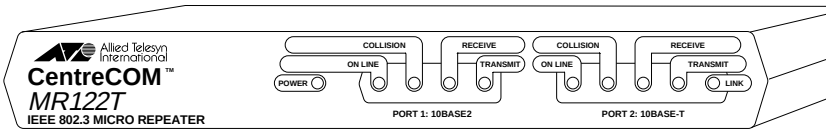
CentreCOM™ Two-Port Ethernet Micro Repeater Models AT-MR11xT, AT-MR11x AT-MR12xT, AT-MR12x

User Manual



PN 613-10449-00 Rev. B 970130

Electrical Safety and Installation Requirments

U.S. Federal Communications
RADIATED ENERGY Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and , if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Note: Modifications or changes not expressly approved of by the manufacturer or the FCC, can void your right to operate this equipment.

Canadian Department of Communications
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

STANDARDS: This product meets the following standards

RFI Emission EN55022 Class A

WARNING: In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Immunity EN50082-1

These products have been safety tested by UL to Standard UL 1950, CSA to CSA 950 and by TUV to EN60950.



SAFETY
ELECTRICAL NOTICES
WARNING: ELECTRIC SHOCK HAZARD
To prevent ELECTRIC shock , do not remove cover. No user-serviceable parts inside. This unit contains HAZARDOUS VOLTAGES and should only be opened by a trained and qualified technician. To avoid the possibility of ELECTRIC SHOCK disconnect electric power to the product before connecting or disconnecting the LAN cables.



LIGHTNING DANGER
DANGER: DO NOT WORK on equipment or CABLES during periods of LIGHTNING ACTIVITY.



CAUTION: POWER CORD IS USED AS A DISCONNECTION DEVICE. TO DE-ENERGISE EQUIPMENT disconnect the power cord.

INSTALLATION
ELECTRICAL—AUTO VOLTAGE ADJUSTMENT
This product will automatically adjust to any voltage between the ranges shown on the label.

ELECTRICAL—TYPE CLASS 1 EQUIPMENT
THIS EQUIPMENT MUST BE EARTHED. Power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.

ELECTRICAL—CORD NOTICE
Use power cord, maximum 4.5 meters long, rated 6 amp minimum, 250V, made of HAR cordage molded IEC 320 connector on one end and on the other end a plug approved by the country of end use.

CAUTION: Air vents must not be blocked and must have free access to the room ambient air for cooling.

OPERATING TEMPERATURE
This product is designed for a maximum ambient temperature of 40 degrees C.

ALL COUNTRIES: Install product in accordance with local and National Electrical Codes.

NORMEN: Dieses Produkt erfüllt die Anforderungen der nachfolgenden Normen.

Hochfrequenzstörung EN55022 Klasse A

WARNUNG: Bei Verwendung zu Hause kann dieses Produkt Funkstörungen hervorrufen. In diesem Fall müßte der Anwender angemessene Gegenmaßnahmen ergreifen.

Störsicherheit EN50082-1

Die Sicherheitsprüfung dieser Produkte wurde von Underwriters Laboratories Inc. gemäß Norm 1950, CSA nach CSA 950 und gemäß TÜV nach EN60950 durchgeführt.



SICHERHEIT
ELECTRICAL NOTICES
WARNING: ELECTRIC SHOCK HAZARD
To prevent ELECTRIC shock , do not remove cover. No user--serviceable parts inside. This unit contains HAZARDOUS VOLTAGES and should only be opened by a trained and qualified technician. To avoid the possibility of ELECTRIC SHOCK disconnect electric power to the product before connecting or disconnecting the LAN cables.



LIGHTNING DANGER
DANGER: DO NOT WORK on equipment or CABLES during periods of LIGHTNING ACTIVITY.



VORSICHT: DAS NETZKABEL DIENT ZUM TRENNEN DER STROMVERSORGUNG. ZUR TRENNUNG VOM NETZ, KABEL AUS DER STECKDOSE ZIEHEN.

INSTALLATION
AUTOMATISCHE SPANNUNGSEINSTELLUNG Dieses Gerät stellt sich automatisch auf die auf dem Etikett aufgeführten Spannungswerte ein.

GERÄTE DER KLASSE 1
DIESE GERÄTE MÜSSEN GEERDET SEIN. Der Netzstecker darf nur mit einer vorschriftsmäßig geerdeten Steckdose verbunden werden. Ein unvorschriftsmäßiger Anschluß kann die Metallteile des Gehauses unter gefährliche elektrische Spannungen setzen.

NETZKABEL
Das Netzkabel sollte eine maximale Länge von 4,5 Metern, einen Nennwert von mindestens 6 A und 250 V haben, aus HAR-Material hergestellt und mit einer gepreßten, IEC 320 entsprechenden, Anschlußverbindung an einem Ende, und am anderen Ende mit einem im Land des Endverbrauchers geprüften Stecker ausgestattet sein.

VORSICHT
Die Entlüftungsöffnungen dürfen nicht versperrt sein und müssen zum Kühlen freien Zugang zur Raumluft haben.

BETRIEBSTEMPERATUR
Dieses Produkt wurde für den Betrieb in einer Umgebungstemperatur von nicht mehr als 40° C entworfen.

ALLE LÄNDER: Installation muß örtlichen und nationalen elektrischen Vorschriften entsprechen.

Standarder: Dette produkt tilfredsstiller de følgende standarder.

Radiofrekvens forstyrrelsesemission EN55022 Klasse A

ADVARSEL: I et hjemligt miljø kunne dette produkt forårsage radio forstyrrelse. Bliver det tilfældet, påkræves brugeren muligvis at tage tilstrækkelige foranstaltninger.

Immunitet EN50082-1

Disse produkter er blevet sikkerhedstestet af UL til Standard 1950, CSA til CSA 950 og af TUV til EN60950.



SIKKERHED

ELECTRICAL NOTICES
WARNING: ELECTRIC SHOCK HAZARD
To prevent ELECTRIC shock, do not remove cover. No user-serviceable parts inside. This unit contains HAZARDOUS VOLTAGES and should only be opened by a trained and qualified technician. To avoid the possibility of ELECTRIC SHOCK disconnect electric power to the product before connecting or disconnecting the LAN cables.



FARE UNDER UVEJR
FARE: UNDLAD at arbejde på udstyr eller KABLER i perioder med LYNAKTIVITET.



ADVARSEL: DEN STRØMFØRENDE LEDNING BRUGES TIL AT AFBRYDE STRØMMEN. SKALSTRØMMENTILAPPARATET AFBRYDES, tages ledningen ud af stikket.

INSTALLATION
ELEKTRISK—AUTOMATISK SPÆNDINGSREGULERING Dette apparat vil automatisk tilpasse sig enhver spænding indenfor de værdier, der er angivet på etiketten.

ELEKTRISK—KLASSE 1-UDSTYR
DETTE UDSTYR KRÆVER JORDFORBINDELSE. Stikket skal være forbundet med en korrekt installeret jordforbunden stikkontakt. En ukorrekt installeret stikkontakt kan sætte livsfarlig spænding til tilgængelige metaldele.

ELEKTRISK—LEDNING
Anvend ledning af maksimum 4,5 meters længde, med en kapacitet på minimum 6 amp., 250 v, bestående af en IEC 320 connector med indstøbt HAR ledning i den ene ende og et stik i den anden ende, der er godkendt af myndighederne i brugerlandet.

ADVARSEL: Ventilationsåbninger må ikke blokeres og skal have fri adgang til den omgivende luft i rummet for afkøling.

BETJENINGSTEMPERATUR
Dette apparat er konstrueret til en omgivende temperatur på maksimum 40 grader C.

ALLE LANDE: Installation af produktet skal ske i overensstemmelse med lokal og national lovgivning for elektriske installationer.

Eisen: Dit product voldoet aan de volgende eisen.

RFI Emissie EN55022 Klasse A

WAARSCHUWING: Binnenshuis kan dit product radiostoring veroorzaken, in welk geval de gebruiker verplicht kan worden om gepaste maatregelen te nemen.

Immuniteit EN50082-1

De veiligheid van deze produkten is door UL getest volgens norm 1950, CSA tot CSA 950 en door TUV volgens EN60950.

VEILIGHEID
WAARSCHUWINGEN MET BETREKKING TOT ELEKTRICITEIT
WAARSCHUWING: GEVAAR VOOR ELEKTRISCHE SCHOKKEN Verwijder het deksel niet, teneinde ELEKTRISCHE schokken te voorkomen. Binnenin bevinden zich geen onderdelen die door de gebruiker onderhouden kunnen worden. Dit toestel staat onder GEVAARLIJKE SPANNING en mag alleen worden geopend door een daartoe opgeleide en bevoegde technicus. Om het gevaar op ELEKTRISCHE SCHOKKEN te vermijden, moet u het toestel van de stroombron ontkoppelen alvorens de LAN-kabels te koppelen of ontkoppelen.

GEVAAR VOOR BLIKSEMINSLAG
GEVAAR: NIET aan toestellen of KABELS WERKEN bij BLIKSEM.\

WAARSCHUWING: HET TOESTEL WORDT UITGESCHAKELD DOOR DE STROOMKABEL TE ONTKOPPELEN.OM HET TOESTEL STROOMLOOS TE MAKEN: de stroomkabel ontkoppelen.

INSTALLATIE
ELEKTRISCH: AUTOMATISCHE AANPASSING VAN DE SPANNING Dit toestel past zich automatisch aan elke spanning aan, tussen de op het label vermelde waarden.

ELEKTRISCHE TOESTELLEN VAN KLASSE 1
DIT TOESTEL MOET GEAARD WORDEN. De stekker moet aangesloten zijn op een juist geaarde contactdoos. Een onjuist geaarde contactdoos kan de metalen onderdelen waarmee de gebruiker eventueel in aanraking komt onder gevaarlijke spanning stellen.

ELEKTRISCHE SNOEREN
Gebruik een elektrisch snoer, maximum 4,5 meter lang, berekend voor ten minste 6 ampåçère, 250 V, uit HAR vervaardigd, met aan het ene uiteinde een gevormd IEC 320 aansluitstuk en aan het andere uiteinde een stekker die goedgekeurd is door het land waar het toestel gebruikt zal worden.

OPGELET: De ventilatiegaten mogen niet worden gesperd en moeten de omgevingslucht ongehinderd toelaten voor afkoeling.

BEDRIJFSTEMPERATUUR
De omgevingstemperatuur voor dit produkt mag niet meer bedragen dan 40 graden Celsius.

ALLE LANDEN: het toestel installeren overeenkomstig de lokale en nationale elektrische voorschriften.

NORMES: ce produit est conforme aux normes de suivantes :

Emission d'interférences radioélectriques EN55022 Classe A

MISE EN GARDE: dans un environnement domestique, ce produit peut provoquer des interférences radioélectriques. Auquel cas, l'utilisateur devra prendre les mesures adéquates.

Immunité EN50082 - 1

La sécurité de ces matériels a été testée par UL conformément à la norme UL 1950, CSA à CSA 950 et par TUV conformément à la norme EN60950.

SÉCURITÉ
INFORMATION SUR LES RISQUES ÉLECTRIQUES AVERTISSEMEN: DANGER D'ÉLECTROCUTION
Pour éviter toute ÉLECTROCUTION, ne pas ôter le revêtement protecteur du matériel. Ce matériel ne contient aucun élément réparable par l'utilisateur. Il comprend des TENSIONS DANGEREUSES et ne doit être ouvert que par un technicien dûment qualifié. Pour éviter tout risque d'ÉLECTROCUTION, débrancher le matériel avant de connecter ou de déconnecter les câbles LAN.



DANGER DE FOUDRE
DANGER: NE PAS MANIER le matériel ou les CÂBLES lors d'activité orageuse.

ATTENTION: LE CORDON D'ALIMENTATION SERT DE MISE HORS CIRCUIT. POUR COUPER L'ALIMENTATION DU MATÉRIEL, débrancher le cordon.

INSTALLATION
RÉGLAGE DE TENSION AUTOMATIQUE ÉLECTRIQUE
Ce matériel peut s'ajuster automatiquement sur n'importe quelle tension comprise dans la plage indiquée sur l'étiquette.

ÉQUIPEMENT DE CLASSE 1 ÉLECTRIQUE
CE MATÉRIEL DOIT ÊTRE MIS A LA TERRE. La prise de courant doit être branchée dans une prise femelle correctement mise à la terre car des tensions dangereuses risqueraient d'atteindre les pièces métalliques accessibles à l'utilisateur.

INFORMATION SUR LE CORDON ÉLECTRIQUE
Utiliser un cordon secteur de 4.5 mètres de long maximum, calibré à 6 ampères minimum, 250V, fabriqué en câblage HAR avec connecteur IEC 32C moulé à une extrémité, et à l'autre extrémité, une prise de courant mâle répondant aux normes du pays d'utilisation.

ATTENTION: Ne pas bloquer les fentes d'aération, ceci empêcherait l'air ambiant de circuler librement pour le refroidissement.

TEMPÉRATURE DE FONCTIONNEMENT
Ce matériel est capable de tolérer une température ambiante maximum de 40 degrés Celsius.

POUR TOUS PAYS: Installer le matériel conformément aux normes électriques nationales et locales.

Standardit: Tämä tuote on seuraavien standardien mukainen.

Radioaaltojen häirintä EN55022 Luokka A

VAROITUS: Kotiolosuhteissa tämä laite voi aiheuttaa radioaaltojen häiröitä, missä tapauksessa laitteen käyttäjän on mahdollisesti ryhdyttävä tarpeellisiin toimenpiteisiin.

Kestävyys EN50082-1UL on turvatestannut nämä tuotteet Standard 1950 mukaisesti, CSA standardin CSA 950 mukaisesti ja TUV standardin EN60950 mukaisesti.



TURVALLISUUS
ELECTRICAL NOTICES
WARNING: ELECTRIC SHOCK HAZARD
To prevent ELECTRIC shock, do not remove cover. No user-serviceable parts inside. This unit contains HAZARDOUS VOLTAGES and should only be opened by a trained and qualified technician. To avoid the possibility of ELECTRIC SHOCK disconnect electric power to the product before connecting or disconnecting the LAN cables.



SALAMANISKUVAARA
HENGENVAARA: ÄLÄ TYÖSKENTELE laitteiden tai KAAPELEIDEN KANSSA SALAMOINNIN AIKANA.



HUOMAUTUS: VIRTAJOHTOA KÄYTETÄÄN VIRRANKATKAISULAITTEENA. VIRTA KATKAISTAAN irrottamalla virtajohto.

INSTALLATION
SÄHKÖ—AUTOMAATTINEN JÄNNITTEENSÄÄTÖ
Tämä tuote säätää automaattisesti mihin tahansa jännitteeseen ohjetarrassa annettujen arvojen välillä.

SÄHKÖ—TYYPPILUOKAN 1 LAITTEET
TÄMÄ LAITE TÄYTYY MAADOITTAA. Pistoke täytyy liittää kunnollisesti maadoitettuun pistorasiaan. Virheellisesti johdotettu pistorasia voi altistaa metalliosat vaarallisille jännitteille.

SÄHKÖ—JOHTOON LIITTYVÄ HUOMAUTUS
Käytä seuraavanlaista virtajohtoa: maksimipituus 4,5 metriä, minimiteho 6 ampeeria, 250 V, valmistettu HAR-johdostosta, muovattu IEC 320 -liitin toisessa päässä ja käyttömaassa hyväksytty pistoke toisessa päässä.

HUOMAUTUS: Ilmavaihtoreikiä ei pidä tukkia ja niillä täytyy olla vapaa yhteys ympäröivään huoneilmaan, jotta ilmanvaihto tapahtuisi.

KÄYTTÖLÄMPÖTILA
Tämä tuote on suunniteltu ympäröivän ilman maksimilämpötilalle (40-50)°C.

KAIKKI MAAT: Asenna tuote paikallisten ja kansallisten sähköturvallisuusmääräysten mukaisesti.

Standard: Questo prodotto è conforme ai seguenti standard.

Emissione RFI (interferenza di radiofrequenza) EN55022 Classe A

AVVERTENZA: in ambiente domestico questo prodotto potrebbe causare radio interferenza. In questo caso potrebbe richiedersi all'utente di prendere gli adeguati provvedimenti.

Immunità EN50082-1

Questi prodotti sono stati sottoposti a collaudi di sicurezza dai seguenti enti: dalla UL in conformità allo standard 1950, dalla CSA in conformità allo standard CSA 950 e dal TUV in conformità allo standard EN60950.



NORME DI SICUREZZA
AVVERTENZE ELETTRICHE ATTENZIONE: PERICOLO DI SCOSSE ELETTRICHE
Per evitare SCOSSE ELETTRICHE non asportare il coperchio. Le componenti interne non sono riparabili dall'utente. Questa unità ha TENSIONI PERICOLOSE e va aperta solamente da un tecnico specializzato e qualificato. Per evitare ogni possibilità di SCOSSE ELETTRICHE, interrompere l'alimentazione del dispositivo prima di collegare o staccare i cavi LAN.



PERICOLO DI FULMINI
PERICOLO: NON LAVORARE sul dispositivo o sui CAVI durante PRECIPITAZIONI TEMPORALESCHE.



ATTENZIONE: IL CAVO DI ALIMENTAZIONE È USATO COME DISPOSITIVO DI DISATTIVAZIONE. PER TOGLIERE LA CORRENTE AL DISPOSITIVO staccare il cavo di alimentazione.

INSTALLAZIONE
ELETTRICITÀ—REGOLAZIONE AUTOMATICA DELLA TENSIONE
Questo prodotto regolerà automaticamente la tensione ad un valore compreso nella gamma indicata sull'etichetta.

ELETTRICITÀ—DISPOSITIVI DI CLASSE 1
QUESTO DISPOSITIVO DEVE AVERE LA MESSA A TERRA. La spina deve essere inserita in una presa di corrente specificamente dotata di messa a terra. Una presa non cablata in maniera corretta rischia di scaricare una tensione pericolosa su parti metalliche accessibili.

ELETTRICITÀ—AVVERTENZA SUL CAVO
Usare un cavo della lunghezza massima di metri 4,5, con capacità minima di 6 A, 250 V, di filo HAR, dotato di connettore stampato IEC 320 ad un'estremità e di spina approvata dal paese di destinazione all'altra.

ATTENZIONE: le prese d'aria non vanno ostruite e devono consentire il libero ricircolo dell'aria ambiente per il raffreddamento.

TEMPERATURA DI FUNZIONAMENTO
Questo prodotto è concepito per una temperatura ambientale massima di 40 gradi centigradi.

TUTTI I PAESI: installare il prodotto in conformità delle vigenti normative elettriche nazionali.

Sikkerhetsnormer: Dette produktet tilfredsstiller følgende sikkerhetsnormer.

RFI stråling EN55022 Klasse A

ADVARSEL: Hvis dette produktet benyttes til privat bruk, kan produktet forårsake radioforstyrrelse. Hvis dette skjer, må brukeren ta de nødvendige forholdsregler.

Immunitet EN50082-1

Disse produktene er blitt sikkerhetstestet av UL i forhold til standard 1950, CSA i forhold til CSA 950, og av TUV i forhold til EN60950.



SIKKERHET
ELEKTRISITET
ADVARSEL: FARE FOR ELEKTRISK SJOKK
For å unngå ELEKTRISK sjokk, må dekslet ikke tas av. Det finnes ingen deler som brukeren kan reparere på innsiden. Denne enheten inneholder FARLIGE SPENNINGER, og må kun åpnes av en faglig kvalifisert tekniker. For å unngå ELEKTRISK SJOKK må den elektriske strømmen til produktet være avslått før LAN-kablene til- eller frakobles.



FARE FOR LYNNEDSLAG
FARE: ARBEID IKKE på utstyr eller KABLER i TORDENVÆR.



FORSIKTIG: STRØMLEDNINGEN BRUKES TIL Å FRAKOBLE UTSTYRET. FOR Å DEAKTIVISERE UTSTYRET, må strømforsyningen kobles fra.

INSTALLASJON
ELEKTRISK—AUTO SPENNINGSTILPASNING
Dette produktet vil automatisk bli tilpasset hvilken som helst strømspenning i de områdene som vises på etiketten.

ELEKTRISK—TYPE 1- KLASSE UTSTYR
DETTE UTSTYRET MÅ JORDES. Strømkontakten må være tilkoplet en korrekt jordet kontakt. En kontakt som ikke er korrekt jordet kan føre til farlig spenninger i lett t ilgjengelige metalldeler.

ELEKTRISK—MEDDELELSE OM LEDNINGER
Bruk en strømledning av maksimalt 4.5 m. i lengde, godkjent for minst av 6 amp, 250V, fremstilt av HAR ledning IEC 320 koplingsstykke i den ene enden, og i den andre enden en plugg som er blitt godkjent i brukerlandet.

FORSIKTIG: Lufteventilene må ikke blokkeres, og må ha fri tilgang til luft med romtemperatur for avkjøling.

DRIFTSTEMPERATUR
Dette produktet er konstruert for bruk i maksimum romtemperatur på 40 grader celsius.

ALLE LAND: Produktet må installeres i samsvar med de lokale og nasjonale elektriske koder.

Padrões: Este produto atende aos seguintes padrões.

Emissão de interferência de radiofrequência EN55022 Classe A

AVISO: Num ambiente doméstico este produto pode causar interferência na radiorrecepção e, neste caso, pode ser necessário que o utente tome as medidas adequadas.

Imunidade EN50082-1

Estes produtos foram testados pela UL quanto a aspectos de segurança no Padrão 1950, CSA a CSA 950, e pela TUV no EN60950.



SEGURANÇA
AVISOS SOBRE CARACTERÍSTICAS ELÉTRICAS ATENÇÃO: PERIGO DE CHOQUE ELÉTRICO
Para evitar CHOQUE ELÉTRICO, não retire a tampa. Não contém peças que possam ser consertadas pelo usuário. Este aparelho contém VOLTAGENS PERIGOSAS e só deve ser aberto por um técnico qualificado e treinado. Para evitar a possibilidade de CHOQUE ELÉTRICO, desconecte o aparelho da fonte de energia elétrica antes de conectar e desconectar os cabos da LAN.



PERIGO DE CHOQUE CAUSADO POR RAIO PERIGO: NÃO TRABALHE no equipamento ou nos CABOS durante períodos suscetíveis a QUEDAS DE RAIO.



CUIDADO: O CABO DE ALIMENTAÇÃO É UTILIZADO COMO UM DISPOSITIVO DE DESCONEXÃO. PARA DESELETRIFICAR O EQUIPAMENTO, desconecte o cabo de ALIMENTAÇÃO.

INSTALAÇÃO
ELÉTRICO—AJUSTE AUTOMÁTICO DE VOLTAGEM
Este produto ajustar-se-á automaticamente a qualquer voltagem que esteja dentro dos limites indicados no rótulo.

ELÉTRICO—EQUIPAMENTOS DO TIPO CLASSE 1
DEVE SER FEITA LIGAÇÃO DE FIO TERRA PARA ESTE EQUIPAMENTO. O plugue de alimentação deve ser conectado a uma tomada com adequada ligação de fio terra. Tomadas sem adequada ligação de fio terra podem transmitir voltagens perigosas a peças metálicas expostas.

ELÉTRICO—AVISO SOBRE O CABO DE ALIMENTAÇÃO
Use cabo de alimentação com comprimento máximo de 4,5 metros, com uma capacidade indicada mínima de 6 amp e 250 V, fabricado de material para cabo HAR com conector moldado IEC 320 em uma extremidade e, na outra extremidade, um plugue aprovado para uso no país em questão.

CUIDADO: As aberturas de ventilação não devem ser bloqueadas e devem ter acesso livre ao ar ambiente para arrefecimento adequado do aparelho.

TEMPERATURA DE FUNCIONAMENTO
Este produto foi projetado para uma temperatura ambiente máxima de 40 graus centígrados.

TODOS OS PAÍSES: Instale o produto de acordo com as normas nacionais e locais para instalações elétricas.

Estándares: Este producto cumple con los siguientes estándares.

Emisión RFI EN55022 Clase A

ADVERTENCIA: en un entorno doméstico, este producto puede causar radiointerferencias, en cuyo caso, puede requerirse del usuario que tome las medidas que sean convenientes al respecto.

Inmunidad EN50082-1

La seguridad de estos productos ha sido probada por UL conforme con la Norma 1950, CSA a CSA 950, y por TUV conforme con EN60950.



SEGURIDAD
AVISOS ELECTRICOS ADVERTENCIA: PELIGRO DE ELECTROCHOQUE Para evitar un ELECTROCHOQUE, no quite la tapa. No hay ningún componente en el interior al cual puede prestar servicio el usuario. Esta unidad contiene VOLTAJES PELIGROSOS y sólo deberá abrirla un técnico entrenado y calificado. Para evitar la posibilidad de ELECTROCHOQUE desconecte la corriente eléctrica que llega al producto antes de conectar o desconectar los cables LAN.



PELIGRO DE RAYOS
PELIGRO: NO REALICE NINGUN TIPO DE TRABAJO O CONEXION en los equipos o en LOS CABLES durante TORMENTAS ELECTRICAS.



ATENCION: EL CABLE DE ALIMENTACION SE USA COMO UN DISPOSITIVO DE DESCONEXION. PARA DESACTIVAR EL EQUIPO, desconecte el cable de alimentación.

INSTALACION
ELECTRICO—AUTO-AJUSTE DE TENSION
Este producto se ajustará automáticamente a cualquier tensión entre los valores máximos y mínimos indicados en la etiqueta.

ELECTRICO—EQUIPO DEL TIPO CLASE 1
ESTE EQUIPO TIENE QUE TENER CONEXION A TIERRA. El cable tiene que conectarse a un enchufe a tierra debidamente instalado. Un enchufe que no está correctamente instalado podría ocasionar tensiones peligrosas en las partes metálicas que están expuestas.

ELECTRICO—ADVERTENCIA SOBRE EL CABLE
Use un cable eléctrico con un máximo de 4,5 metros de largo, con una capacidad mínima de 6 amperios, 250 V, hecho de cable HAR, con el conector moldeado IEC 320 en un extremo y con un enchufe que está aprobado por el país de uso final en el otro.

ATENCION: Las aberturas para ventilación no deberán bloquearse y deberán tener acceso libre al aire ambiental de la sala para su enfriamiento.

TEMPERATURA REQUERIDA PARA LA OPERACIÓN
Este producto está diseñado para una temperatura ambiental máxima de 40 grados C.

PARA TODOS LOS PAÍSES: Monte el producto de acuerdo con los Códigos Eléctricos locales y nacionales.

Standarder: Denna produkt uppfyller följande standarder.

Radiostörning EN55022 Klass A

VARNING: Denna produkt kan ge upphov till radiostörningar i hemmet, vilket kan tvinga användaren till att vidtaga erforderliga åtgärder.

Immunitet EN50082-1

Dessa produkter har säkerhetstestats av UL i enlighet med Standard 1950, av CSA i enlighet med CSA 950, och av TUV i enlighet med EN60950.



SÄKERHET
TILLKÄNNAGIVANDEN BETRÄFFANDE ELEKTRICITETSRISK:
RISK FÖR ELEKTRISK STÖTFör att undvika ELEKTRISK stöt, ta ej av locket. Det finns inga delar inuti som behöver underhållas. Denna apparat är under HÖGSPÄNNING och får endast öppnas av en utbildad kvalificerad tekniker. För att undvika ELEKTRISK STÖT, koppla ifrån produktens strömanslutning innan LAN-kablarna ansluts eller kopplas ur.



FARA FÖR BLIXTNEDSLAG
FARA: ARBETA EJ på utrustningen eller kablarna vid ÅSKVÄDER.



VARNING: NÄTKABELN ANVÄNDS SOM STRÖMBRYTARE
FÖR ATT KOPPLA FRÅN STRÖMMEN, dra ur nätkabeln.

INSTALLATION
ELEKTRISKT—AUTOMATISK SPÄNNINGSJUSTERING
Denna produkt justeras automatiskt till alla spänningar inom omfånget som indikeras på produktens märkning.

ELEKTRISKT—TYP KLASS 1 UTRUSTNING
DENNA UTRUSTNING MÅSTE VARA JORDAD. Nätkabeln måste vara ansluten till ett ordentligt jordat uttag. Ett felaktigt uttag kan göra att närliggande metalldelar utsätts för högspänning. Apparaten skall anslutas till jordat uttag, när den ansluts till ett nätverk.

ELEKTRISKT—NMÄRKNING BETRÄFFANDE KABELN
Använd en kabel med maximum längd 4,5 meter och minimum 6 amp nominal, 250V, av HAR kabelfabrikat med ett specialutformat IEC 320-kontaktdon i ena änden och i den andra en plugg som godkänts i landet där produkten används.

VARNING: Luftventilerna får ej blockeras och måste ha fri tillgång till omgivande rumsluft för avsvalning.

DRIFTSTEMPERATUR
Denna produkt är konstruerad för rumstemperatur ej överstigande (40 eller 50) grader Celsius.

ALLA LÄNDER: Installera produkten i enlighet med lokala och statliga bestämmelser för elektrisk utrustning.

Overview

CentreCOM™ Micro Repeaters are two-port media converters designed for Ethernet coax and Unshielded Twisted Pair (UTP) network segments. The product family includes a series with internal power supplies (AT-MR12x as illustrated in Figure 1) and with external power supplies (AT-MR11x). CentreCOM Micro Repeaters support full length segments on either side, fully repeated transmission and the maximum number of nodes specified by the IEEE. Repeating packets results in a higher performance network by regenerating preamble, retiming the data packets and extending collision fragments to ensure collision enforcement by all nodes.

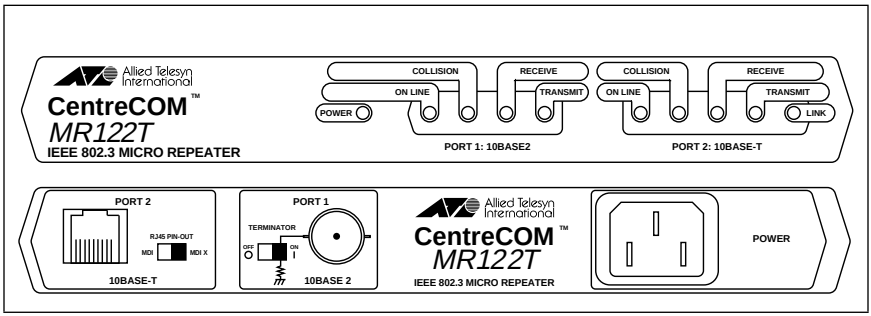


Figure 1: AT-MR122T Front and Back Panels

The AT-MR111T and AT-MR121T allow for connection of a UTP 10Base-T Ethernet segment to a thick (10Base5) segment, and the AT-MR112T and AT-MR122T allow for connection of a UTP 10Base-T Ethernet segment to a thin (l0Base2) coaxial segment. Table 1 summarizes the product line.

Table 1: Two-Port Micro Repeater Models

Model Name	Power Supply	Port 1	Port 2
AT-MR111T	External	AUI	UTP
AT-MR112T	External	BNC	UTP
AT-MR113	External	AUI	AUI
AT-MR114	External	AUI	BNC
AT-MR115	External	BNC	BNC
AT-MR121T	Internal	AUI	UTP
AT-MR122T	Internal	BNC	UTP
AT-MR123	Internal	AUI	AUI
AT-MR124	Internal	AUI	BNC
AT-MR125	Internal	BNC	BNC

The AT-MR113 and AT-MR123 connect AUI to AUl, and the AT-MR114 and AT-MR124 connect 10Base2 to AUI. The AUI will accept any IEEE 802.3 standard transceiver for 10Base5, 10Base2, 10Base-T, FOIRL, or a proprietary media connection provided the AUI meets the IEEE 802.3 standard. (Heartbeat should be disabled).

These media converters utilize state-of-the-art technologies, including a custom Application Specific Integrated Circuit (ASIC) and Surface Mount Technology (SMT), which provide enhanced functionality, increased reliability and improved performance. The use of a proprietary ASIC has permitted Allied Telesyn to make the CentreCOM Micro Repeaters exceptionally compact while providing the complete functionality of larger repeaters. The small size of the units allows for the repeater function to be brought to the desktop or used in wall mount installation.

Network diagnostic indicators are provided on the front of the micro repeaters to aid in troubleshooting and fault isolation. Each port has LEDs appropriate for the medium. For example, on the AT-MR112T and AT-MR122T (BNC to UTP), both ports have Transmit, Receive, On Line, and Collision indicators. In addition, the UTP port has a Link integrity indicator.

Cabling

AUI Connections

CentreCOM Micro Repeaters with 15-pin AUI connections may accept up to 50 meters (164 ft.) of IEEE 802.3 AUI cabling. An alternative to using AUI cable is to attach a CentreCOM Micro Transceiver directly to the AUI connector.

Note

For micro repeaters using external transceivers attached to the AUI port, disable the SQE Test (heartbeat) function on the external transceiver. Repeaters and SQE Test function are not compatible.

10Base2 (Thin Coax) Connections

The micro repeater 10Base2 thin Ethernet connections support a full 185 meters (606 ft.) of thin Ethernet coaxial cable. This coax segment will allow up to 30 Media Access Units (MAU) or transceiver connections including the connection to the CentreCOM Micro Repeater. The BNC coax connector may be plugged directly into the BNC connection without using a BNC-T connector and external 50Ω terminator. The termination is built in. If the micro repeater is not on either end of the segment, then the internal 50Ω termination must be disabled via the external switch located next to the BNC connector.

10Base-T (UTP) Connections

Micro Repeaters with a UTP port support both straight-through (Figure 2) and crossed (Figure 3) wiring. The MDI/MDI-X two-position slide switch located near the RJ45 connector will allow use with either type of cable. If you are not sure of the UTP cable pinout, set the switch into the position that gives a valid Link indication for the UTP connection.

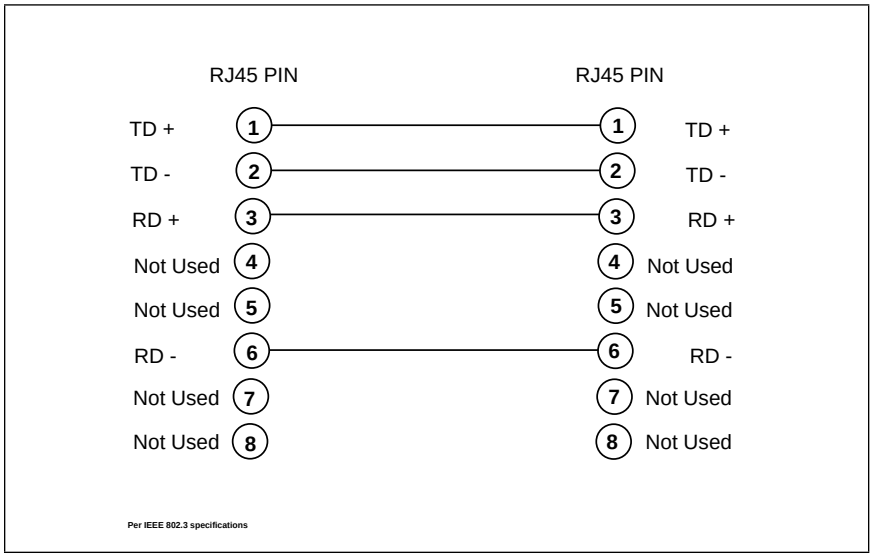


Figure 2: 10Base-T UTP Straight-Through

This switch allows for use with a UTP cable wired as straight-through (MDI interface) or wired with the TX pair crossed with the RX pair (MDI-X interface). That is, when connecting the micro repeater to a 10Base-T repeater or Hub, a straight-through cable could be used and the switch would be in the non-crossover position (MDI). If the UTP port is connected to a 10Base-T transceiver and a straight-through cable is used, then the switch should be in the crossover (MDI-X) position.

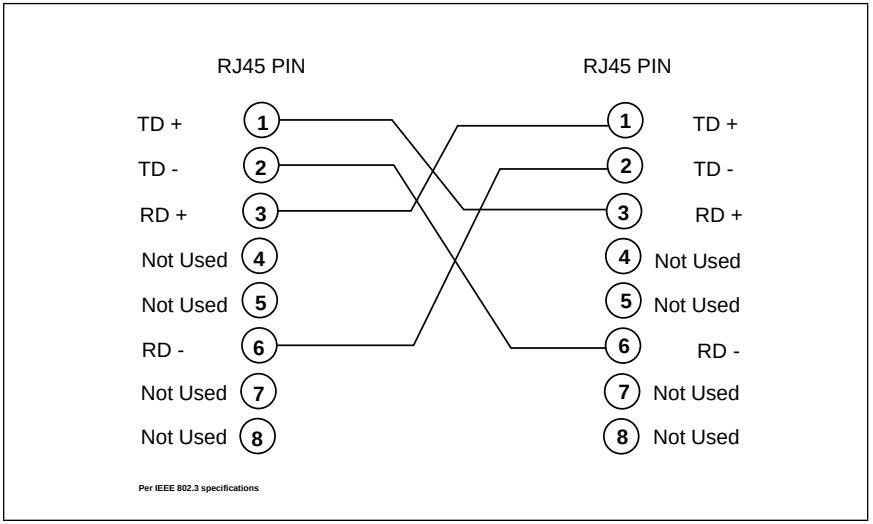


Figure 3: 10Base-T UTP Crossover Cabling

External Power Supply Micro Repeaters

The AT-MR11x Micro Repeaters have external power adapters. Locate a 120 VAC outlet and plug in the provided AC power adapter.

Note

Use only the AC power adapter provided. Using another power adapter may permanently damage your micro repeater and void your warranty.

Connect the power connector from the AC power adapter to the micro repeater. The power indicator should illuminate.

Internal Power Supply Micro Repeaters

The AT-MR12x Micro Repeaters have internal universal power supplies. Locate the 120 or 240 VAC power outlet for the site and plug in the standard-equipment power cord. Insert the power plug into the micro repeater. The power indicator should now illuminate.

The CentreCOM Micro Repeaters re-time the Ethernet signal and regenerate the Ethernet packet and preamble. The micro repeaters also count the number of consecutive collisions. If this number reaches 32, then the repeater takes the segment Off Line (partition). If one valid Ethernet packet is received on that segment, the repeater places the segment On Line automatically, thus, disconnecting problem segments and reconnecting valid segments dynamically.

Switches

Micro repeaters with an UTP RJ45 port (the AT-MR111T, AT-MR121T, AT-MR112T and AT-MR122T) have a switch for selecting the UTP crossover function. Models with a BNC port (the AT-MR112T, AT-MR122T, AT-MR114T, AT-MR124T, AT-MR115 and AT-MR125) have a switch for selecting or deselecting the internal 50Ω termination function for the thinnet connection.

Note

The factory default of the 50Ω terminator switch is the ON setting. No external BNC-T and 50Ω terminator is required when this switch is enabled.

Indicators

The following diagnostic indicators are common to the micro repeaters:

Power—Indicates the AC power adapter is plugged in and providing power to the micro repeater.

On Line—This indicator is lit when the port is ready for operation and is not partitioned.

Collision—Indicates a collision detected on that port.

Receive—This indicator will flash whenever a packet is received on that port. Brief flashes indicate low traffic levels.

Transmit—Indicates micro repeater transmitting a packet out of that port. In addition to the common indicators, the 10Base-T RJ45 ports have a Link indicator.

Link—This indicator will illuminate when a valid link is detected on the Receive pair of the UTP segment. The Link indicator must be lit on the 10Base-T devices on both ends of the UTP segment for Ethernet data to flow.

Figure 4 through Figure 13 show the indicators and ports for all repeaters in the micro repeater family.

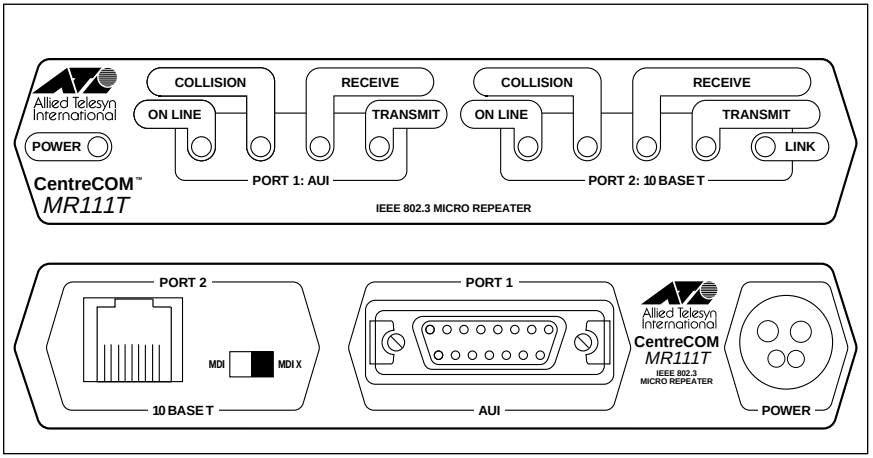


Figure 4: AT-MR111T Front and Back Panels

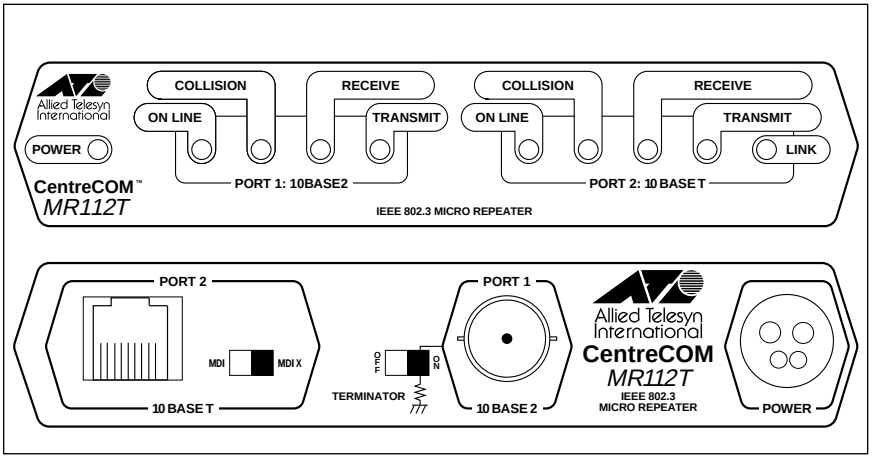


Figure 5: AT-MR112T Front and Back Panels

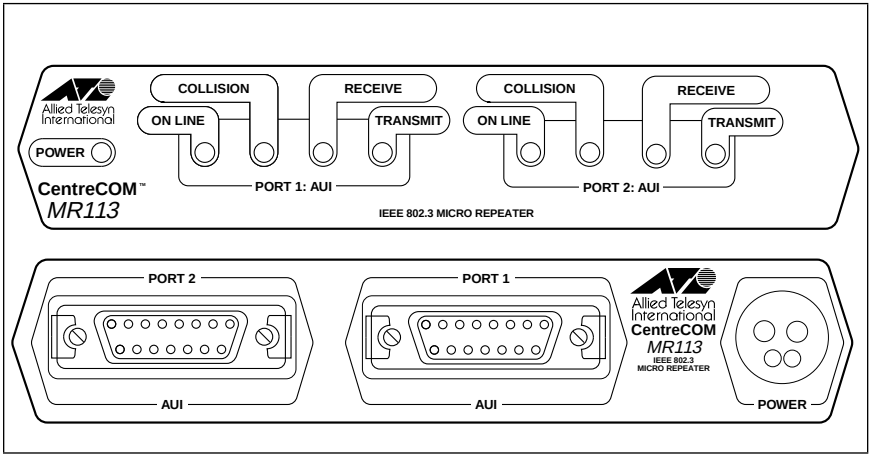


Figure 6: AT-MR113 Front and Back Panels

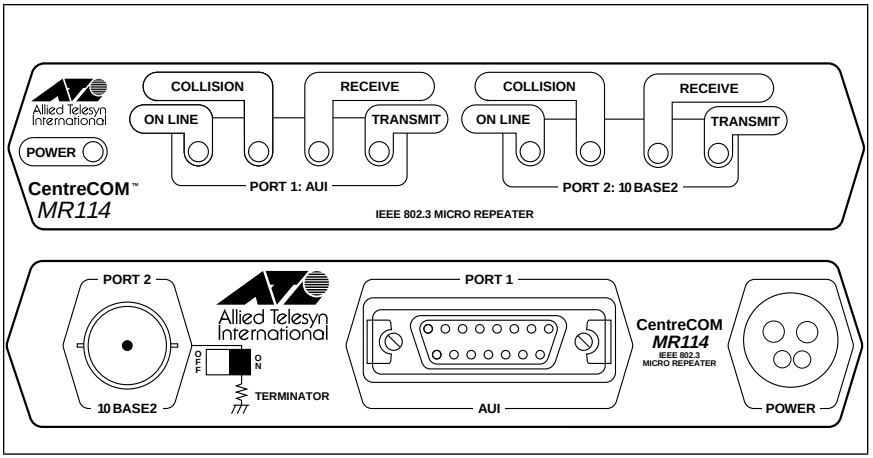


Figure 7: AT-MR114 Front and Back Panels

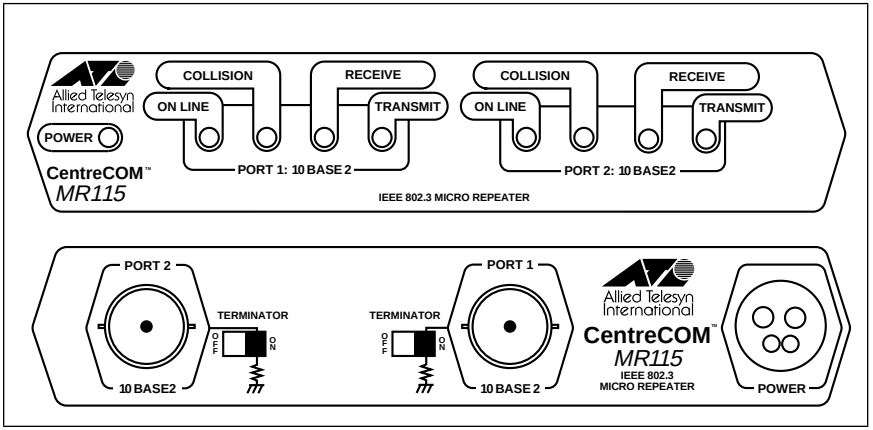


Figure 8: AT-MR115 Front and Back Panels

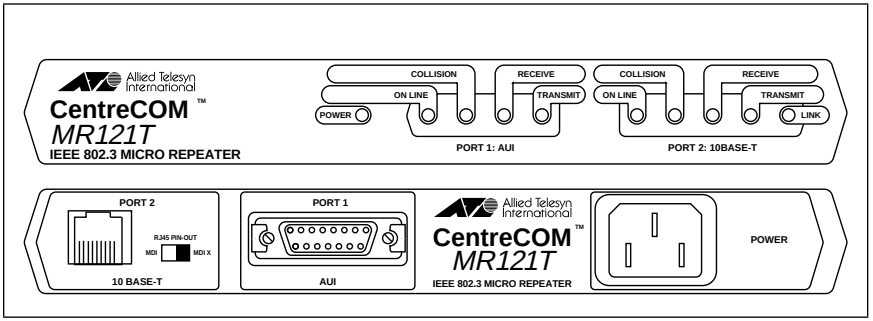


Figure 9: AT-MR121T Front and Back Panels

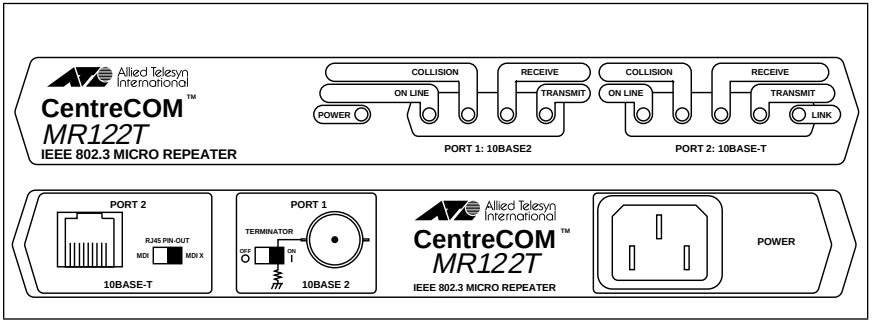


Figure 10: AT-MR122T Front and Back Panels

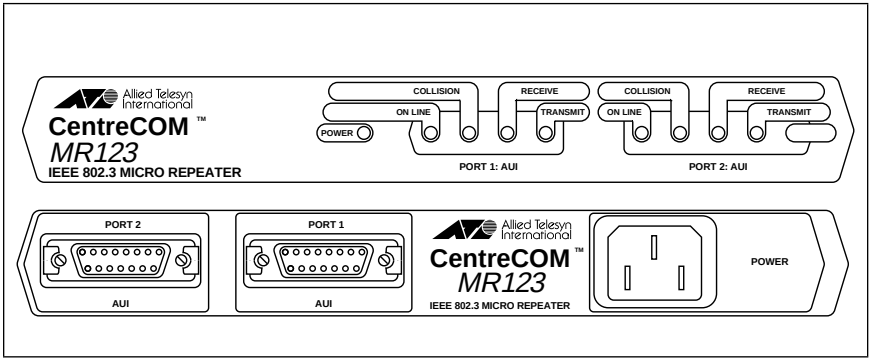


Figure 11: AT-MR123 Front and Back Panels

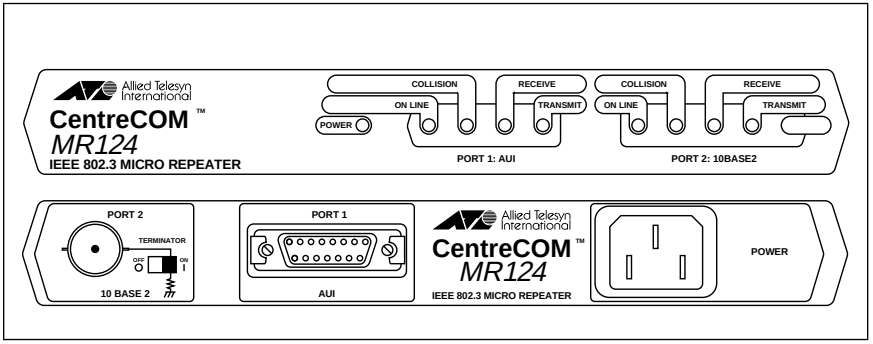


Figure 12: AT-MR124 Front and Back Panels

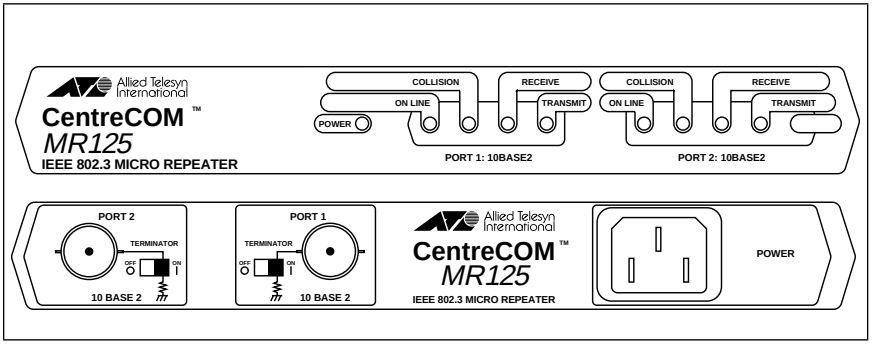


Figure 13: AT-MR125 Front and Back Panels

Troubleshooting

Caution

On a repeater with an external power supply, there's no power indication.

1. Check the AC power adapter at the AC receptacle and ensure that there is AC power available.
2. Also, ensure that the power plug at the micro repeater is properly seated.
3. If there is still no power indication on a unit with an external power supply replace the power adapter and test again.

Caution

Power LED is lit but no packets are getting through (no network connections across the repeater).

1. Check to see if the port is receiving or transmitting packets by checking the Receive and Transmit indicators.
2. Check port connections and wiring. Check link indications on a 10Base-T segment (see below) and termination on a 10Base2 segment (see below).
3. Check for excessive collisions (see below).
4. Try another known good repeater to test and validate the segment.

Caution

On a 10Base-T UTP port, the Link indicator is not illuminated.

❑ With 10Base-T Ethernet, most problems are with the UTP wiring.

1. Check that the UTP crossover switch is properly set. You cannot harm anything by changing the setting. If the Link indicator comes on, the transmit and receive polarity was backwards for your configuration.

   For micro repeater to 10Base-T Hub connections, use a straight-through cable and set the switch to the MDI position. For connecting a micro repeater to a 10Base-T transceiver or network interface card, use a crossover cable and set the switch to the MDI-X position.
2. Use only UTP cable designed for use in 10Base-T applications. 10Base-T wiring lengths should not exceed 100 meters (328 ft.). The wiring should be routed away from devices known to emit electromagnetic interference, such as fluorescent lights, power transformers and relay equipment.

Caution

On a 10Base2 BNC port, there are too many collisions or packets are not getting through.

1. Verify that the segment is properly terminated on both ends and that there is no other termination between these two points. You may plug the BNC connector directly into the micro repeater BNC connection if the internal 50 Ω termination function is enabled. If a BNC-T connector is to be used, the internal 50 Ω termination function should be disabled. Using an Ohm meter (DMM or VOM), it is possible to statically test the coaxial segment. With terminators in place, measure the resistance of the cable from the male connector of a BNC-T. Touch one of the meter's probes to the inner pin and the other probe to the outside of the BNC-T. You should read between 25 Ω and 30 Ω resistance.

Caution

Too many collisions.

1. On an AUI port, make certain that the SQE Test (heartbeat) switch is OFF on any transceiver attached to the port.
2. Check the media connections and cabling. Excessive collisions may be caused by a faulty cable or connection.

Network loading can also cause excessive collisions.

Configurations

The configuration in Figure 14 demonstrates how the AT-MR111T (or AT-MR121T) can be used to connect 10Base-T devices.

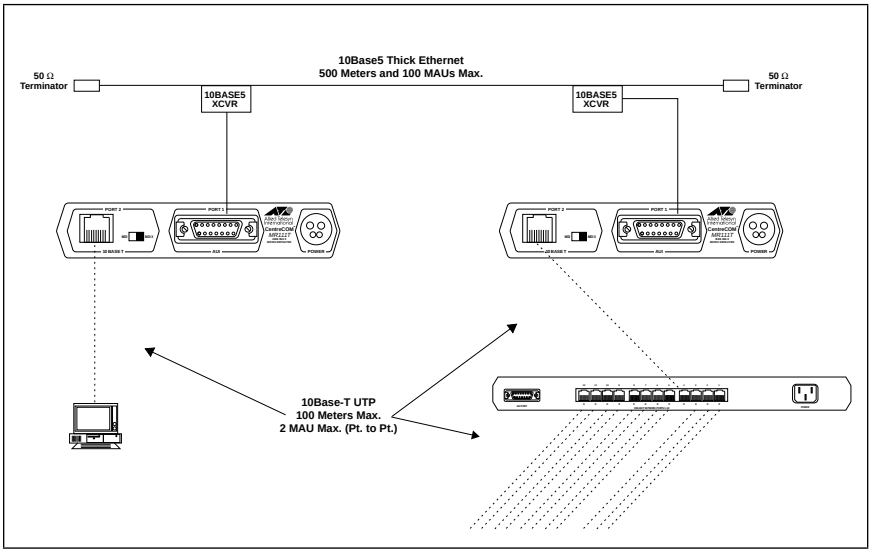


Figure 14: AT-MR111T AUI to RJ45

The configuration in Figure 15 depicts a 10Base-T Hub connecting to several 10Base2 segments through the AT-MR122T (or AT-MR112T) micro repeater.

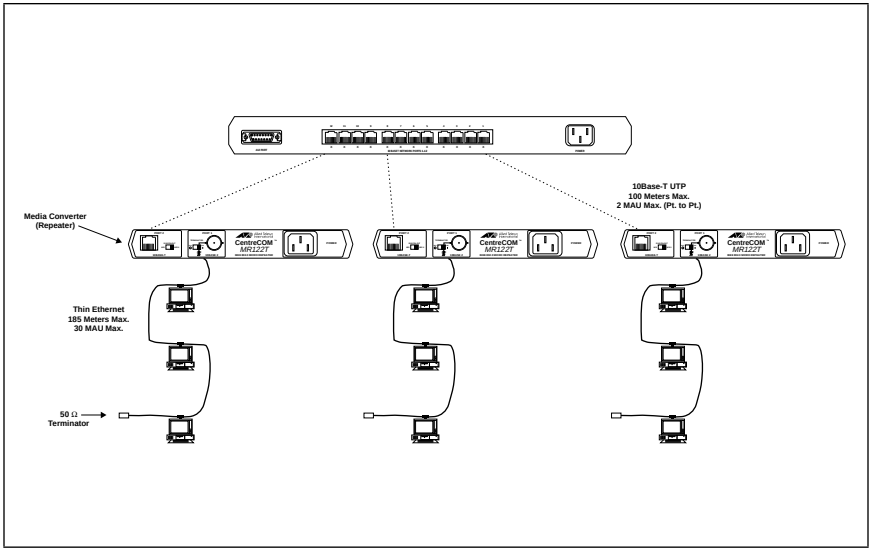


Figure 15: AT-MR122T BNC to RJ45

The configuration in Figure 16 shows how an AT-MR113 (or AT-MR123) connects two 10Base5 segments.

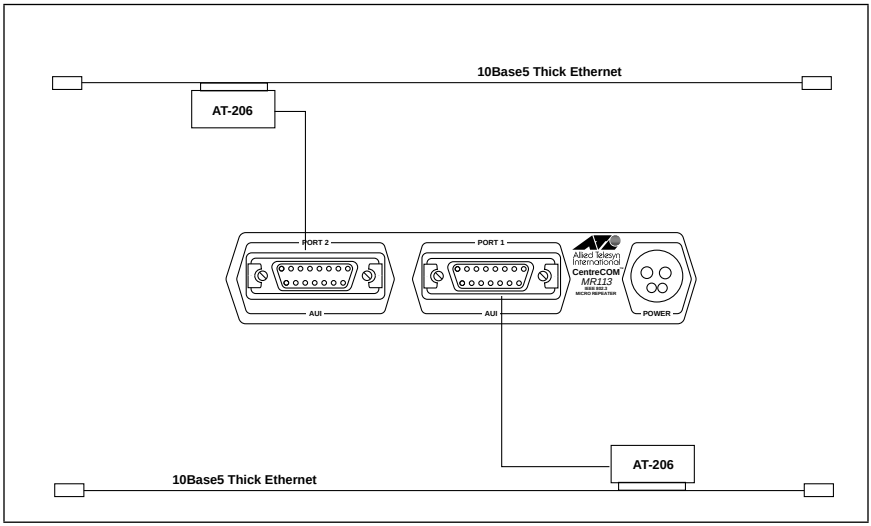


Figure 16: AT-MR113 AUI to AUI

Figure 17 shows how an AT-MR114 (or AT-MR124) connects a 10Base2 segment to a 10Base5 backbone.

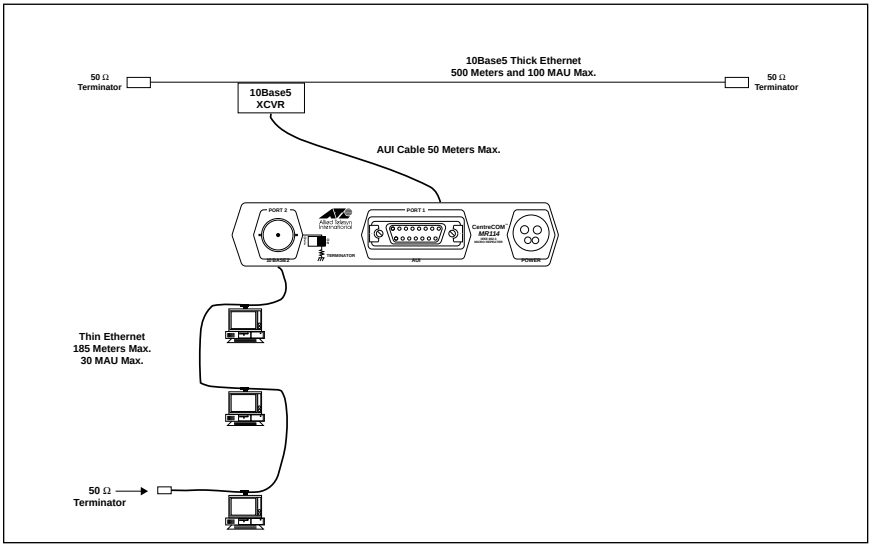


Figure 17: AT-MR114 AUI to BNC

The configuration in Figure 18 shows how an AT-MR115 (or AT-MR125) would be used to connect two 10Base5 segments.

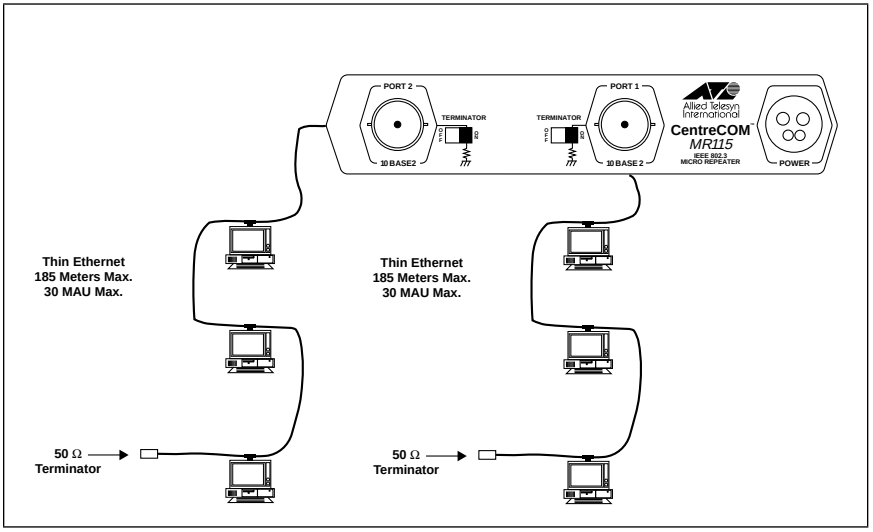


Figure 18: AT-MR115 BNC to BNC

IEEE 802.3 Quick Primer

AUI "Drop" Cables

AUI or "Drop" cables can be no longer than 50 meters (164 ft.) each. Attachments may be made only to the cable ends at the 15 pin D-sub connector. AUI "Drop" cables may have a maximum 257ns propagation delay for computing the worst case propagation delay of a cable system. AUI cable propagation delay is about 5.13 ns/ meter. This cable internally consists of four shielded twisted pair wires with an overall shield and drain wire; a 15 pin D-sub male connector at one end and a 15 pin D-sub female connector at the other end. Cable impedance is typically 78 Ω. The AUI cable typically connects a transceiver attached to a coaxial segment to a Data Terminal Equipment (DTE) workstation.

10Base-T

10Base-T UTP media was implemented to reduce Ethernet wiring costs. UTP wiring is installed in most buildings for telephone systems. Much of this existing cabling is suitable for Ethernet 10 Mb data rates. Care must be taken to ensure the buildings UTP wiring is able to carry these Ethernet data rates before a 10Base-T network solution is implemented. Unlike coaxial Ethernet, 10Base2, 10Base5 and 10Base-T UTP is point-to-point wiring. Typically, an Ethernet 10Base-T transceiver (MAU) is connected to one end and a 10Base-T Hub (Repeater) is connected to the other. Straight-through cabling pinout is used for Hub to MAU connections. Hub to Hub and MAU to MAU connections are allowed using a UTP cable with a crossover function crossing TD+ and TD- with RD+ and RD- signals. No other attachments are allowed along the length of UTP wire, however, wiring patch panels and punch-down blocks are allowed for interconnecting segments. The cable should be Type 3 UTP, 100 Ω impedance, 22 to 24 AWG, and should not exceed 100 meters (328 ft.) in length from one end to the other.

Thin (10Base2) Ethernet

When configuring thin coax segments, IEEE 802.3 specifications allow 29 or fewer MAUs per cable segment spaced at no less than 0.5 meter (1.6 ft.). The 10Base2 (thin) cable length can not exceed 185 meters (606 ft.) per 10Base2 (thin) cable segment. The worst case propagation delay for a 185 meters (606 ft.) thin Ethernet segment is 960.9 ns. The propagation delay for 10Base2 (thin) Ethernet cable is 514 ns/meter. Both ends of the segment must be terminated with a 50 Ω termination with a power rating of 0.5 watts or greater. Earth grounding of the segment shield must take place at only one point on the cable.

Thick (10Base5) Ethernet

When configuring thick coax segments, IEEE 802.3 specifications allow 100 MAU attachments or less, spaced at multiples of 2.5 meters (8.2 ft.) measured accurately from the cable end (50 Ω terminator included). The thick cable segment cannot exceed 500 meters (1640 ft.) in length. Worst case "end-to-end" propagation delay of a thick coax segment is 2165 ns. Propagation delay of thick Ethernet coax is calculated at 4.33 es/meter. Both ends of the segment must be terminated with a 50 Ω termination with a power rating of 0.5 watts or greater. Earth grounding of the segment shield must take place at only one point on the cable.

Propagation

Round-trip propagation delay throughout the entire cable system, from farthest ends, may not exceed 51.7 µs.

Propagation delay is the time it takes a signal to travel from the input of a system component to the output. Propagation delay is usually measured in nanoseconds. IEEE 802.3 has specific propagation delay maximums for the Ethernet components. Cable length plays a major role in propagation delay. (i.e., a 50 meter [164 ft.] AUI cable has a maximum propagation delay of 257 ns.) The propagation delay of a cable is dependent on the length and velocity factor of the cable type.

Four Repeater Rule

No more than four repeaters may be linked to connect five segments and no other attachments may be on the linking segments. If attachments are present on the repeater coax link segments, then no more than two repeaters linking three segments may be configured. These limitations are set to keep propagation delay, packet jitter, and signal attenuation to within acceptable standards.

Where to Find Us

For Technical Support or Service		
Location	Phone	Fax
Americas United States, Canada, Mexico, Central America, South America	1 (800) 428-4835	1 (206) 481-3790
Asia Singapore, Taiwan, Thailand, Malaysia, Indonesia, Korea, Philippines, China, India	(+65) 3815-613	(+65) 3833-830
Australia Australia, New Zealand	(612) 416-0619	(612) 416-9764
France France, Belgium, Luxembourg, The Netherlands, Middle East, Africa	(+33) 1-60-92-15-32	(+33) 1-69-28-37-49
Germany Germany, Switzerland, Austria, Eastern Europe	(+49) 30-435-900-126	(+49) 30-435-70-650
Hong Kong	(+852) 2-529-4111	(+852) 2 529-7661
Italy Italy, Spain, Portugal, Greece, Turkey, Israel	(+39) 2-416047	(+39) 2-419282
Japan	(+81) 3-3443-5640	(+81) 3-3443-2443
United Kingdom United Kingdom, Denmark, Norway, Sweden, Finland, Iceland	(+44) 1-235-442560	(+44) 1-235-442490
Technical Bulletin Board Service	1 (206) 483-7979	
CompuServe	Go ALLIED	
World Wide Web	http://www.alliedtelesyn.com	

For Information Regarding Allied Telesyn International Corp.

Allied Telesyn International Corp.
19015 North Creek Parkway Suite 200
Bothell, WA 98011
Tel:1 (206) 487-8880
Fax:1 (206) 489-9191

Allied Telesyn International Corp.
950 Kifer Road
Sunnyvale, CA 94086
Tel:1 (800) 424-4284 (USA and Canada)
Fax:1 (408) 736-0100

For Sales Information

United States

Scottsdale, AZ
Tel: (602) 423-7087, Fax: (602) 423-7088

Los Angeles, CA
Tel: (310) 412-8684, Fax: (310) 412-8685

Mission Viejo, CA
Tel: (714) 699-0628, Fax: (714) 699-0276

San Diego, CA
Tel: (619) 279-3899, Fax: (619) 279-3897

Santa Ana, CA
Tel: (714) 838-0434 Fax: (714) 838-9721

Clearwater, FL
Tel: (813) 726-0022, Fax: (813) 726-0234

Norcross, GA
Tel: (770) 448-7214, Fax: (770) 448-2600

Reading, MA
Tel & Fax: (617) 944-3492

Eden Prairie, MN
Tel: (612) 829-7506, Fax: (612) 903-5284

St. Louis, MO
Tel: (314) 894-6160, Fax: (314) 894-3773

Morrisville, NC
Tel: (919) 468-0831, Fax: (919) 468-0829

Dover, NH
Tel: (603) 743-3010, Fax: (603) 743-6327

Portsmouth, NH
Tel: (603) 431-6461, Fax: (603) 431-1649

Plaistow, NH
Tel: (603) 382-0815, Fax: (603) 382-0818

Lake Oswego, OR
Tel: (503) 699-3130, Fax: (503) 636-6575

Austin, TX
Tel: (512) 261-6378, Fax: (512) 261-6379

San Antonio, TX
Tel: (210) 646-8744

Dallas, TX
(214) 365-9471, Fax: (214) 365-9472

Vienna, VA
Tel: (703) 506-0196, Fax: (703) 506-1986

Australia

Lindfield, NSW
Tel: (612) 416-0619, Fax: (612) 416-9764

Canada

Richmond, British Columbia
Tel: (604) 244-0678, Fax: (604) 270-3644

Rexdale, Ontario
Tel: (416) 675-6738, Fax: (416) 675-0057

Germany

Berlin
Tel: (+49) 30-435-90-00, Fax: (+49) 30-435-706-50

Freising
Tel: (+49) 8161-9906-0, Fax: (+49) 8161-9906-22

The Netherlands

Schiphol
Tel: (+31) 20-654-0111, Fax: (+31) 20-654-0270

Italy

Milano
Tel: (+39) 2-416047, Fax: (+39) 2-419282

England

Abingdon, Oxon
Tel: (+44) 1235-442500, Fax: (+44) 1235-442490

France

Les Ulis
Tel: (+33) 1-60921525, Fax: (+33) 169-28-37-49

Hong Kong

Wanchai
Tel: (+852) 2-529-4111, Fax: (+852) 2-529-7661

Singapore
Tel: (+65) 383-3832, Fax: (+65) 383-3830

Japan

Yodogawa-ku, Osaka
Tel: (+81) 6-391-6310, Fax: (+81) 6-391-6325

Machida-shi, Tokyo
Tel: (+81) 427-21-8141, Fax: (+81) 427-21-8848

Ethernet™ is a registered trademark of Xerox Corporation.

Copyright 1997 Allied Telesyn International, Corp.
CentreCOM™ is a trademark of Allied Telesyn International, Corp.

All rights reserved. No part of this publication may be reproduced without prior written permission from Allied Telesyn International, Corp.

Allied Telesyn International, Corp. reserves the right to make changes in specifications and other information contained in this document without prior written notice. The information provided herein is subject to change without notice. In no event shall Allied Telesyn International, Corp. be liable for any incidental, special, indirect, or consequential damages whatsoever, including but not limited to lost profits, arising out of or related to this manual or the information contained herein, even if Allied Telesyn International, Corp. has been advised of, known, or should have known, the possibility of such damage.



ATI
950 Kifer Road
Sunnyvale, CA 94086 USA
Tel (800) 424-4284 • Fax (408) 736-0100
Technical Support Tel (800) 428-4835 • Fax (206) 481-3790
International Fax (408) 736-0286