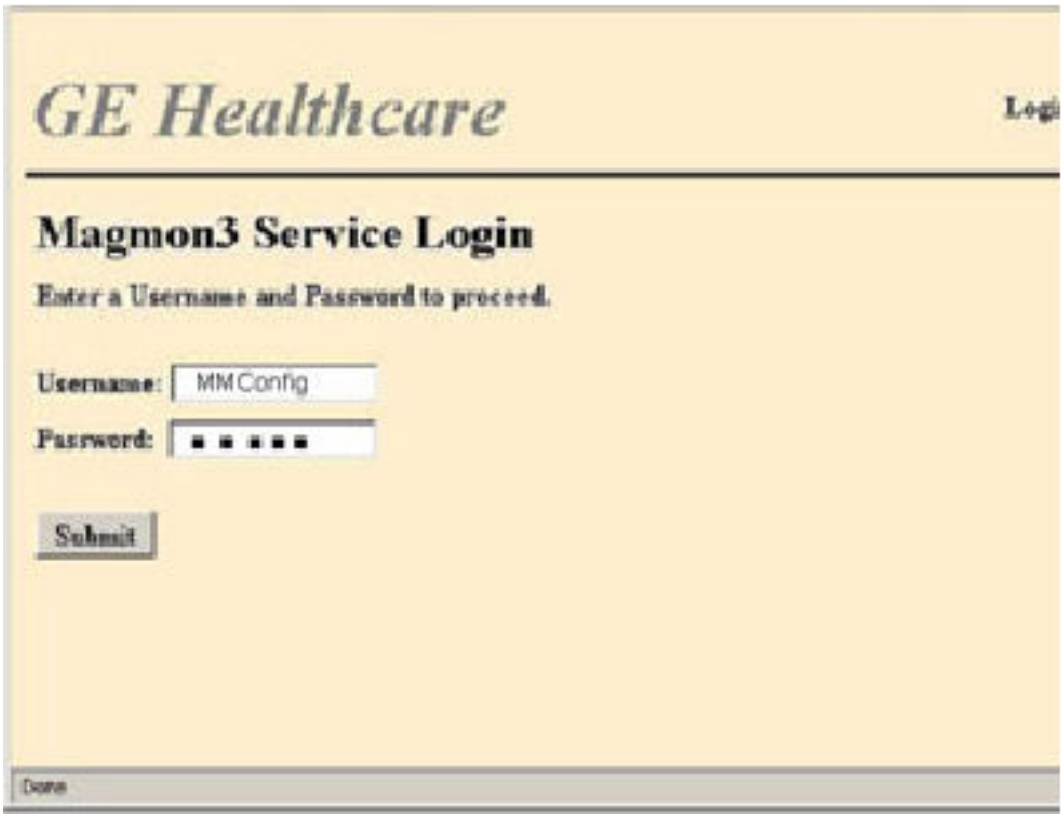
The unit can perform these basic functions in Non-Proprietary Mode:

- Display last sample of He Level (%).
- Allows you to initiate He level sample to update the displayed information.
- Display He vessel pressure (psi).
- Do pressure control for magnets with recondenser refrigeration systems.
- Display alarms when a monitored parameter is out of range.
- For SIGNA OpenSpeed products, the Magmon3 will communicate with the MRI System Host PC through a network connection and provide parameter data needed to support coldhead cycling.
- Allows you to access Data Mode for viewing current sensor values.
- Allows you to access Fill Mode to increase He level sampling during the fill operation.

1. On the ***Magmon3 Service Login*** page, fill the following fields:
   - ***Username***: **`MMConfig`**

- ***Password***: `ConfigMonitor`

Figure 63 Magmon3 Service Login window



NOTE

The Magmon3 will disconnect users after 45 minutes.

2. Click ***Submit***.

The magnet monitor type must be selected. For more information, see 9.1 Configuration setup on page 97.

Chapter 8 Web page overview

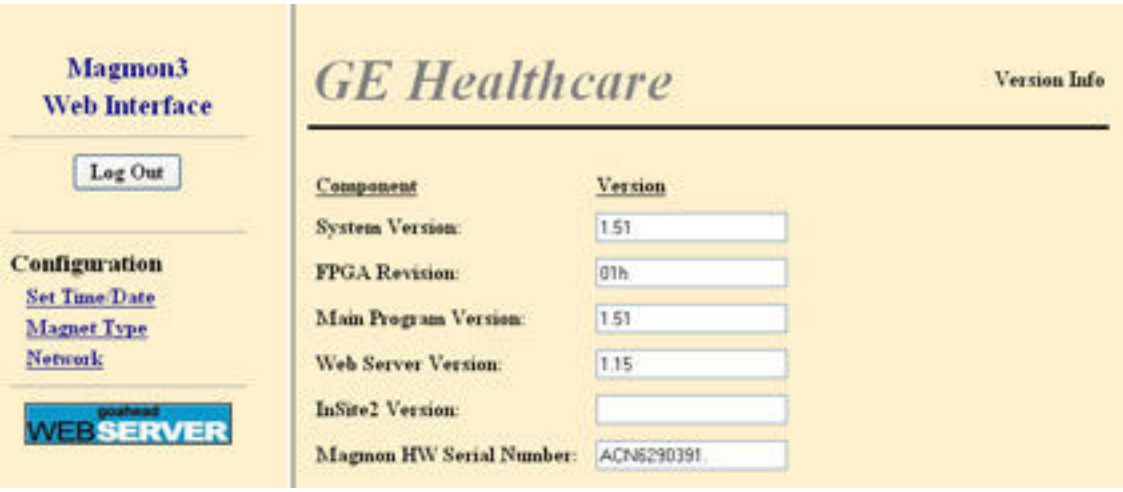
8.1 Basic web page layout

8.1.1 Basic web page layout

The web pages and detailed information are provided in the order that they appear on the navigation menu on the left side of the page.

This web page shows the basic layout of the Magmon3 web interface. The left column is a navigation menu where you can select one of the available web pages. Selecting one of the items in the navigation menu changes the page shown in the main section. Upon log on, the main section will show the ***Version Info*** page.

Figure 64 Basic web page layout



Page intentionally left blank

Chapter 9 Configuration

9.1 Configuration setup

9.1.1 Setting the date and time

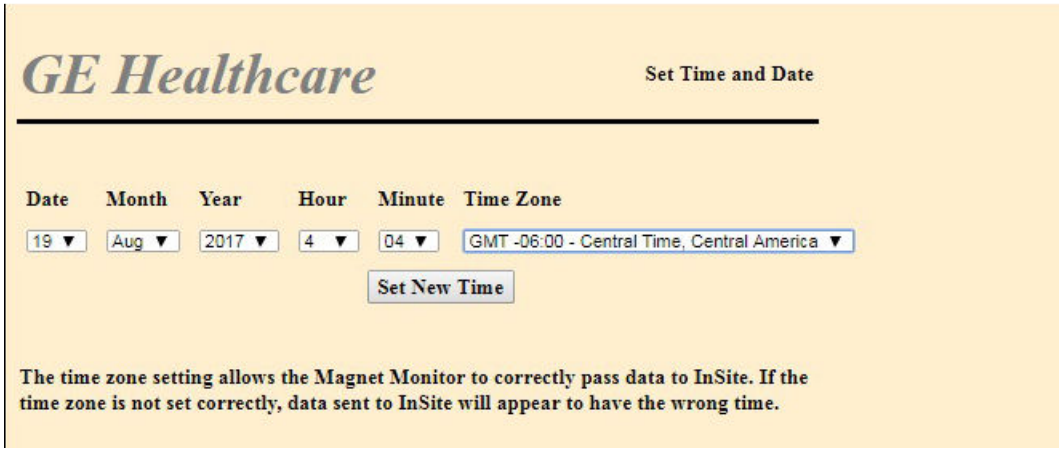
The ***Set Time and Date*** page allows the setting of the internal time and date for the Magmon. This process must be done using a laptop connection and cannot be done remotely. The internal time and date are used to timestamp the minute data and the event log items. The time zone setting is required to synchronize the Magmon3's time to the back office time.

NOTE

The Magmon3 does not automatically change settings when daylight saving time goes into effect.

1. On the ***Set Time and Date*** page, select a value from each list for the following fields:
   - ***Date***
   - ***Month***
   - ***Year***
   - ***Hour***
   - ***Minute***
   - ***Time Zone***

   Figure 65 Set Time and Date page



2. Click ***Set New Time***.

9.1.2 Setting the magnet type

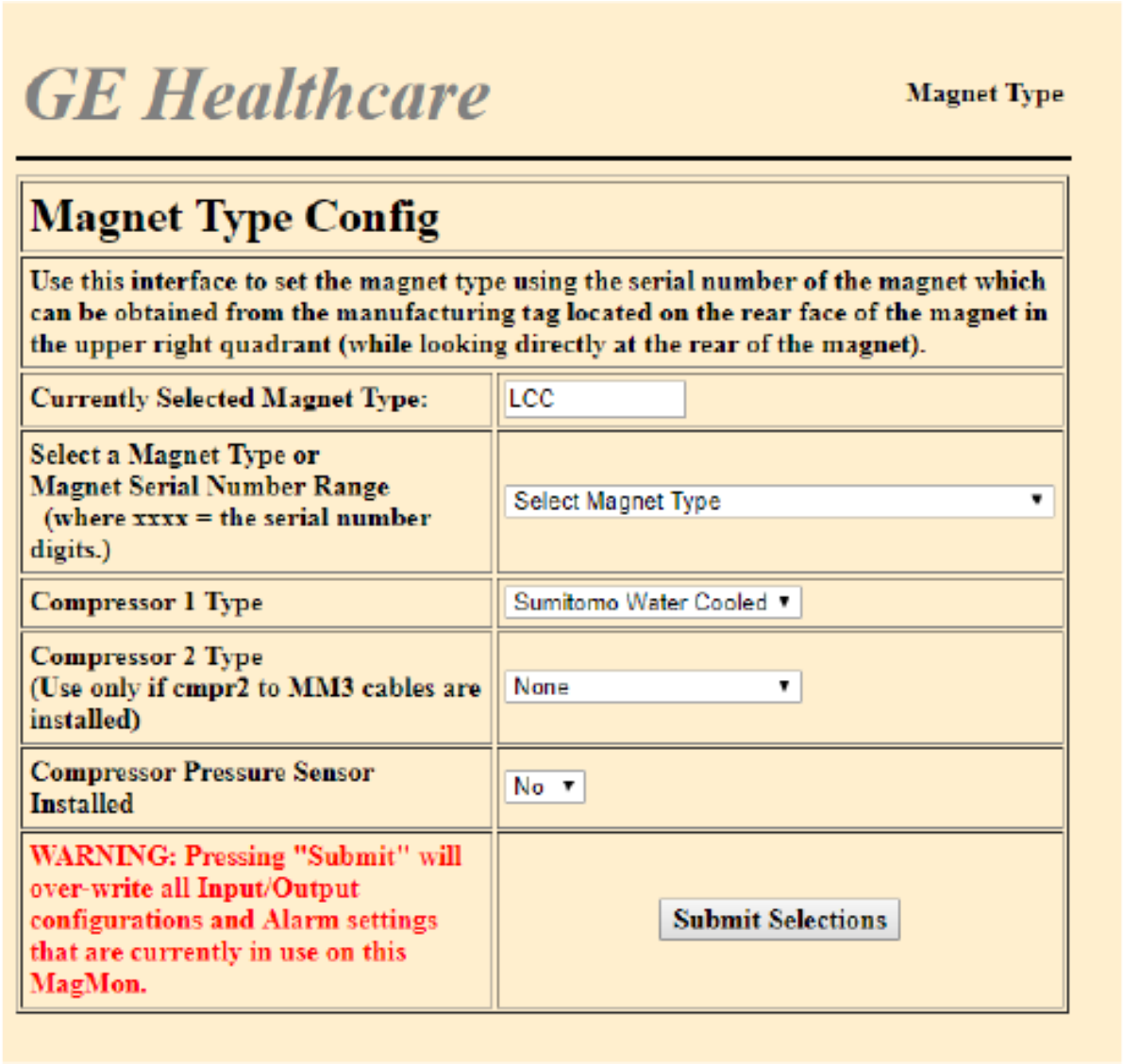
The ***Magnet Type*** page configures the Magmon3 to one of the predefined magnet types. The number of sensors, type of compressors, and alarm parameters will vary between magnet model types, so the magnet type selection is a key element in the operation of the magnet and Magmon3.

1. Select the magnet type from the ***Select a Magnet Type or Magnet Serial Number Range (where xxxx = the serial number digits)*** list that most closely matches the system type that the Magmon3 will be monitoring. If you are unsure about what magnet type to select, contact the magnet support team and your regional online center.

   NOTE

   Select the correct magnet type BEFORE configuring InSite2. Once the MM3 has registered with InSite2 as one type of magnet, it is very difficult to change the magnet type on the GE side of InSite2.

   Figure 66 Magnet Type page



2. Locate the magnet serial number on the magnet's rating plate. The first letter (or letters) of that serial number indicates what type of magnet it is.
3. Specify the magnet type.

.

Table 4 Magnet types based on serial number

Serial number begins with	Select this magnet type
Nxxx	CX
Pxxx	CX
Rxxx	LCC
RAxxx	LCC

Magnet types based on serial number continued	
Serial number begins with	**Select this magnet type**
RBxxx	LCC_HM
RDxxx	LCC
Qxxxx	LCC
HMxxx	LCC_HM (1.5T wide)
Wxxxx	LCC300
WBxxxx	LCC300
UAxxxx	LCC_UA (3T wide)
Txxxx	• HFO (monitors both coldheads) • HFO_ORG (dual stage monitoring only)
Axxxx	MAX
Cxxxx	SII
Dxxxx	SIII
Gxxxx	SIV
Jxxxx	SV
Xxxxx	SX
Kxxxx	SX
Lxxxx	SX
Vxxxx	VNX
Zxxxx	VMX2
7xxxx	7T_2CH

4. Select the proper compressor type from the ***Compressor 1 Type*** list.
   Compressor 2 type should only be used when two compressors are connected to the same magnet.

   NOTE

   Failure to configure the compressor type correctly will result in the Magmon3 being in constant alarm.

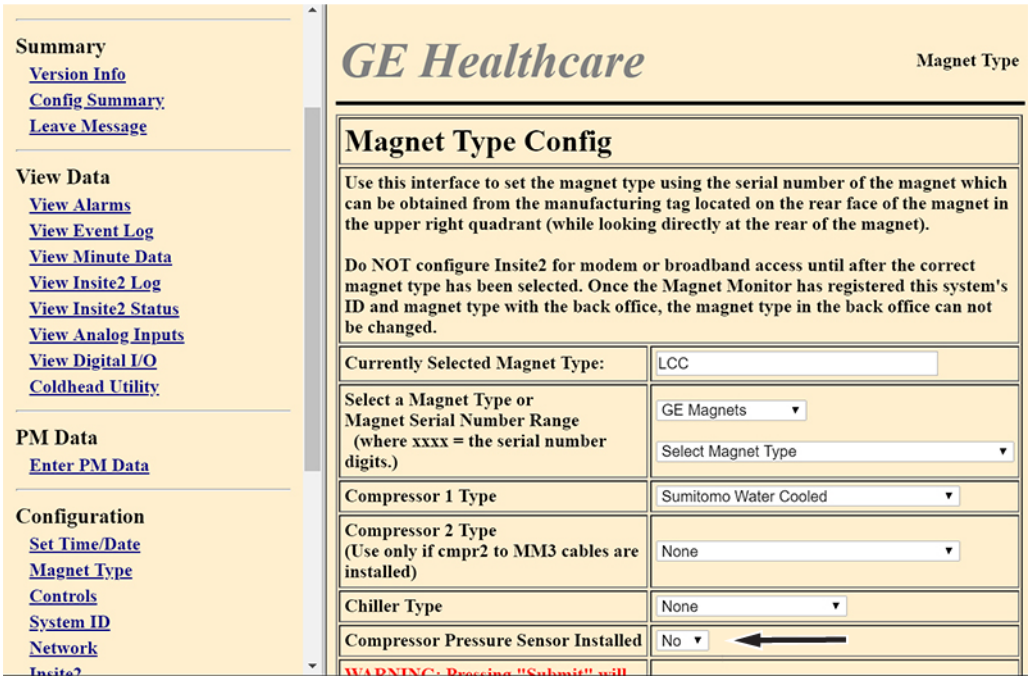
   Table 5 Compressors

Compressor type number	Compressor descriptions
0	None
1	Sumitomo Water Cooled
2	Sumitomo Air Cooled
3	Balzer Water Cooled
4	Leybold
5	Sumitomo F50
6	Sumitomo CSW71
7	Sumitomo HC10
8	Leybold RW4000
9	Leybold CP4000
10	Leybold RW6000
11	Leybold CP6000
12	Sumitomo F70
13	Sumitomo CSA-71 (Air Cooled)
14	Sumitomo CNA-31 (ONI MR430)
15	Sumitomo CNA-61 (Indoor/Outdoor Unit)
16	Sumitomo F51

5. Select the proper chiller type from the ***Chiller Type*** list.

6. If the helium tee pressure sensor is installed, set the ***Compressor Pressure Sensor Installed*** field to **`Yes`**.

Figure 67 Compressor Pressure Sensor Installed field



7. Click ***Submit Selections*** after identifying the magnet type.

9.1.3 Functional check for helium supply line pressure sensor

1. Turn off the compressor using the power switch in front.
2. Note the static pressure reading on the pressure gauge for the supply line.
3. Log in to Magnet Monitor and select ***View Data*** > ***View Minute Data***.
4. Scroll to column ***Cmp1A***. This shows pressure read by sensor in MPa.
5. Turn on the compressor using the power switch in front.
6. Note the dynamic pressure reading on the pressure gauge for the supply line.
7. Log in to Magnet Monitor and select ***View Data*** > ***View Minute Data***.
8. Scroll to column ***Cmp1A***. This shows pressure read by sensor in MPa.

9.1.4 Setting the network IP configuration

A network connection must be made between the Magmon3 and the High-Field Open (HFO) host computer's LAN Port 7. For network information on HFO systems, see A.1 Prerequisite information for non-proprietary operation on page 111.

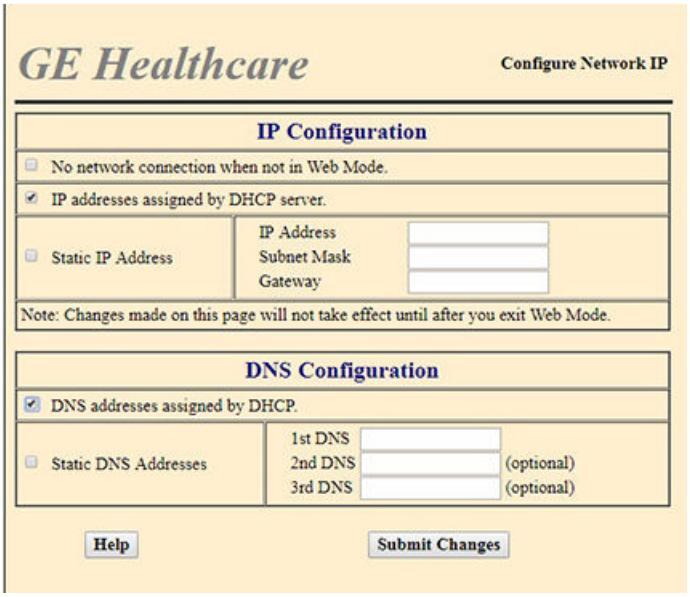
The following is the communication path for supporting the Coldhead Switching feature on the HFO system.

1. Click ***Network***.
2. On the ***Configure Network IP*** page, enter the information provided by the customer's network administrator for IP Configuration and DNS Configuration.

NOTE

Make sure the ***No Network connection when not in Web Mode*** check box is ***not*** selected.

Figure 68 Configure Network IP page



3. Click ***Submit Changes***.

9.1.5 Clearing data

1. On the ***Clear Data*** page, click ***Erase Data*** to erase all saved data.

Figure 69 Clear Data page

2. To return all settings to the factory defaults, click ***Reset All Config Files***. This is useful when moving a Magmon3 from one system to another.

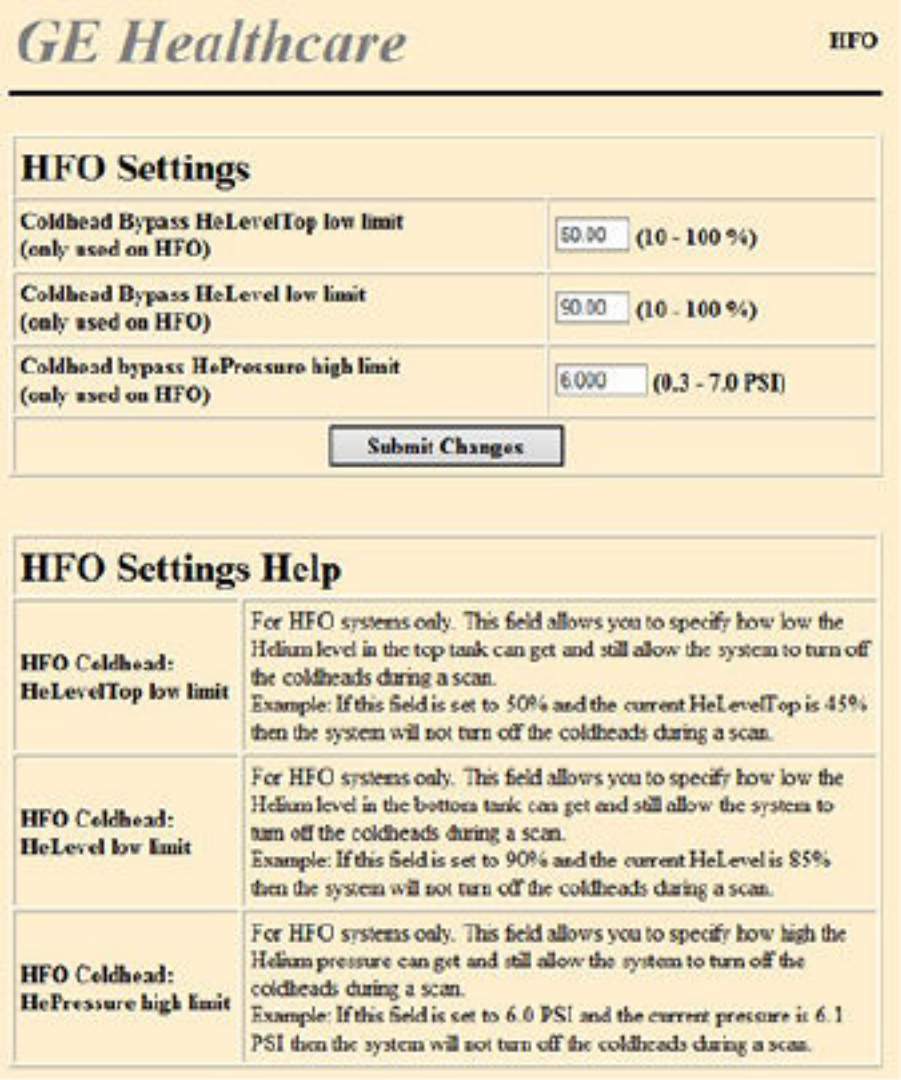
9.1.6 HFO controls

The following three items are required for the operation of the coldhead cycling feature used on the 0.7T High-Field Open (HFO) magnet. The Magmon3 software will respond to entries made only if the selected magnet type is: 0.7T HFO magnet. These items should be ignored for all other magnet types.

Table 6 Requirements for operating the coldhead cycling feature

Item	Default
Coldhead Bypass HeLevelTop low limit (only used on HFO)	50.0
Coldhead Bypass HeLevel low limit (only used on HFO)	90.6
Coldhead Bypass HePressure high limit (only used on HFO)	6.0

Figure 70 HFO control settings page



Page intentionally left blank

Chapter 10 Maintenance and replacement

10.1 Maintenance

The only maintenance action for Magmon3 is to check the time of day occasionally.

10.2 Renewal parts

Table 7 Cables

Item	Part number	Run number	Description	FRU
1	46-318042P1	627	Lakeshore Meter Cable x 11 ft long, Cold-head Sleeve to Rear Pedestal	Yes
2	46-328000G979	823	Run 823 MSM1-J10 to MR2-A11-J24	No
3	46-317359G975	824TR	Run 824TR PP1-J10 to FJ1	Yes
4	46-317359G977	825TR	Run 825TR PP1-J48 to MSM1-A1-J8	Yes
5	46-328000G978	826	Run 826 FJ3 TO MSM1-A1-J9	No
6	46-328578P1	827	Run 827 FJ3 to FJ4 and MS5A5	Yes
7	46-328000G974	828	Run 828 MS1-A3-A1-J403 to PP1-J10	Yes
8	46-328000G976	829	Run 829 MS1-FJ2 TO PP1-J48	No
9a	2279237	830	Run 830 Magnet Room Interface Cable	No
9b	2222797	830	Magnet Room Interface 830 Cable	Yes
9c	2222797-2	830	Magnet Room Interface Cable	No
9d	2108726	830	Mag Room Interface	Yes
10	46-328000G980	831	Run 831 FJ1 to MSM1-A1-J7	Yes
11a	2214062	832	832 Sleeve and Coldhead Cable, LCC	Yes
11b	2214062-2	832	Sleeve-Cold Head Adapter Cable	No
11c	2271499	832	Coldhead Adapter Cable, Shielded	Yes
12	46-328000G981	833	Run 833 FJ4 TO MS5-A1-A6-JR Cable	Yes
13	2263158	913	Run 913 MS1-A1-A4-P302-3 TO PP1-J62 Cable	No
14	2262699	914	Run 914 PP1-J62 TO FJ5 Cable	Yes

Cables continued				
Item	**Part number**	**Run number**	**Description**	**FRU**
15	2263160	915	Run 915 MSM1A2-J1 to FJ6	Yes
16	2263159	916	Run 916 MSM1-J7 to FJ1, FJ5 and FJ6	No
17	2264859	919	Run 919 MS1-A1-A4-P302-1 TO PP1-J10 Cable	No
18	2276568	940	Run 940 MSM3-RS-232 to MSM1-J1 Cable	Yes
19	2271497	942	Run 942 Ethernet Cable	Yes
20	2404555	1278	CoolPak Compressor Interface Cable	No
21	46-271600G37	1301	25-pin (12 T.P.+1) Female-Female (100 ft long) (two coldheads: Run 1301 and Run 1302)	No
22	46-271600G37	1302	25-pin (12 T.P.+1) Female-Female (100 ft long) (two coldheads: Run 1301 and Run 1302)	No
23	2404562	1307	Compressor 2 Magmon Cable	No
24	2404554	1308	Temp Sensors 2 - Filter Cable	No
25	2404553	1309	Compressor 1 Magmon Cable	No
26	46-271609G37	1310	9-pin (4 T.P.+1) Female-Male (100 ft long)	No
27	2404561	1311	9-pin Female-9-pin Male (Cable)	No
28	46-271601G37	1312	25-pin (12 T.P.+1) Female-Male (100 ft long)	No
29	2404558	1313	He Sensors and Heaters (Cable)	No
30	5183297	1410	Pre-Amp Coldhead 1 Cryostat Cable	No
31	2255874	N/A	RJ11 Modular, 6-Conductor (7 ft long) Cable	No
32	2216697	N/A	RJ11 (25 ft long) Cable	Yes
33	2204485	N/A	J24 Cable Magnet Monitor, System Cabinet - TPS	Yes

Table 8 Component parts

Item	Part number	Description	FRU
1	2394952	Magnet Monitor 3 (Magmon3; includes power cord, laptop computer crossover network cable, and installation/operation manual)	Yes
2	2219341	RUO Pre-Amplifier	Yes
3	2333825	Water Flow/Temperature Meter (Turbine Type)	Yes
4	5113506	Rebuild Kit for Water Flow Meter 2333825-2	Yes
5	2299843 and 2299843-2	Pressure Transducer	Yes
6	2299843 and 2299843-2	Pressure Transducer	Yes
7	2369032	Pressure Transducer RF Shield	Yes
9	2266628	Remote Alarm Box	Yes
10	5180301	Magmon3 Remote Alarm Collector	Yes
11	2276094	Uninterruptable Power Supply (UPS)	Yes
12	46-265067P1	I/F Panel Cable Screwlock Connector	Yes
13	2404712	Lock Coil Timer	No
16	46-328475P1	Telephone Line Multiplexor One Outside Line; Five Station Lines; No Audible Ring; with Barge-In Protection. 115 VAC, 60 HZ	
	46-328475P3	Telephone Line Multiplexor One Outside Line; Five Station Lines; No Audible Ring; with Barge-In Protection. 220 VAC, 50HZ	
	46-328475P2	Multiplexor, Eight Line 115 VAC, 60HZ	
	46-328475P4	Multiplexor, Eight Line 220 VAC, 50 HZ	
18	46-252294P1	0.25 inch Union Tee	Yes
19	46-296816P1	Adapter, BNC TEE, 50 OHM Amphenol #31-200 - All Center Conductors are Silver Plated (REV TK, 11/91). Has Rexolite Insulation	Yes

Page intentionally left blank

Appendix A

A.1 Prerequisite information for non-proprietary operation

To configure Magmon3 network connectivity, you must obtain information from the customer's network system administrator. This section details the type of information required based on connectivity type and system type. Make sure to start this information-gathering process at least 3 weeks in advance of the physical installation.

A.1.1 Prerequisite information for non-HFO systems (fixed sites and mobiles)

Neither a network connection or cryogen system ID is used.

- Magnet type (required): S2, S3, S4, S5, SX, CX, LCC, LCC300, 7.0T, VMX, MAX, Compact, Other.
- Compressor type (required):
  - Balzer Water Cooled.
  - Leybold Models: RW4000, RW4200, RW6000, RW6200, CP4000, CP4200 and CP6000.
  - Sumitomo Models: CSW71, CSA-71, CNA-31, CNA-61, F50, F70 and HC10.
- Chiller type: HEC, TRM, AIRSYS, DIMPLEX, TEMPORARY/OTHER.

A.1.2 Prerequisite information for HFO systems

Network cable connection from Magmon3 J5 to OW – Host Lan Hub J7.

- Magnet type (required): HFO.
- Compressor type (required): Sumimoto. DHCP is not used because of the coldhead cycling hardware and communication requirement. Must use the following:
  - Static internet protocol (IP) address: Obtain from customer's IT person.
  - Subnet address: Obtain from customer's IT person.
  - Gateway address: Obtain from customer's IT person.
  - Domain name service (DNS): Obtain from customer's IT person.
- Chiller type: HEC, TRM, AIRSYS, DIMPLEX, TEMPORARY/OTHER.

Page intentionally left blank