Allied Telesyn International

CentreCOM ®

AT-MR420TR
AT-MR820TR

Multiport Micro Repeaters

Installation Guide

PN 613-10625-00 Rev A

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Electrical Safety and Installation Requirements

U.S. Federal Communications Commission

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 the 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 the 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 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 appariel 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.

MOUNTING INSTRUCTIONS
CAUTION: These models are designed for operation in the HORIZONTAL position. VERTICAL MOUNTING must not be done without the use of an Allied Telesyn vertical mount chassis designed for this purpose.

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

CAUTION: DO NOT detach rubber feet from the product unless an Allied Telesyn vertical mounting chassis is being used.

OPERATING TEMPERATURE
This product is designed for a maximum ambient temperature of 40° 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
ACHTUNG: GEFÄHRLICHE SPANNUNG
Das Gehäuse nicht öffnen. Das Gerät enthält keine vom Benutzer wartbaren Teile. Das Gerät steht unter Hochspannung und darf nur von qualifiziertem technischem Personal geöffnet werden. Vor Anschluß der LAN-Kabel, Gerät vom Netz trennen.

GEFAHR DURCH BLITZSCHLAG
GEFAHR: Keine Arbeiten am Gerät oder an den Kabeln während eines Gewitters ausführen.

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.

KLASSE 1 GERÄTE
DIESE GERÄTE MÜSSEN GEERDET SEIN. Der Netzstecker darf nur mit einer vorschriftsmäßig geerdeten Steckdose verbunden werden. Ein unvorschriftsmäßiger Anschluß kann das Metallgehäuseteile 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.

MONTAGEANWEISUNGEN
VORSICHT: Diese Modelle sind für Betrieb in horizontaler Position entworfen worden. Das Gerät darf NICHT OHNE Gebrauch eines dafür entworfenen Allied Telesyn-Vertikalmontagegestells in VERTIKALER POSITION montiert werden.

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

VORSICHT: Die Gummifüße NICHT ENTFERNEN, außer bei Gebrauch des Allied Telesyn-Vertikalmontagegestells.

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.

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
ELEKTRISKE FORHOLDSREGLER
ADVARSEL: RISIKO FOR ELEKTRISK STØD
For at forebygge ELEKTRISK stød, undlad at åbne apparatet. Der er ingen indre dele, der kan repareres af brugeren. Denne enhed indeholder LIVSFARLIGE STRØMSPÆNDINGER og bør kun åbnes af en uddannet og kvalificeret tekniker. For at undgå risiko for ELEKTRISK STØD, afbrydes den elektriske strøm til produktet, før LAN-kablerne monteres eller afmonteres.

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

ADVARSEL: DEN STRØMFØRENDE LEDNING BRUGES TIL AT AFBRYDE STRØMMEN. SKAL STRØMMEN TIL APPARATET 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 godkendt der er af myndighederne i brugerlandet.

INSTRUKTIONER FOR OPSTILLING
ADVARSEL: Disse modeller er konstrueret til at betjenes i HORISONTAL position (vandret). VERTIKAL OPSTILLING (lodret) må IKKE FORETAGES uden brug af et Allied Telesyn vertikalt monteringsstel konstrueret til dette formål.

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

ADVARSEL: UNDLAD at fjerne gummisoklerne fra apparatet, med mindre der anvendes et Allied Telesyn vertikalt monteringsstel.

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.

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
Gelieve het deksel niet te verwijderen, teneinde ELEKTRISCHE schokken te voorkomen. Binnenin bevinden zich geen onderdelen die door de gebruiker kunnen worden onderhouden. 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 waarden op het label vermeld.

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 ampère, 250 V, uit HAR vervaardigd, met aan het ene uiteinde een gevormde IEC 320 stekker en aan het andere uiteinde een stekker die goedgekeurd is door het land waar het toestel zal worden gebruikt.

MONTAGE-INSTRUCTIES
WAARSCHUWING: Deze modellen zijn ontworpen om te werken in HORIZONTALE stand.
VERTICALE MONTAGE mag NIET UITGEVOERD WORDEN, tenzij een daartoe speciaal ontworpen Allied Telesyn chassis voor verticale montage wordt gebruikt.

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

WAARSCHUWING: De rubberen voetjes NIET van het produkt LOSMAKEN behalve wanneer een chassis voor vertikale montage van Allied Telesyn wordt gebruikt.

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.

SECURITE
INFORMATION SUR L'ELECTRICITE
AVERTISSEMENT: DANGER D'ELECTROCUTION
Pour empêcher les dangers d'ELECTROCUTION, ne pas enlever le couvercle. L'équipement ne contient aucun élément réparable par l'utilisateur. Cet appareil comprend des TENSIONS DANGEREUSES et ne doit être ouvert que par un technicien dûment qualifié. Pour éviter tout risque d'ELECTROCUTION, débrancher l'appareil de la prise de courant avant de connecter ou de déconnecter les câbles LAN.

DANGER DE FOUDRE
DANGER: NE PAS MANIER l'équipement ou les CABLES pendant les périodes d'activité orageuse.

ATTENTION: LE CORDON D'ALIMENTATION SERT DE MISE HORS CIRCUIT POUR COUPER L'ALIMENTATION DE L'APPAREIL, débranchez le cordon.

INSTALLATION
ELECTRICITE—REGLAGE DE TENSION AUTOMATIQUE
Ce produit peut s'ajuster automatiquement sur n'importe quelle tension comprise dans la plage indiquée sur le label.

ELECTRICITE—EQUIPEMENT DE CLASSE 1
CET APPAREIL DOIT ETRE MIS A LA TERRE. La prise de courant doit être branchée dans une prise femelle correctement mise à la terre. Sinon, des tensions dangereuses risqueraient d'atteindre les pièces métalliques accessibles à l'utilisateur.

ELECTRICITE—INFORMATION SUR LE CORDON
Utiliser un cordon secteur de 4,5 mètres de long maximum, calibré à 6 ampères minimum, 250V, et 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.

INSTRUCTIONS DE MONTAGE
ATTENTION: Ces modèles sont destiné à fonctionner en position horizontale. L'appareil NE DOIT PAS être utilisé en MONTAGE VERTICAL sans employer un châssis de montage vertical Allied Telesyn conçu à cet effet.

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

ATTENTION: NE PAS ôter les pattes d'attache en caoutchouc du produit, à moins d'utiliser un châssis de montage vertical Allied Telesyn.

TEMPERATURE DE FONCTIONNEMENT
Ce produit est capable de tolérer une température ambiante maximum de 40 degrés Celsius

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

Radioaaltojen häirintä: EN55022 Luokka A

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

Kestävyys: EN50082-1

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

TURVALLISUUS
SÄHKÖÖN LIITTYVIÄ HUOMAUTUKSIA
VAROITUS: SÄHKÖISKUVAARA
Estääksesi SÄHKÖISKUN älä poista kantta. Sisällä ei ole käyttäjän huollettavissa olevia osia. Tämä laite sisältää VAARALLISIA JÄNNITTEITÄ ja sen voi avata vain koulutettu ja pätevä teknikko. Välttääksesi SÄHKÖISKUN mahdollisuuden katkaise sähkövirta tuotteeseen ennen kuin liität tai irrotat paikallisverkon (LAN) kaapelit.

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

HUOMAUTUS: VIRTAJOHTOA KÄYTETÄÄN VIRRANKATKAISULAITTEENA. VIRTA KATKAISTAAN irrottamalla virtajohto.

ASENNUS
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.

ASENNUSSOHJEET
HUOMAUTUS: Nämä mallit on suunniteltu käytettäviksi VAAKA-asennossa. PYSTYASENNUSTA EI SAA TEHDÄ ilman Allied Telesyn -pystykiinnitysalustaa, joka on suunniteltu tähän tarkoitukseen.

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

HUOMAUTUS: ÄLÄ irroita kumijalkoja tuotteesta, ellei Allied Telesyn-pystykiinnitysalusta ole käytössä.

KÄYTTÖLÄMPÖTILA
Tämä tuote on suunniteltu ympäröivän ilman maksimilämpötilalle 40° C.

KAIKKI MAAT: Asenna tuote paikallisten ja kansallisten sähköturvallisuusmääräysten mukaisesti.

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.

ISTRUZIONI PER IL MONTAGGIO
ATTENZIONE: questi modelli sono concepiti per il funzionamento in posizione ORIZZONTALE. NON È POSSIBILE EFFETTUARE IL MONTAGGIO VERTICALE senza utilizzare l'apposito telaio per il montaggio verticale Allied Telesyn.

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

ATTENZIONE: NON staccare il piedino in gomma dal prodotto tranne qualora si utilizzi il telaio Allied Telesyn per il montaggio verticale.

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

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

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
ELEKTRISKE MEDDELELSE
ADVARSEL: FARE FOR ELEKTRISK SJOKK
For å unngå ELEKTRISK sjokk, må dekslet ikke tas av. Det finnes ingen deler som du kan bruke på innsiden. Denne enheten inneholder FARLIGE SPENNING, og må kun åpnes av en opplært, kvalifisert tekniker. For å unngå muligheten av ELEKTRISK SJOKK, må den elektriske strømmen til produktet være av når du slår LAN-ledninger av og på.

FARE FOR LYNANTENNELSE
FARE: MÅ IKKE BRUKES på utstyr eller ledninger mens LYN-AKTIVITET er i gang.

FORSIKTIG: STRØMLEDNINGEN BRUKES TIL Å SLÅ APPARATET AV. HVIS DU VIL DEAKTIVISERE UTSTYRET, må du fjerne strømledningen.

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

ELEKTRISKE—TYPE 1. KLASSE UTSTYR
DETTE UTSTYRET MÅ JORDES. Strømkontakten må være tilkoplet en korrekt jordet grunnstøpselkontakt. En støpselkontakt som ikke er jordet på rett måte, kan tilføre farlig spenning til lett tilgjengelige metalldeler.

ELEKTRISKE—MEDDELELSE OM LEDNINGER
Bruk en strømledning av maksimal størrelse 4,5 m i lengde, vurdert for minst av 6 amp, 250V, fremstilt av HAR ledning IEC 320 koplingsstykke på den ene kanten og på den andre kanten en plugg som har blitt godkjent i det landet hvor den siste brukeren befinner seg.

BRUKSANVISNINGER FOR MONTERING
FORSIKTIG: Disse modellene er beregnet til bruk i HORISONTAL stilling. VERTIKAL MONTERING må IKKE UTFØRES uten bruk av et Allied Telesyn vertikal monteringschassis som er spesiallaget til dette formål.

FORSIKTIG: MEKANISK LASTNING Installering av utstyret på hyllen må utføres på slik måte at ingen farlige situasjoner oppstår som en følge av ujevn lastning.

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

FORSIKTIG: Gummiføttene må IKKE fjernes fra produktet med mindre en Allied Telesyn vertikal monteringschassis er i bruk.

DRIFTSTEMPERATUR
Dette produktet har blitt fremstilt til bruk med maksimum romtemperatur på 40 grader celsius.

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

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 de 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 deve ser conectado a uma tomada com ligação de fio terra. Tomadas sem 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 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 .

INSTRUÇÕES DE INSTALAÇÃO
CUIDADO: Este modelos foram projetados para funcionar na posição HORIZONTAL. NÃO DEVE SER EFETUADA INSTALAÇÃO VERTICAL sem o uso de um chassis de montagem vertical Allied Telesyn projetado para este fim específico.

CUIDADO: CARREGAMENTO - O equipamento deverá ser montado no suporte de montagem de forma a não causar perigo devido a carregamento não-uniforme.

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

CUIDADO: NÃO RETIRE os calços de borracha do produto a menos que esteja sendo usado um chassis de montagem vertical Allied Telesyn.

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 federais e locais para instalações elétricas.

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 DE RAYOS

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 con tierra debidamente instalado. Un enchufe que no está correctamente instalado podría ocasionar tensiones peligrosas en las partes metálicas 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.

INSTRUCCIONES DE MONTAJE
ATENCION: Estos modelos están diseñados para operar en posición HORIZONTAL. NO SE DEBEN MONTAR VERTICALMENTE sin el uso de un chasis de montaje vertical de Allied Telesyn que se ha diseñado para este fin.

ATENCION: CARGA MECANICA - El montaje del equipo en el bastidor debe realizarse de manera tal que no cause una condición peligrosa debido a la distribución desigual del peso.

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

ATENCION: NO separe las patas de goma del producto a menos que se esté usando un chasis de montaje vertical de Allied Telesyn.

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.

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 STÖT
För 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—ANMÄRKNING 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.

MONTERINGSINSTRUKTIONER
VARNING: Dessa modeller är konstruerade för användning i HORISONTALLÄGE. VERTIKALMONTERING får EJ UTFÖRAS utan att ett Allied Telesyn specialkonstruerat vertikalt monteringschassi används.

VARNING: MEKANISK BELASTNING: Utrustningen ska installeras i chassit på så sätt att fara inte uppstår p g a ojämn belastning.

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

VARNING: Ta ej bort gummifötterna från produkten om inte ett Allied Telesyn vertikalt monteringschassi används.

DRIFTSTEMPERATUR
Denna produkt är konstruerad för rumstemperatur ej överstigande 40 grader Celsius.

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

Table of Contents

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About This Guide

This guide is written for system administrators who are responsible for configuring, monitoring, and maintaining a Local Area Network (LAN) of which Allied Telesyn's *AT-MR420TR* and *AT-MR820TR Micro Repeaters* are components. This guide serves as an installation guide and reference guide for both products.

The contents of each chapter are described below:

- Chapter 1, "Product Description," provides an overview of the *AT-MR420TR/AT-MR820TR Micro Repeaters* including the backbone network ports and switches.
- Chapter 2, "Installation," describes the site requirements, quick installation as well as conventional installation procedures, connections, and LED Status Indicators.
- Chapter 3, "Connectivity," provides instructions associated with the four media connectors and ports.
- Chapter 4, "Topology," describes uplink and cascading capabilities in a backbone network topology as well as the MDI/MDI-X and BNC Termination Switches.
- Appendix A, "Technical Specifications," includes specifications and basic 10Base-T cabling pin assignments.
- Appendix B, "Glossary," provides a glossary of terms that are product and industry specific to the AT-MR420TR/AT-MR820TR.
- Appendix C is a "Technical Support Fax Order."
- Appendix D, "Guide Feedback," offers a means to transmit your comments and/or suggestions for improving the documentation.
- Appendix E, "Index," is an index to this guide.
- Appendix F, "Where To Find Us," provides Technical Support information.

Document Conventions

The following conventions are used in presenting information in this guide:

Note

A note provides additional information or describes the possible consequence of a specific action you can perform.

Contacting ATI Technical Support

If you are having problems with your AT-MR420TR/AT-MR820TR, you can contact ATI's Technical Support staff by:

- Telephone
- Bulletin board services
- Electronic mail via the Internet
- CompuServe forum

When you contact Technical Support, you should have the following information available:

- Serial number of the AT-MR420TR/AT-MR820TR
- Power-up test codes, if any
- Diagnostic test codes, if any

Telephone and Fax

Refer to Appendix E on page 47 for a complete listing of Technical Support Telephone and Fax numbers.

Bulletin Board Services

A bulletin board is available. The number is:

206-483-7979

Modem settings for the bulletin board is: 8 bits; no parity; 1 stop bit.

The process is straightforward: Once the BBS is accessed, it requests that you register either as a new user or as a current user. It then provides instructions on the various features and functions available. This is followed by a list and description of all available technical notes and files that can be downloaded.

Internet Mail

You can send electronic mail via the Internet to:

tech_support@centre.com

CompuServe Forum

ATI has a forum on CompuServe. You can reach us by typing **go allied** at the CompuServe prompt (!).

World Wide Web

You can access Allied Telesyn at our Web Site using the following:

http: //www.alliedtelesyn.com

Chapter 1
Product Description

Overview

Allied Telesyn's multiport *AT-MR420TR/AT-MR820TR Micro Repeaters* represent a compact, inexpensive solution for Local Area Network (LAN) applications.

AT-MR420TR/AT-MR820TR Micro Repeaters combine 10 Mbps of 10Base-T Ethernet connectivity with the same features and functionality of larger, more expensive repeaters. At the same time, they support full-length cable segments with the maximum number of supported devices allowed within IEEE standards.

While identical in structure, the *AT-MR420TR Micro Repeater* differs from the *AT-MR820TR Micro Repeater* in that the former has 4 Shielded/Unshielded Twisted Pair (STP/UTP) ports whereas the latter has 8 STP/UTP ports. You can use any one of the STP/UTP ports for connection to a 10 megabit Ethernet node using Category 3-5 STP/UTP cabling. The Uplink port provides cascading capabilities to the second 10Base-TX Ethernet hub.

AT-MR420TR Faceplates

Figure 1 and Figure 2, respectively show the front and back panel of the *AT-MR420TR* and *AT-MR820TR Micro Repeaters*. The front panel consists of eight Network Load LEDs indicating the percentage of network utilization, and 16 or 8 (depending on version) Link and Receive status LEDs for each network port. Three additional LEDs indicate Activity, Collision, and Power for the repeater itself.

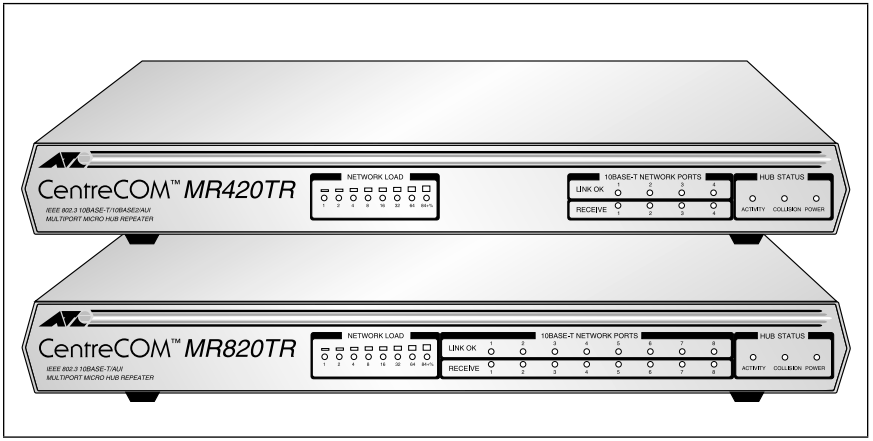

Figure 1: AT-MR420TR and AT-MR820TR Front Panels

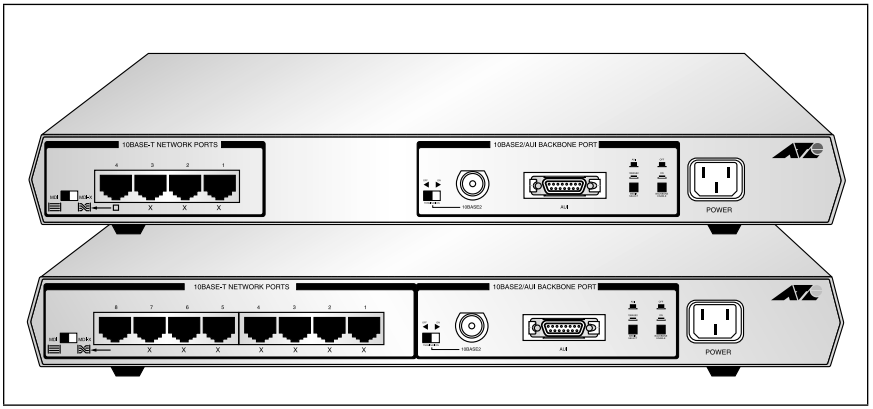

Figure 2: AT-MR420TR and AT-MR820TR Rear Panels

On the back panel are four/eight STP/UTP RJ45 network ports, including Port 4/8, an uplink port, as well as the 10Base5 and 10Base2 backbone network ports, Figure 1 and Figure 2 also show the three-pin AC power receptacle.

Features

The *AT-MR420TR/AT-MR820TR Micro Repeaters* have incorporated the latest technologies, including a custom Application Specific Integrated Circuit (ASIC) and Surface Mount Technology (SMT). These result in enhanced functionality, increased reliability, improved performance, and lower cost.

The *AT-MR420TR/AT-MR820TR Micro Repeaters* have the following features:

- ❑ IEEE 802.3 compliant
- ❑ 10Base-T and Ethernet Version 1.0 and 2.0 compatible
- ❑ AUI and a BNC ports for connectivity to a network backbone as well as four/eight twisted pair cable connections
- ❑ user-selectable AUI or BNC Backbone switch
- ❑ user-selectable Backbone Network Enable/Disable switch
- ❑ Network Load LEDs (network utilization)
- ❑ automatic packet regeneration, error detection and correction
- ❑ test link capability
- ❑ auto-partitioning and jabber lock-up protection
- ❑ status and diagnostic LEDs
- ❑ STP/UTP uplink port supported for network cascading

Packet Regeneration. Packet regeneration is a high-performance network feature that includes the regenerating of the packet preamble, retiming of data packets, and the extension of collision fragments.

Link Integrity. The IEEE 802.3 defined link integrity test function continually monitors the twisted pair cable to ensure link continuity of the receive pair between the user node and the repeater.

Auto-partitioning. Also known as segmentation, each segment is automatically partitioned whenever 32 consecutive collisions are seen on the segment. One valid packet will reset the segment and reconnect it.

Jabber Lock-up Protection. Jabber lock-up protects the repeater from being overrun with data packets by isolating segments with transmitted packets that exceed the maximum packet length. That is,

jabber lock-up automatically prevents transmitted data from reaching the repeater if the transmitted data time exceeds a specified duration (usually 5 ms).

Backbone Network Port

There are two user-selectable network media options which can be used to connect to a backbone network: 10Base2 and 10Base5.

These network ports are located on the back panel. See Figure 3.

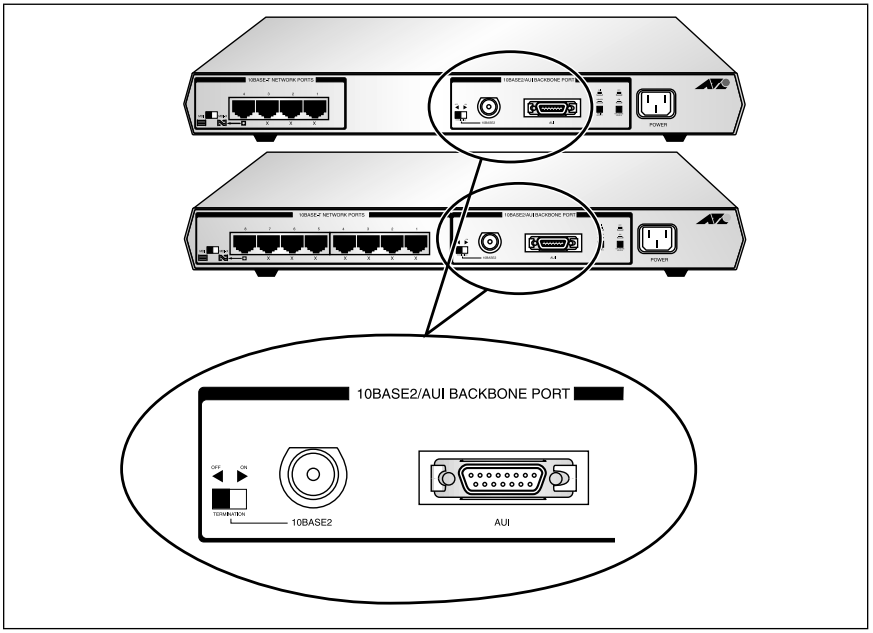

Figure 3: Network Media Options

These media alternatives are:

- 10Base2 (Bayonet Nut Couple [BNC])
  - — 10Base2 requires a thin coaxial cable, RG58U, which is a 10 MHz baseband cable that uses BNC-series connectors. The cable must be terminated at both ends with 50 Ω terminators and grounded at one end. Maximum segment length is 185 meters (606 ft.). Internal termination is provided via the BNC Terminator Switch. See Chapter 4 “BNC Terminator Switch” for details concerning this switch.

- 10Base5 (Attachment Unit Interface [AUI])

  — Located to the right of the BNC port, the 10Base5 network port connects the repeater to the network using standard (thick) Ethernet cable and AUI-series connectors. Alternatively, you can fit an Allied Telesyn 802.3 transceiver into this port for alternative media connections, for example fiber optics.

Although both network ports are always available, only one can be active at a time and, since there is no default port, you determine the active port by using the Backbone Enable and Media Select switches — both of which will be discussed next.

10Base2/AUI Backbone Port Switches

There are two user-selectable switches: a Backbone Enable and Media Select. See Figure 4.

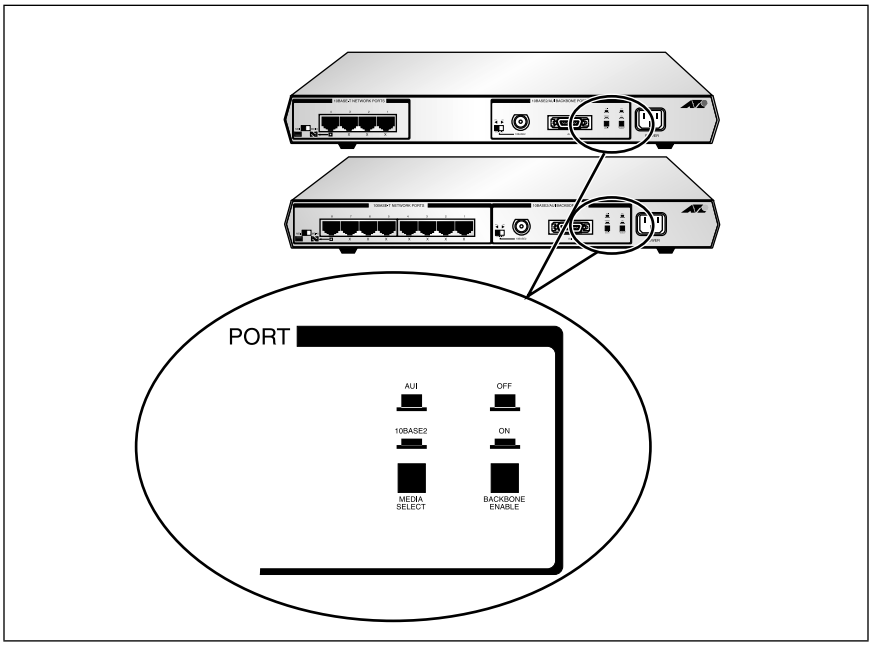

Figure 4: Backbone Switches

Backbone Enable Switch

This dual-position switch allows you to activate the backbone network AUI and BNC ports.

When this switch is ON (default position), it is depressed below the surface of the chassis. The ON position (enabled) indicates that both 10Base2 and AUI ports have a backbone network capability.

Deactivating the switch to OFF (disabled) means that the switch is flush with the surface of the chassis. As a result, the ports are not capable of connecting to a backbone network.

Media Select Switch

The Media Select switch is only active after the Backbone Enable switch is activated. It functions as the name implies — you have the ability to determine the medium of connectivity to the network backbone: either the 10Base2 (BNC) port or the 10Base5 (AUI) port (but not both).

The default position is AUI (the switch is flush with the surface of the chassis).

The AUI port also allows you to attach an optional, inexpensive external micro transceiver for additional LAN connectivity using thinnet, twisted pair or fiber optic cable.

When the switch is pressed below the surface of the chassis, the 10Base2 port is selected. Notice that the 10Base2 backbone port also includes a user-selectable 50 Ω terminator switch. The use of the terminator switch is discussed in Chapter 4.

Chapter 2
Installation

Site Requirements

Ventilation

AT-MR420TR/AT-MR820TR Micro Repeaters have grilled openings on both sides for ventilation. Although they do not require an internal fan to aid in cooling, adequate ventilation is required. Ensure that the ventilation openings located on the sides of the chassis are never blocked.

Note

Maximum ambient operating temperature is 104° F (40° C).

Power

Be sure that the voltage and frequency is either 100-120 or 200-240 VAC and 60 or 50 Hz respectively. Since there is no external power switch, power is applied when the power cord is connected.

Note

For countries other than the United States and Canada: use a power cord that is rated at 6 amp, 250 VAC. Also note that this cord cannot exceed 4.6 meters (15 ft.) in length and must be made of HAR cordage with IEC fittings that are approved by the country of end use.

Quick Installation

1. Carefully remove the *AT-MR420TR/AT-MR820TR Micro Repeaters* from their packaging materials. Keep the packing materials until you have successfully installed the product.

2. Place them in a location with adequate ventilation and power receptacles.

3. Apply power by plugging in the AC cord and ensure that the POWER LED on the front panel is illuminated.

4. If you are connecting to a backbone network, prepare either the AUI or BNC cable for attachment.

5. Attach your 10Base-T STP/UTP cables, with RJ45 connectors to the 10Base-T ports. If the UPLINK port is not used for cascading, you may connect a standard 10Base-T cable to port 4/8.

6. If the *AT-MR420TR/AT-MR820TR Micro Repeaters* are to be connected to an external transceiver, attach a transceiver to the 15-pin AUI connector on the back panel. Ensure that the external transceiver has its Signal Quality Error (SQE)/Heartbeat Test function disabled. When power is applied to the *AT-MR420TR/AT-MR820TR Micro Repeaters*, the external transceiver should also have power.

Note

Because of the default switch positions, you do not have to changes any switches.

Connections

The *AT-MR420TR/AT-MR820TR Micro Repeaters* have the following connectors:

- RJ45
- AUI
- BNC

RJ45 Ports

Attach an RJ45 10Base-T STP/UTP cable to port 1. The respective segment LINK OK LED located on the front panel should light when the 10Base-T network adapter card in the device on the opposite end of the STP/UTP segment is operational. If not, check that the card on the opposite end of the STP segment is operational, then ensure that the proper cable is being used.

Attach a second 10Base-T STP RJ45 connector to 10Base-T network port 2. The port 2 LINK OK LED on the front panel should light, provided the 10Base-T device on the opposite end of the STP/UTP cable is operational.

AUI Network Port

Each *AT-MR420TR/AT-MR820TR Micro Repeater* has one AUI port to accommodate a 10Base5 (standard or thick Ethernet cable) connection to the network backbone using an AUI or convert the media type, for example fiber optics.

BNC Network Port

Each *AT-MR420TR/AT-MR820TR Micro Repeater* has one BNC port to accommodate a 10Base2 (cheapernet or thin Ethernet cable) connection to the network backbone.

LED Status Indicators

The front panel indicators are grouped into the following categories:

- Network Load
- Port Status
- Hub Status

Network Load Indicators

Eight Network Load LEDs indicating the percentage of network utilization, are located on the front panel. Figure 5 shows these LEDs.

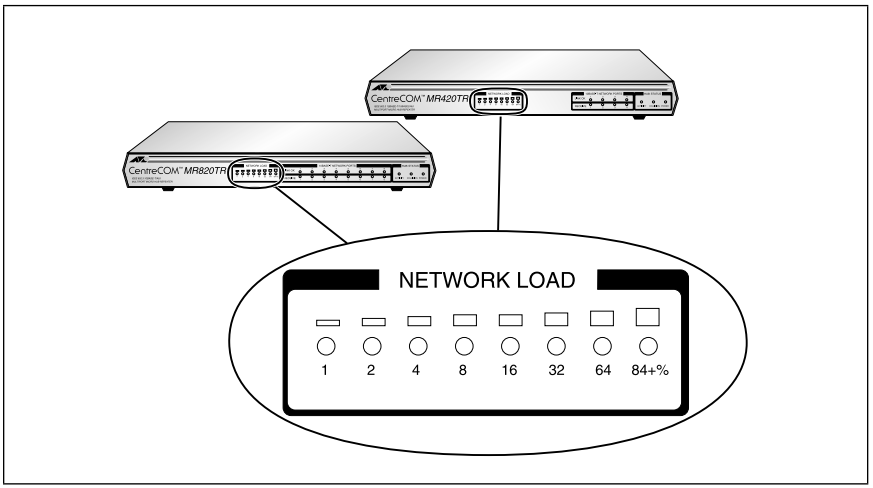

Figure 5: Network Load Indicators

Port Status Indicators

Two Port Status indicators are associated with each 10Base-T (RJ45) network port. Located on the front panel of the repeater, these LEDs indicate whether the port is linked, receiving data, or both. See Figure 6.

Note

A data packet is too fast for the human eye to distinguish on an LED, therefore the LEDs will not reflect real-time activity. The repeater artificially stretches the LED on time for easier observation.

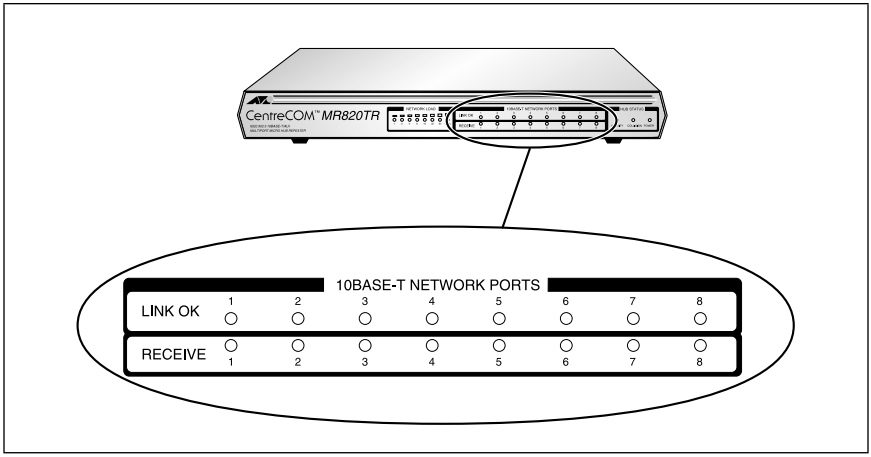

Figure 6: Port Indicators

Each RJ45 repeater port has two LEDs — LINK OK and Receive:

- LINK OK
  - — No light—Indicates typically a physical connection problem. The device at the other end of the cable may be powered off, the cable may be loose or disconnected, or the cable has been wired incorrectly. Check the crossover cable.
  - — Green (Steady)—Indicates a valid link exists.
- Receive
  - — Amber (Flashing)—Link is OK, port is not partitioned and there is activity on the port. Brief flashes indicate low traffic levels.

In short, port status LEDs show the functionality of the port. If the LINK OK status light is green and the Receive status is flashing amber, a signal is being received and the segment attached to the port is functional.

If there is no link light, there is no signal continuity.

Check that the attached Data Terminal Equipment (DTE) is ON and that the proper cable is being used.

If this check does not identify the problem, it may indicate that a repeater or the device connected to the port is faulty. Move the cable to the adjacent ports to further isolate the problem to the repeater or to the attached device. It may be necessary to change cables to isolate the fault to a particular cable.

Hub Status Indicators

Three Hub status LEDs at the far right of the front panel indicate the overall status of the repeater. Figure 7 shows the location of these indicators.

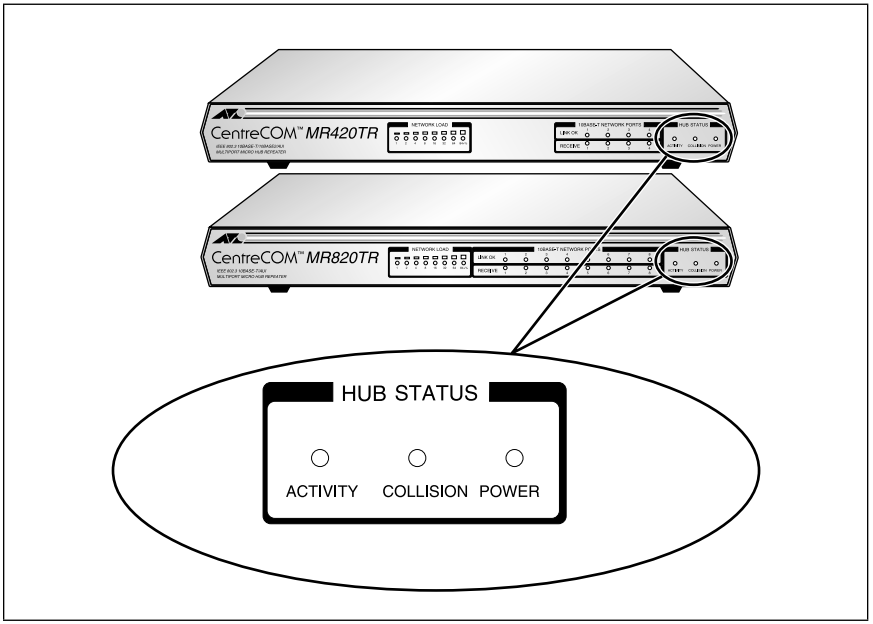

Figure 7: Hub Status LEDs

Table 1: Hub Status LEDs

LED	Color	Description
Power	green	lights when AC power is applied
Collision[1]	amber	flashes indicating an SQE or frame collisions on a segment. This may be caused by an overloaded segment, faulty cable, or loose connection.
Activity	green	indicates that the repeater is functional and is transmitting packets

[1] Occasional collisions are normal in Ethernet networks. A constantly illuminated Collision LED may indicate that there is a prt with excessive traffic problems. If the Collision LED is flashing steadily, and you are using an external transceiver on the AUI backbone port, make certain that the SQE/Heartbeat Test function is disabled. Repeaters do not function properly when the SQE/Heartbeat Test is active.

System Check

1. Check the LINK OK LED on the front panel for the first 10Base-T port that is connected. A steady green LED indicates continuity. A valid network connection must be made from the connected port to a host or workstation on another port.

2. After a successful connection, disconnect the active 10Base-T connector and connect it to the next successive port. Continue this process until all 10Base-T ports have been validated with good network connections.

3. Establish a connection from a device connected to port 1 to a device connected to port 2.

4. Once the connection between devices attached to ports 1 and 2 has been successfully established, remove the RJ45 connector from port 2 and connect it to each of the subsequent repeater's 10Base-T ports, 3 through 4/8, to verify their functions.

5. If all ports test successfully, install the rest of the 10Base-T RJ45 connections and ensure that the LINK LED for each port is illuminated. Remember, the 10Base-T device on the opposite end of the STP/UTP cable must be operational.

Note

The LINK LED validates the receive pair only. The opposite end of the STP segment is responsible for validating the transmit pair.

Chapter 3
Connectivity

Four Media Connectors

This repeater has four types of ports and media connectors:

- ❑ AC input power connector
- ❑ 10Base5 (AUI) network backbone port
- ❑ 10Base2 (BNC) network backbone port
- ❑ Four/Eight STP/UTP 10Base-T (RJ45) ports

These four types of connecting media are described in the following sections.

AC Power Connector

While it is common to use dedicated power circuits or power conditioners to supply power to network devices, the source must be able to provide AC power at 100-120 VAC, 0.5A, and/or 200-240VAC, 0.25A, and 60/50 Hz (for North American models). This aids in isolating the network equipment from electrical power "noise."

The AC power connector is located on the back panel and provides connectivity for an internal power supply. It accepts 100-120 or 200-240 VAC from the rear IEC power entry port. The three-pin power receptacle, shown in Figure 8, requires a three-pin male connector.

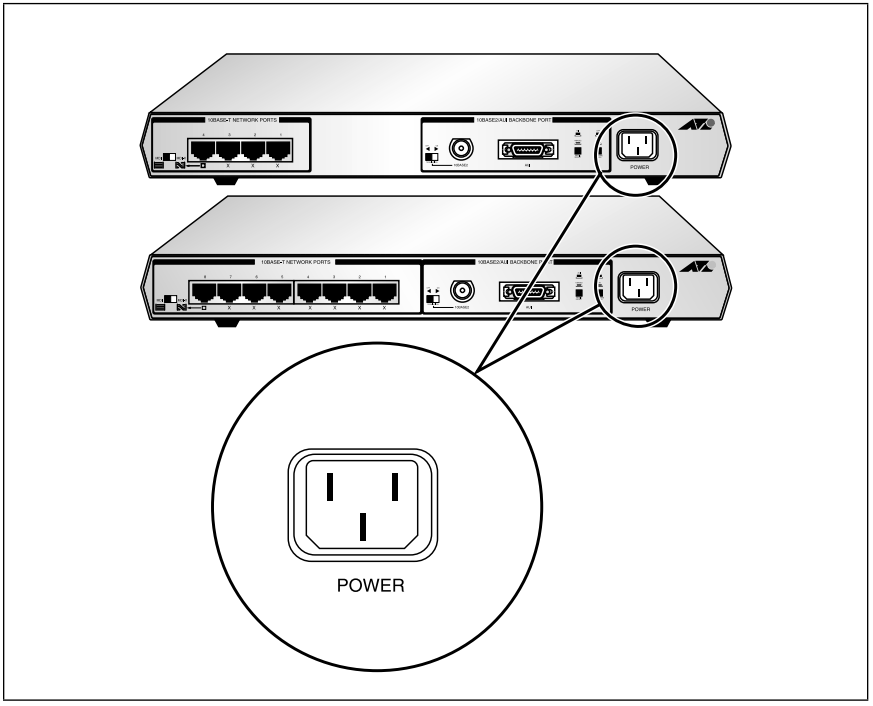

Figure 8: Power Connector

10Base-T Network Specifications

Table 2 provides an overview of the IEEE 802.3 specifications for 10Base-T network configurations using thick, thin, and twisted-pair wiring.

Table 2: IEEE 802.3 Network Specifications

	10Base-T	10Base2	10Base5
Media	Twisted Pair Cable	Thin Coaxial Cable	Thick Coaxial Cable
Topology	Star, Tree	Bus	Bus
External Devices	Network Adapter Card	Network Adapter Card	Network Adapter Card and External Transceiver
Maximum Segment Length	100 meters (328 ft.)	185 meters (605 ft.)	457 meters (1,500 ft.)
Maximum Devices per Segment	–	30	100
Maximum Devices per Network	–	1,024	1,024

AUI Port

The AUI port is a 15-pin D-sub female connector, located on the back panel. This AUI backbone port connects the repeater to the network using a standard AUI drop cable. See Figure 9. Alternatively, you can fit any of a variety of Allied Telesyn's 802.3 transceivers into this port should you select a different medium such as fiber optics.

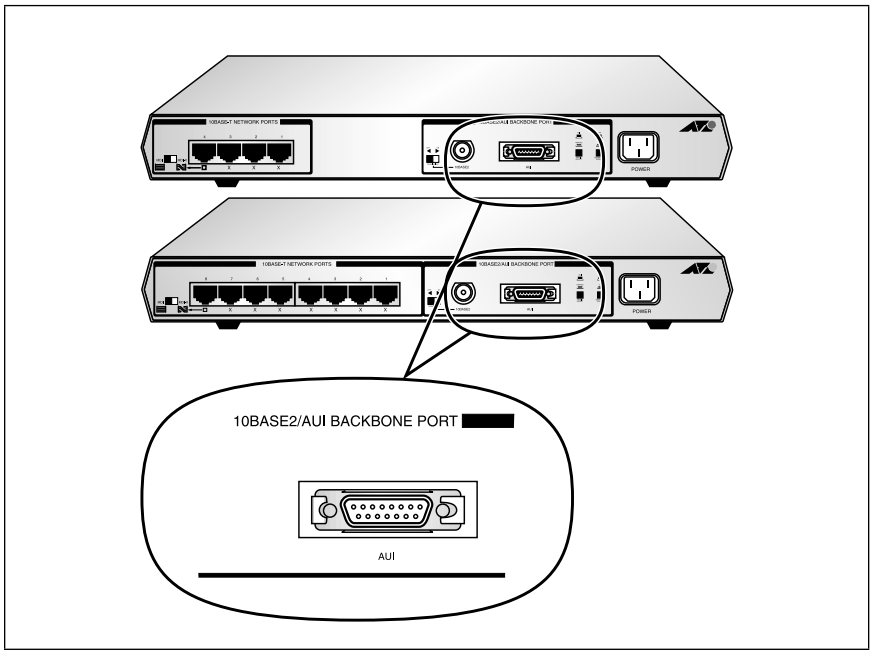

Figure 9: AUI Network Port

10Base5 (Thick) Ethernet Cable. When configuring 10Base5 coax segments, IEEE 802.3 specifications allow a maximum of 100 MAU attachments, spaced at multiples of 2.5 meters (8.2 ft.) measured accurately from the cable end (50 Ω terminator included). The 10Base5 cable segment should not exceed 500 meters (1,640 ft.). Worst-case "end-to-end" propagation delay of a 10Base5 coax segment is 2165 ns. Propagation delay of 10Base5 Ethernet coax is calculated at 4.33 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 is allowed at only one point on the cable.

AUI Drop Cables. AUI or drop cables should not exceed 50 meters (164 ft.) each. Attachments may be made only to the cable ends at the 15-pin D-shell connector. AUI cables may have a maximum 257 ns propagation delay, as used for computing the worst-case propagation delay of a cable system. AUI cable propagation delay is approximately

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-shell male connector at one end and a 15-pin D-shell female connector at the other end. Cable impedance is nominally 78 Ω. The AUI cable typically connects a transceiver attached to a coaxial segment to a DTE (workstation).

BNC Port

10Base2 requires an RG58U, thin coaxial cable. This cable is a 10 Mbits/sec baseband with 50 Ω impedance. See Figure 10. Connected with BNC-series connectors, the maximum segment length is 185 meters (606 ft.).

10Base2 (Thin) Ethernet. When configuring thin coax segments, IEEE 802.3 specifications allow 30 or fewer MAUs per cable segment spaced at no less than 0.5 meter (1.64 ft.). The 10Base2 cable length cannot exceed 185 meters (606 ft.) per 10Base2 cable segment. The worst case propagation delay for a 185 meters (606 ft.) thin Ethernet segment is 950.9 ns. The propagation delay for 10Base2 Ethernet cable is 5.14 ns/meter. Both ends of the segment must be terminated with a 50Ω termination with a power rating of 0.5 watts or greater. The AT-MR420TR and AT-MR820TR repeaters provide internal 50Ω terminator with a slide switch. Earth grounding of the segment shield is required at only one point on the cable.

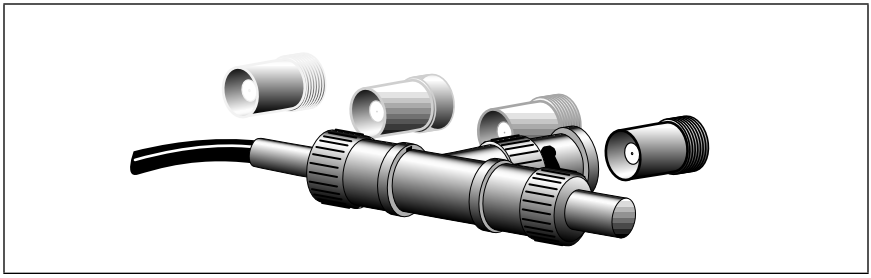

Figure 10: BNC-T Connector

Twisted Pair (RJ45) Connector

Figure 11 shows a twisted pair cable with RJ45 connectors. For a 10Base-T link between a repeater and a Medium Attachment Unit (MAU) or Network Interface Controller (NIC), the cable is wired straight through.

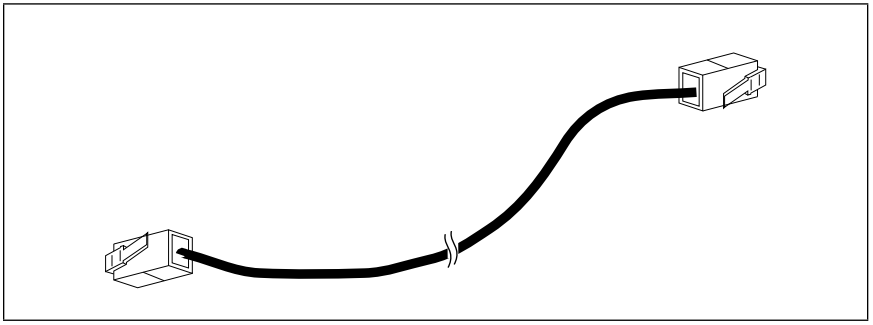

Figure 11: RJ45 Connector

10Base-T STP cables can be up to 100 meters (328 ft.) in length. The cable should be 22 to 26 AWG TP wire with 100Ω impedance and rated at Category 3, 4, or 5. The *AT-MR420TR/AT-MR820TR Micro Repeaters* use RJ45 modular connectors for 10Base-T connections.

10Base-T Cable. The *AT-MR420TR/AT-MR820TR Micro Repeaters* support full-length, fully repeated transmission and maximum node attachments which, for the STP/UTP link, enables transmissions to 100 meters (328 ft.).

A serious problem exists concerning identification of modular cable. There are various grades of voice-quality and data-quality cables available. These can appear to be similar, but their high-speed data transmission characteristics are significantly different. Some suppliers have sold purportedly data-quality cables manufactured with voice-quality cabling.

If any voice-quality cabling is used in a 10Base-T network system, data movement is slow, collision-prone or non-existent. To confuse the issue, the Link indicator on the interface usually indicates a valid link.

10Base-T connections require Category 3, 4, or 5. In most cases, if a cable type is flat, it is typically untwisted and can cause problems. Generally, cable that is more or less round in section, gives better results.

Hub to MAU Wiring. The most typical TP cable for the *AT-MR420TR/ AT-MR820TR Micro Repeaters* is TP Hub to TP transceiver Data Terminal Equipment (DTE).

To configure your own cables, see Appendix A, “Technical Specifications.”

Chapter 4
Topology

Standalone Topology

Figure 12 shows a standalone topology. Four workstations are connected directly to the repeater through the repeater's RJ45 ports.

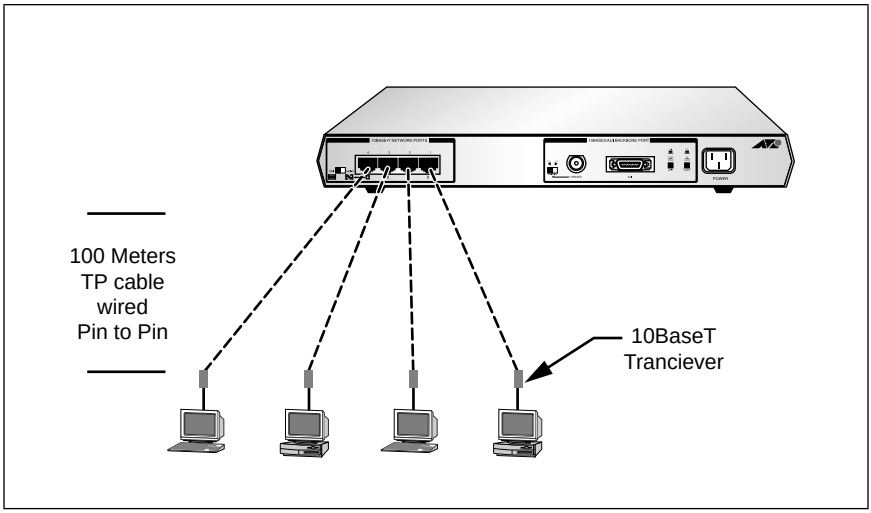

Figure 12: AT-MR420TR Standalone Topology

Cascade Topology

A shared Ethernet network can be expanded by interconnecting repeaters (cascading) through the UTP ports. Figure 13 shows a cascaded topology using four repeaters which is the maximum number of micro repeaters and nodes in a single segment: four micro repeaters with ten (AT-MR420TR)/twenty-six (AT-MR820TR) ports. Its design complies with the four-repeater rule. Additional UTP ports are available if the AUI port is used for cascading.

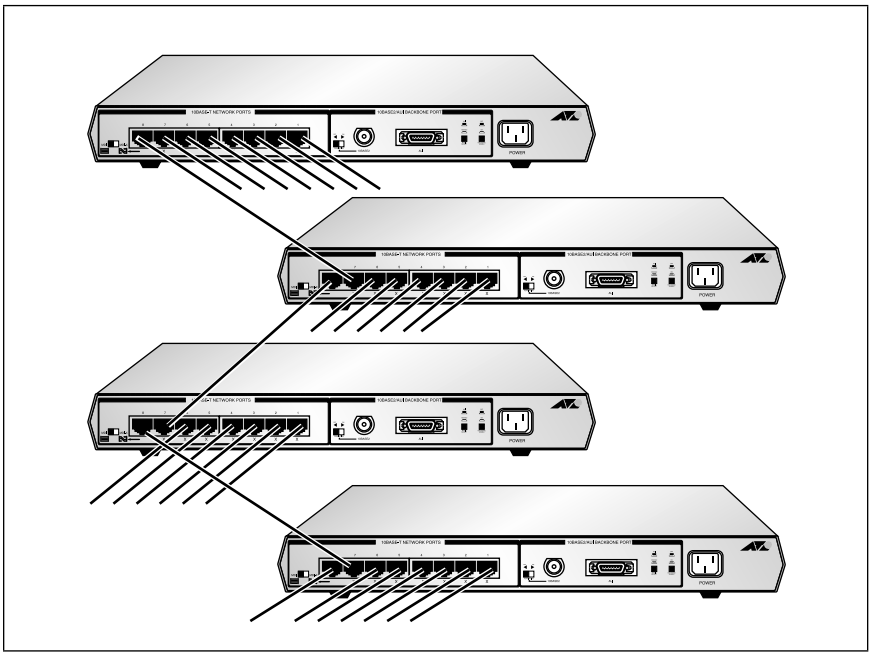

Figure 13: AT-MR820TR Four Cascaded Repeaters

The Four-Repeater Rule. The IEEE 802.3 standard provides general rules for 10Base-T cable length and network connections on single segments of cable or on point-to-point links with media attenuation and signal propagation delays. The basic rule applies for all networks. The maximum number of repeaters in the data path between any two nodes cannot exceed four.

BNC Terminator Switch

The BNC Terminator switch is located on the rear panel to the left of the BNC connector. Use this switch to enable or disable internal termination at this end of the 10Base2 segment.

If you are installing BNC-T connectors in the center of a segment, the termination switch must be disabled (OFF). The general rule is to terminate at each end of the cable segment. If the cable is connected directly into the port without a T-connector (end of segment), turn ON

the termination switch. Figure 14 shows the location of the two-position 50 Ω Terminator switch. The switch is either ON (the default) or OFF.

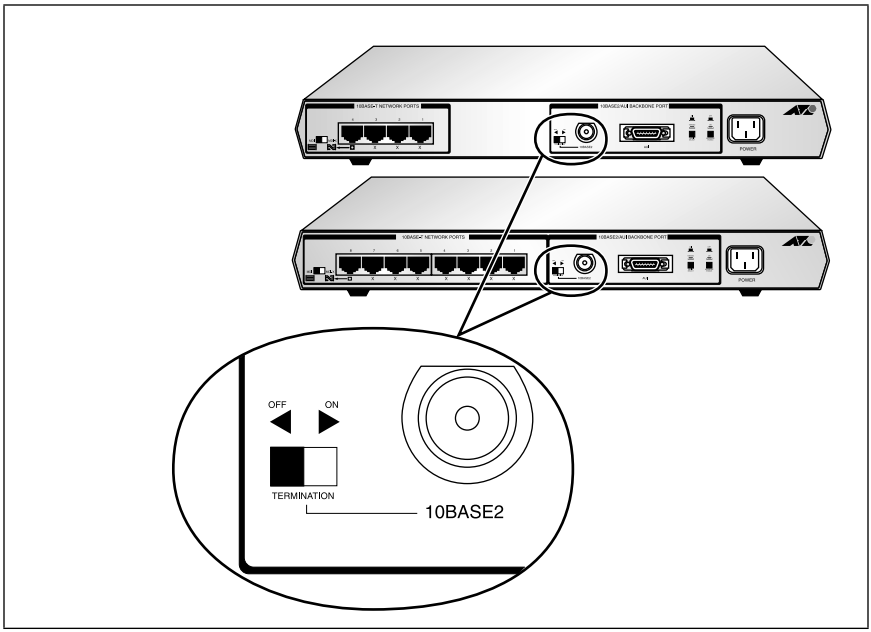

Figure 14: Terminator Switch

OFF (disabled) — When installing a hub at an intermediate point of a thinnet cable, a BNC-T connector must be used to connect the cable to the backbone port and the terminator switch must be disabled. See Figure 14.

ON (enabled) — When installing a hub at the end of the cable, if you need to remove the BNC-T connector and the terminator, the backbone port must be connected directly to the thinnet cable. The terminator switch must be enabled. This provides the 50 ohm termination that is required.

- Use the OFF position to disable termination if you are installing a link segment with a BNC-T connector on this port.
- Use the ON position to enable termination if you are installing a link segment without a BNC-T connector at this port, and if the unit is at the end of the cable.

Backbone Networks

The most straightforward topology is a backbone network. Figure 15 show a backbone network topology with the AUI port attaching to a coaxial Ethernet cable.

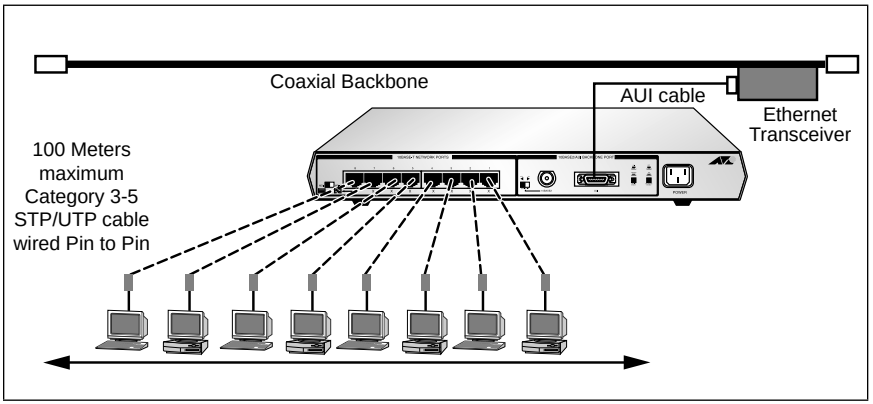

Figure 15: AT-MR820TR Backbone Topology

In a backbone network topology, each workgroup has its own local network and the backbone is used to link the various workgroups through the bridges. The advantages of a backbone network topology are twofold:

- When the backbone network is operating correctly, any problem within a sub-network does not affect other sub-networks.
- Since faults are isolated to a single sub-network, they are easier to locate.

MDI/MDI-X Switch and Uplink Port

While any RJ45 port can be used to cascade repeaters, port 4/8 has been specifically designed with an uplink (cascading) capability, by providing a Media Dependent Interface (MDI/MDI-X) switch.

Cascading through port 4/8 means if a single, standalone *AT-MR420TR/AT-MR820TR Micro Repeater* can support 4/8 ports, when a second *AT-MR420TR/AT-MR820TR Micro Repeater* is uplinked (cascaded) using the port 4/8 of the first unit to any port of a

second unit. A maximum of four repeaters (the four repeater rule) can be interconnected. The network effectively consists of 6 nodes for the AT-MR420TR and 14 nodes for the AT-MR820TR. The Uplink port is located on the back panel, as shown in Figure 16.

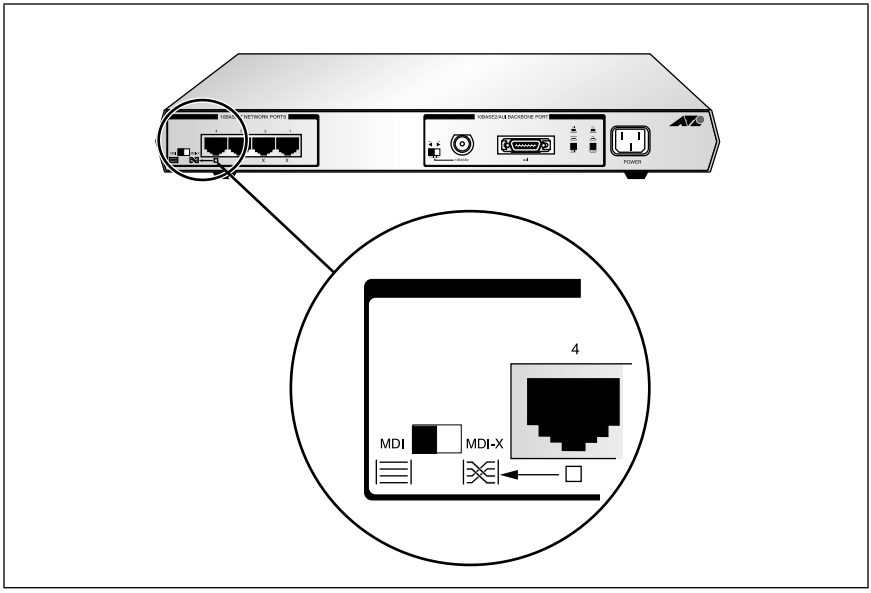

Figure 16: Uplink Port for MR420TR/820TR

Port 4/8 has the ability to become a dedicated uplink port. To facilitate this process, it uses a Media Dependent Interface (MDI/MDI-X) switch.

An MDI/MDI-X switch is a crossover/straight-through cable selection slide switch. As shown in Figure 16, the MDI/MDI-X switch converts the 10Base-T (RJ45) Port 4/ 8, to an uplinkable port that allows one repeater to connect to another repeater without requiring special crossover cables.

The default setting for the RJ45 pinout switch is MDI-X (standard RJ45 port), which means the slide switch is to the right.

- In the default MDI-X configuration you can connect the 10Base-T port to a workstation or to any other DTE (that is, node).

- In the MDI configuration — the slide switch is to the left — you can connect the 10Base-T port to another 10Base-T internal crossover port, that is, a repeater using straight-through twisted pair cable to form an interrepeater link. See Figure 16.

If you use this port to connect repeaters to each other, the RJ45 pinout switch must be set to MDI. The MDI position is a repeater pinout which automatically swaps the TX and RX pinouts so that they do not conflict with the TX and RX ports at the other end of a straight-through cable.

If you connect a straight-through cable to another repeater or DTE and the Link LEDs on the respective units are not on, change the position of the MDI/MDI-X switch to obtain continuity as indicated by active Link lights. The repeater will not be damaged if the MDI/MDI-X switch is in the wrong position.

In general, if you install an RJ45 port cable, and the Link LED does not light, then simply change the position of the MDI/MDI-X slide switch and see if the Link LED lights.

10Base5 Backbone

Figure 17 illustrates a single multiport 10Base-T *AT-MR820TR Micro Repeater* connecting to a thick Ethernet backbone using a transceiver.

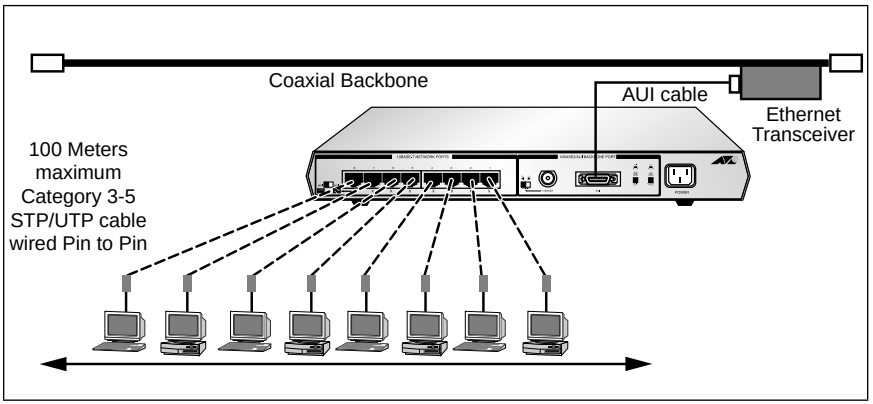

Figure 17: 10Base5 Backbone Topology

10Base2 Backbone

A maximum of 30 *AT-MR420TR/AT-MR820TR Micro Repeaters* can be connected in a network using 10Base2 (thin Ethernet). When you use the BNC port, you avoid using transceivers to complete the linkage. See Figure 18.

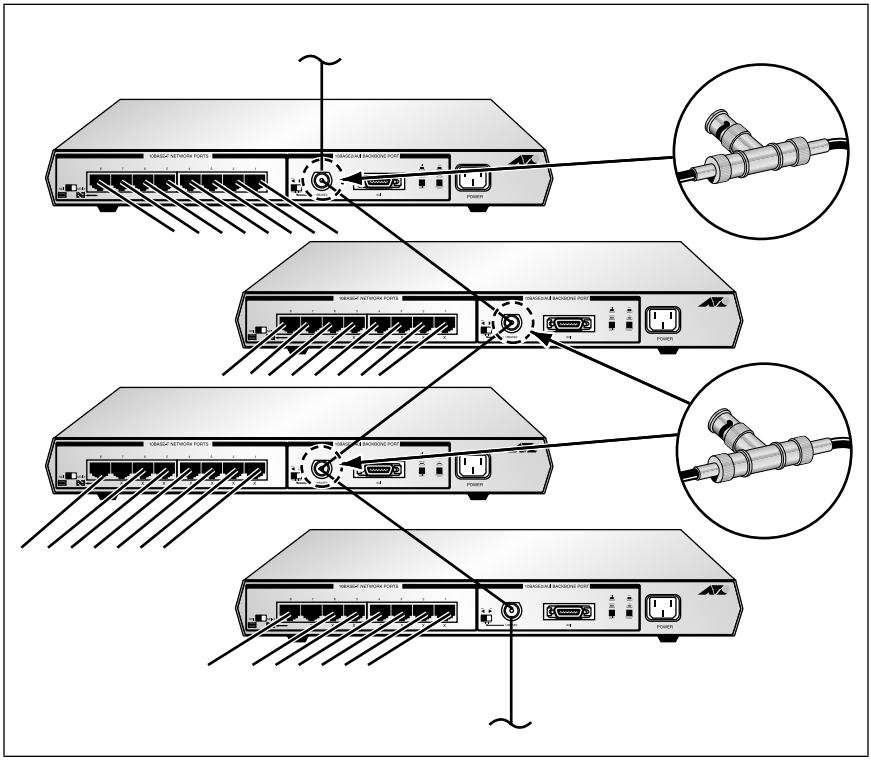

Figure 18: AT-MR820TR on a Backbone Using the BNC Network Port

Fiber Optic Backbone

By attaching a fiber optic transceiver, the AUI port can connect your network to a fiber optic (10Base-FL/FOIRL) cable backbone.

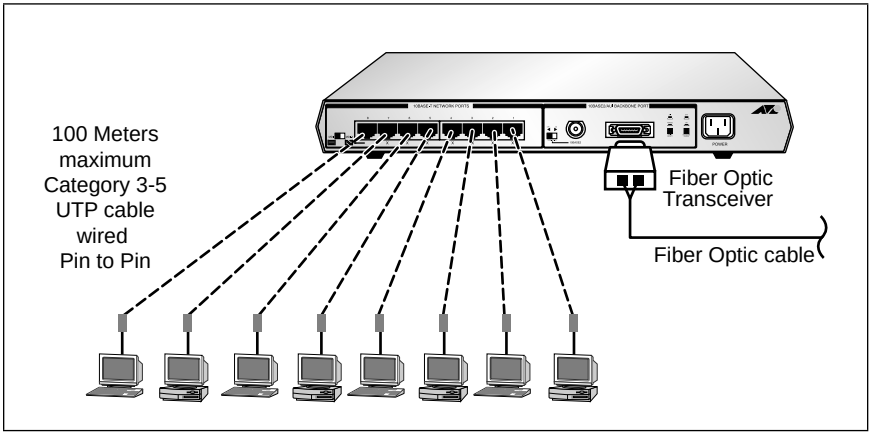

Figure 19: AT-MR820TR on a Fiber Optic Backbone

The advantages of fiber optic cable are as follows:

- ❑ immune to electromagnetic interference
- ❑ spans longer distances without attenuation
- ❑ eliminates grounding problems
- ❑ secure from unauthorized taps

10Base-FOIRL. The IEEE FOIRL (fiber-optic inter-repeater link) standard limit of a fiber segment is 1 km. The fiber optic cable that connects two repeaters is limited to 1 km.

10Base-FL. The more recent IEEE 10Base-FL standard extends a fiber segment length to 2 km. This applies only to topologies in which one 10Base-FL node connects to another 10Base-FL node.

Appendix A

Technical Specifications

The AT-MR420TR/AT-MR820TR Specifications

Physical

Height	37.6 mm (1.55 in.)
Width	332 mm (13 in.)
Depth	112 mm (4.4 in.)
Installation options	Tabletop or rack-mount

Electrical Rating

Input voltage	100-120 or 200-240 VAC
Frequency	50 or 60 Hz
Amperage	0.5/0.25 Amp

Connector Ports

4/8	RJ45 Ethernet ports (MDI-X)
1	AUI D-type, 15-pin female port
1	BNC female port

Environmental

Operating temperature	0˚ to +40˚ C (32˚ to 104˚ F)
Relative humidity	0% to 95%, non-condensing

Diagnostic LEDs

Individual port link status (4/8)

Individual port receive activity (4/8)

Hub status (3), specifying:

- ❑ Both Transmit and Receive activity
- ❑ Collision
- ❑ Power

Certification

Safety	UL 1950, CSA 22.2 No. 950 (Canadian Standards Association), TUV EN60950
Emission	FCC Part 15 Class A, VCCI Class 1, CDOC Class A, EN55022 (CISPR 22) Class A

10Base-T Pin Assignments

An Ethernet twisted-pair link segment requires two pairs of wires. Each wire pair is identified by solid and striped colored wires. For example, one wire in the pair might be red and the other wire, red with white stripes.

Connectors

Notice how the pins are numbered in Figure 20. Be sure to hold the connectors in the same orientation when connecting the wires to the pins.

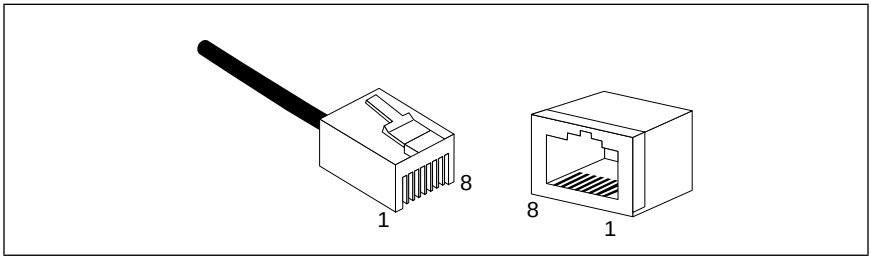

Figure 20: Connector Pin Numbers

Each twisted-pair link segment must have a male connector attached to both ends. According to the 10Base-T specification, pins 1 and 2 on the connector are used for transmitting data; pins 3 and 6 are used for receiving data, as shown in Table 3. The TX and the RX in Table 3 represent Transmitted Data and Ready Data, respectively.

Table 3: Pin Assignments

Pin	Assignment *
1	TX+
2	TX-
3	RX+
6	RX-

*The “+” and “-” signs are used to represent the polarity of the two wires that make up each wire pair.

Straight-through Wiring

If the twisted-pair link segment is to join two ports on a switch, and only one of the ports has an internal crossover, the two pairs of wires must be straight-through, as shown in Table 4.

Table 4: Straight-through RJ45 Pin Assignments

Hub	Device
1 (TX+)	1 (TX+)
2 (TX-)	2 (TX-)
3 (RX+)	3 (RX+)
6 (RX-)	6 (RX-)

Crossover Wiring

Two *AT-MR420TR/AT-MR820TR Micro Repeaters* can communicate only if the transmitter on one unit is connected to the receiver on the other unit. This reversal, or crossover function, can be implemented either in the wiring or in the device itself using the MDI/MDI-X switch. When connecting *AT-MR420TR/AT-MR820TR Micro Repeaters*, a crossover must be used in the wiring when using any port other than 4/8. See Table 5 for crossover pin assignments.

Table 5: Crossover RJ45 Pin Assignments

AT-MR420TR/MR820TR	AT-MR420TR/MR820TR
1 (TX+)	3 (RX+)
2 (TX-)	6 (RX-)
3 (RX+)	1 (TX+)
6 (RX-)	2 (TX-)

5 - 4 - 3 Rule

In addition to the requirements outlined in Chapter 3, Table 2, follow the “5-4-3 rule” to ensure that your configuration does not exceed the maximum 10Base-T data transmission path (the longest path through any given network).

The 5-4-3 rule describes the maximum path between any two devices or nodes (PCs or other stations) on the network. There can be:

- Up to five segments in series
- Up to four repeaters or multiport hubs
- Up to three populated segments (that is, segments attached to two or more PCs)*

* The remaining two segments are unpopulated; these are known as inter-repeater links or IRLs. This distinction between populated and unpopulated segments is significant for coax networks only.

Note

This rule is completely consistent with the IEEE 802.3 specification, and is meant only to summarize the configuration specification.

Appendix B
Glossary

10Base2—Also called thin Ethernet, thinnet or CheaperNet, a 10 MHz baseband specification. Cable impedance is 50 Ω and maximum coaxial segment length is 185 meters (607 ft.).

10Base5—Also called thick Ethernet, a 10 MHz baseband specification. Cable impedance is 50 Ω and maximum coaxial segment is 500 meters (1,640 ft.). The cable is commonly referred to as yellow cable. Thick Ethernet cable is typically used as a trunk or backbone path of the network.

10Base-T—IEEE 802.3 STP/UTP Ethernet. Low-cost Level 3 or better STP/UTP wiring affords 100 meters (328 ft.) of point-to-point link segments. STP/UTP uses RJ45 connectors and sometimes 50-pin Telco connectors to a patch panel and runs at 10 MHz.

ATTACHMENT UNIT INTERFACE (AUI)—Connection between a MAU (transceiver) and a DTE (typically a workstation). Includes a 15-pin D-sub connector and sometimes a 15-conductor twisted pair cable. Maximum length is 50 meters (164 ft.).

BASEBAND COAXIAL SYSTEM—A system whereby information is directly encoded and impressed on the coaxial transmission medium. At any point on the medium, only one information signal at a time can be present without disruption.

BAYONET NUT COUPLE (BNC) CONNECTOR—A 10Base2 thin coax connector with push-on BNC locking lug that quickly locks into place with a half twist.

BIT RATE (BR)—The rate of data throughput on the medium in bits per second. Ethernet specifies 10 million bits per second.

BIT TIME—The duration of one bit symbol (1/BR). Ethernet specifies a bit time of 100 ns.

CARRIER SENSE—In a LAN, an ongoing activity of a data station to detect whether another station is transmitting.

CARRIER SENSE MULTIPLE ACCESS with COLLISION DETECT (CSMA/CD)—This is the access method employed by IEEE 802.3 LAN transceivers, by which multiple stations compete for use of the transmission

medium (coax cable) for data packet transmission. It provides for a level of error detection should that transmission be corrupted or impeded by contention for the transmission medium.

COAX SEGMENT—A segment of Ethernet cable that contains MAUs.

COAXIAL CABLE—A two-conductor (center conductor, shield system), concentric, constant impedance transmission line used as the trunk medium in the baseband system.

COAXIAL CABLE SEGMENT—A length of coaxial cable sections and coaxial connectors, terminated at each end in its characteristic impedance.

COLLISION—An unwanted condition that results from concurrent transmissions on the physical medium.

COMPATIBILITY INTERFACE—The MDI coaxial cable interface and the AUI branch cable interface, the two points at which hardware compatibility is defined to allow connection of independently designed and manufactured components to the baseband transmission system.

CROSSOVER—Wiring used when connecting a 10Base-T MAU to another 10Base-T MAU or a 10Base-T hub to another 10Base-T hub. For example, one 10Base-T MAU has the TD (Transmitted Data) pair on the same pins as another 10Base-T MAU. If pins were wired straight, there would be two transmitters on one pair and no receiver. As a solution, the crossover cable crosses the TD pair with the RD (Ready Data) pair, to connect the TD pins on one end to the RD pins at the other end.

D-SUB CONNECTOR—The AUI cable uses 15-pin D-sub connectors. “D” refers to the shape of the connector shell. Also called miniature D, DB15, or DIX connectors.

DATA COMMUNICATION EQUIPMENT (DCE)—In RS-232 specification, a module, such as a modem, for connecting a DTE to other equipment. A repeater connected to a terminal or workstation for Omega management use is wired as a DCE.

DATA TERMINAL EQUIPMENT (DTE)—In RS-232 specification, a module typically at the end of a segment (i.e., uninterrupted length of Ethernet cable). The DTE could be an Ethernet workstation, repeater or bridge.

DIX CONNECTOR—See D-Sub Connector

HEARTBEAT—See Signal Quality Error

HOUSE WIRING—House wiring is the existing wiring inside a building. This wiring generally originates from one or more wiring closets, such as a telephone room. Some older buildings may have wiring unsuitable for 10 megabit data rates. In these circumstances, it is recommended that the wiring be tested with a 10Base-T signal/wire tester.

HUB/REPEATER—A hub is a central signal distributor. It is used in a wiring topology consisting of several point-to-point segments originating from a central point. The term hub is often used interchangeably with the term repeater. Multiport 10Base-T, 10Base2 and fiber optic (10Base-FL, FOIRL) repeaters are considered hubs. See Repeater.

HUB-to-HUB WIRING—See MAU-to-MAU Wiring

HUB-to-MAU WIRING—STP/UTP cables for 10Base-T hub-to-MAU or NIC cards are wired straight-through. An RJ45 receptacle at the hub would wire pin-to-pin to the RJ45 receptacle at the MAU.

IMPEDANCE—An electrical characteristic of a circuit dealing with the combination of the AC and DC resistance and the appearance of that resistance to attached circuits.

JABBER LOCK-UP—The MAU's ability to automatically inhibit the transmit data from reaching the medium if the transmit data time exceeds a specified duration. This duration is in the range of 20 ms to 150 ms. Jabber lock-up protects the medium from being overrun with data packets from a possibly defective device.

JAM—This is a term used to describe the collision reinforcement signal output by the repeater to all ports. The jam signal consists of 96 bits of alternating 1s and 0s. The purpose is to extend a collision sufficiently so that all devices cease transmitting.

JITTER—The shift of the data bit in respect to a standard clock cycle. Jitter is undesirable and must be minimized.

LINK SEGMENT—The link segment of coaxial cable is a segment that has no MAU devices, but links together two LAN devices such as repeaters.

LINK TEST—In 10Base-T Ethernet there is a link test function that validates the STP/UTP link. This consists of a pulse transmitted from point A on one pair that is validated at point B. Point B also transmits a pulse on the second pair to be validated by point A. These pulses occur during media idle states (in between packets).

MAU—See Medium Attachment Unit

MAU-to-MAU, HUB-to-HUB WIRING—10Base-T MAU-to-MAU or hub-to-hub wiring generally requires a cross-over cable located somewhere along the STP/UTP cable run. This may commonly occur at the punch-down block or between the RJ45 wall receptacle and the workstation.

MAU/TRANSCEIVER—An Ethernet transceiver is a MAU. A 10Base-T MAU interfaces the STP/UTP media to an AUI port on a workstation, repeater, bridge or other Ethernet device.

MDI/MDI-X—See Medium Dependent Interface

MEDIUM ATTACHMENT UNIT (MAU)—In a LAN, a device used in a data station to couple the DTE to the transmission medium.

MEDIUM DEPENDENT INTERFACE (MDI)—The mechanical and electrical interface between a hub and a transceiver (MAU). MDI-X is another version of the interface that enables hubs to connect using different pin-outs, thereby avoiding conflicts that occur when receiving and transmitting packets use the same pin-out.

N-SERIES—A barrel shaped, threaded connector used on 10Base5 (thick Ethernet) coaxial cable.

PATCH PANEL—A 10Base-T patch panel may be used between a punch-down block and STP/UTP workstation. The patch panel generally has a female RJ45 connector on the front for each workstation and a Telco (RJ21) connector on the back, which is wired to a punch-down block. This provides a convenient way for the installer or network manager to connect the hub 10Base-T ports into the desired building locations.

POLARITY CORRECTION—Many 10Base-T STP/UTP ports have a polarity correction function. If the STP/UTP wiring has RD- and RD+ inadvertently crossed, the polarity correction function will sample the signal and electrically swap the wires. If the TD- and TD+ wires are crossed, the correction would occur at the MAU on the other end of the STP/UTP link. This occurs within a single pair and should not be confused with the crossover cable.

PROPAGATION DELAY—The time it takes a signal to travel from the input of a system component to the output. Usually measured in nanoseconds. IEEE 802.3 has specific propagation delay maxima for computing propagation budgets when designing a LAN. Cable length plays a major role in propagation delay; for example, a 50-meter (164-foot) AUI cable has a maximum allowable propagation delay of 257 ns. The propagation delay of cable depends on the length and velocity factor of the cable type. There are also propagation delays associated with electronics attached to the system.

PUNCH-DOWN BLOCK—The punch-down block is the wiring panel where the house wiring from the building's offices terminates. This is where many 10Base-T hubs would be located. Wiring installers use a special punch-down tool to insert the STP/UTP wire for data and voice applications.

REPEATER—A device used to extend the length, topology, or interconnectivity of the physical medium beyond that imposed by a single segment, up to the maximum allowable end-to-end trunk transmission line length. Repeaters perform the basic actions of restoring signal amplitude, waveform and timing applied to normal data and collision signals.

RJ45—This connector is a 10Base-T standard for connecting STP/UTP cabling.

SIGNAL QUALITY ERROR (SQE)—Also referred to as Collision or Collision Presence. This occurs when two devices attempt to transmit at the same time, which is an illegal condition. All ATI transceivers test for SQE.

SQE TEST—Commonly referred to as Heartbeat, is a special 802.3 signal sent by the MAU to the DTE to test the collision detection function. Some DTE want SQE and others do not. Repeaters do not want the SQE Test.

STRAIGHT-THROUGH—A type of wiring connection where the pins of one connector connect to the same pins of another connector. For example, pin 1 of one connector connects to pin 1 of another connector.

THICK ETHERNET—See 10Base5

THIN ETHERNET—See 10Base2

TRUNK CABLE—The coaxial cable used to distribute signals over long distances throughout a cable system.

UNSHIELDED TWISTED PAIR (UTP)—A cable used in 10Base-T wiring that consists of at least two twisted pairs of 22 to 26 AWG wire. The pairs should have at least 3 twists per foot and have an impedance of 100Ω. Level 3, Level 4 and Level 5 UTP cables fit these criteria.

Appendix C

Technical Support Fax Order

Name _____

Company _____

Address _____

City _____ **State/Province** _____

Zip/Postal Code _____ **Country** _____

Phone _____ **Fax** _____

Incident Summary

Model number of Allied Telesyn product I am using _____

Network software products I am using _____

_____

Brief summary of problem _____

_____

Conditions (List the steps that led up to the problem.) _____

_____

_____

_____

Detailed description (Use separate sheet, if necessary)

_____

_____

_____

_____

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_____

When completed, fax this sheet to the appropriate ATI office. Fax numbers can be found on page 47.

Appendix D

CentreCOM AT-MR420TR/AT-MR820TR Guide Feedback

Please tell us what additional information you would like to see discussed in the guide. If there are topics you would like information on that were not covered in the guide, please photocopy this page, answer the questions and fax or mail this form back to Allied Telesyn International Corp. The mailing address and fax number are at the bottom of the page. Your comments are valuable when we plan future revisions of the guide.

I found the following the most valuable _____

_____

_____

_____

_____

I would like the following more developed _____

_____

_____

_____

_____

I would find the guide more useful if _____

_____

_____

_____

_____

Please fax or mail your feedback. Fax to 1-206-481-3790. Or mail to:
Allied Telesyn International Technical Communications Department
19015 North Creek Parkway, #200
Bothell, WA 98011 USA

Appendix E
Where To Find Us

For Technical Support or Service		
Location	Phone	Fax
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
North America United States, Canada, Mexico, Central America, South America	1 (800) 428-4835	1 (206) 481-3790
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

Australia

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

Canada

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

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

England

Abingdon, Oxon
Tel: (+44) 1235-442500, Fax: (+44) 1235-442590

France

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

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

Hong Kong

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

Italy

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

Japan

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

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

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

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

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

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

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

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

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

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

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

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

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

Appendix F
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