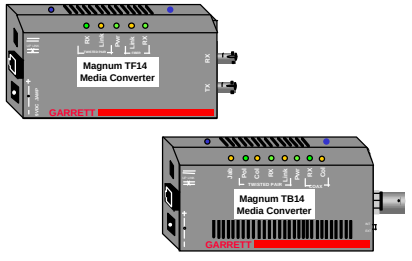
Corporate Headquarters

Garrett Communications
48531 Warm Springs Blvd.
Fremont, CA 94539
Phone 510.438.9071
Fax 510.438.9072
web: www.garrettcom.com
email: support@garrettcom.com

GARRETT

Magnum TF14 and TB14
10Mb/s Media Converters



Installation and User Guide

GARRETT

Magnum™ TF14 and TB14 10Mb/s Media Converters
Installation and User Guide

Part #: 84-00121 (R09/98)

Trademarks

Magnum is a trademark of Garrett Communications, Inc.
UL is a registered trademark of Underwriters Laboratories
Ethernet is a trademark of Xerox Corporation
Velcro is a trademark of Velcro U.S.A.

Important: Magnum Media Converters contain no user serviceable parts. Attempted service by unauthorized personnel shall render any and all warranties null and void. If problems are experienced with a Magnum Media Converter, consult Section 5, Troubleshooting, of this User Guide.

GARRETT

FCC STATEMENT

FEDERAL COMMUNICATIONS COMMISSION

RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Please use the mailing address, email, phone and fax numbers listed below:

Garrett Communications, Inc.
48531 Warm Springs Blvd.
Fremont, CA 94539
Phone (510) 438-9071
Fax (510) 438-9072
email: support@garrettcom.com

web: www.garrettcom.com

TABLE OF CONTENTS **Page**

Garrett Communications reserves the right to change specifications, performance characteristics and/or model offerings without notice.

1.0 SPECIFICATIONS

1.1. Technical Specs - fiber full/half Models: TF14, TF14s, TF14-LP, and standard “BNC Collision-indicating” Model TB14

Performance:

Data Rate: 10 Mbps (IEEE 802.3)

Network Standards:

Ethernet V1.0/2.0 IEEE 802.3: 10BASE2, 10BASE-T, 10BASE-FL

(Magnum Media Converters are physical layer standard Ethernet products, and operate independently of all software.)

Number of Media Converters in series:

Experience shows that up to three units can be used in series between repeaters. For 4 or more in series, noise build-up will typically preclude proper operation.

Maximum Standard Ethernet Segment Lengths:

10BASE-T (twisted pair):	100 m (328 ft)
10BASE2 ThinNet (BNC):	185 m (607 ft)
FOIRL Fiber optic:	1.0 km (3,281 ft)
10BASE-FL Fiber optic :	2.0 km (6,562 ft)
10BASE-FL Single-mode Fiber optic:	10.0 km (32,810ft)

(for single-mode, use full-duplex operation for distances over approx. 4Km.)

Note: Magnum Media Converters DO NOT *support full length Ethernet segments. See Section 3.2 of this manual for media lengths and segment distance calculations.*

Operating Environment:

Ambient Temperature: 32°F to 104°F (0°C to 40°C)
Storage Temperature: -20°C to 60°C
Ambient Relative Humidity: 10% to 95% (non-condensing)

Power Supply (External):

Power Input: 95 - 125 vac at 60 Hz for “-d” U.S. and Canadian models,
200 - 250 vac at 50 Hz for “-i” international models

Power Consumption: 2 watts typical and 3 watts max. for TF14 (fiber),
4 watts typical and 6 watts max. for the TB14 (BNC) Media Converter

Connectors:

RJ-45 Port: Modular 8-Pin female, with “cross-over” up-link switch

Fiber Port: Fiber optic (standard ST type)

BNC Port: Standard BNC connector, RG-58 ThinNet with internal term sw.

Fiber, Full- and half-duplex:

TF14 Fiber models operate in the full- or half-duplex transparent mode. They do not detect and do not indicate collisions, even when the traffic is half-duplex.

Packaging:

Enclosure: High strength sheet metal.

Dimensions, Media Converter unit:

TF14, TF14s, TF14-LP: 2.1”x 3.0”x 0.8” (5.3 cm x 7.6 cm x 2.0 cm)

TB14: 2.1 in x 3.0 in x 0.8 in (5.3 cm x 7.6cm x 2.0 cm)

Dimensions, Power Supply units:

TF14, TF14s, TF14-LP: 1.7 in x 2.2 in x 1.5 in (4.3 cm x 5.5 cm x 3.8 cm)

TB14: 2.0 in x 2.0 in x 1.5 in (5.1 cm x 5.1 cm x 3.8 cm)

Weight:

TF14, TF14s, TF14-LP: 4.6oz. (131g); power supply 5.75 oz (164g)

TB14: 4.6 oz. (131g); power supply 10 oz (285g)

Media Converter LED Indicators:

LED	TF14	TF14s, TF14-LP	TB14	Description
PWR	unit	unit	unit	Indicates unit is receiving DC power.
Link	TP, Fiber	TP, Fiber	TP	Steady ON when proper link is established at both ends of the segment.
RX	TP, Fiber	TP, Fiber	TP, BNC	Indicates port is receiving packets.
POL	n.a.	n.a.	TP.	Indicates the unit has detected a TP receive wire-pair signal inversion (polarity).
COL*	n.a.	n.a.	TP, BNC	Indicates unit is simultaneously transmitting and receiving data from the cables.
JAB*	n.a.	n.a.	unit	Indicates jabber (illegal packet length fault) condition. Segment is partitioned when lit.

NOTE:

*COL and JAB LEDs, only on TB14 units, are indicators applicable to standard collision domains with only half-duplex operation.

Agency Approvals:

115v 60 Hz Power Supply is UL Listed (UL 1950 and cUL) and CE.

230v 50 Hz Power Supply is same.

Emissions: Meets FCC Part 15 Class A, CE

Warranty: Three years, return to factory Made in USA

2.0 INTRODUCTION

This section describes the TF14, TF14s, TF14-LP, and TB14 including appearance, features and typical applications.

2.1 Inspecting the Package and the Product

Examine the shipping container for obvious damage prior to installing this product; notify the carrier of any damage which you believe occurred during shipment or delivery. Inspect the contents of this package for any signs of damage and ensure that the items listed below are included.

This package should contain:

1	Magnum TF14 or TB14 Media Converter Unit
1	External Power Supply, either 115 vac 60 Hz or 230 vac 50 Hz
1 set	Metal mounting clips and screws, 2 each
1	Velcro® Tape section, approximately 3 inches in length
1	User Guide, i.e., this manual

(continued next page)

Remove the Magnum Media Converter from the shipping container. Be sure to keep the shipping container should you need to ship the unit at a later date.

In the event there are items missing or damaged contact your supplier. If you need to return the unit use the original shipping container. Refer to Section 5, Troubleshooting, for specific return procedures.

2.2 Product Description

Magnum TF14 and TB14 10Mb Media Converters offer a compact, cost-effective way to adapt to non-RJ-45 Ethernet cabling as network requirements change and grow. The design provides units that are very small, power-efficient, but also full-function.

The “14” series offer a graceful way to convert and transmit data among twisted pair, fiber and thin coaxial network cabling environments. A variety of twisted-pair-to-fiber models provide for multi-mode or single-mode, transparent full- and half-duplex mode, and normal or Link Pass-through operation. Magnum TF14 and TB14 Media Converters cost significantly less than full repeaters and can be used whenever media distance limitations will not be exceeded in the segment. All units are compatible with Ethernet V 1.0 / 2.0 specifications and comply with IEEE 802.3 standards.

Magnum TF14 and TB14 10Mb Media Converters are designed for quick and easy installation even in very tight spaces. Media cables are easily attached to the corresponding Media Converter. Because of their compact size, Magnum Media Converters can be Velcro®-mounted on an office wall or the side of a desk or cabinet. A rack-mount tray that neatly holds the units and associated power supplies is available.

The standard “1-per-unit” external power supply plugs into a nearby AC wall socket or power strip. Each converter features a full set of LEDs that convey essential diagnostic and status information. See Section 4.1, for LED function specifications.

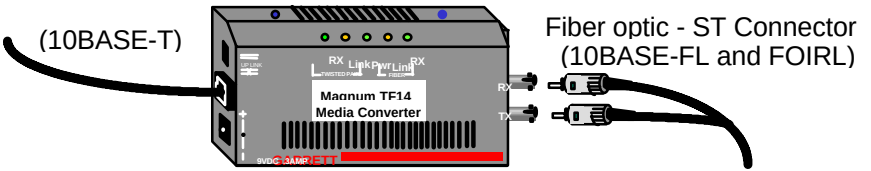
Magnum Media Converters are designed to provide low-temperature operation over an extended period to make them some of the most reliable in the industry. Their high-strength fabricated steel packaging shields against Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI).

Magnum TF14 and TB14 10Mb Media Converters are specifically designed to convert data signaling to allow transmission between two different Ethernet cabling types, allowing migration to a new media type while preserving segments of the pre-existing wiring structure. In addition, the TF14 allows fiber segments to be used with new RJ-45 Ethernet hubs and switches that have insufficient (or none at all) fiber ports.

All of the Magnum Media Converters comply with the IEEE 802.3 10BASE-T specification for 10 Mb/sec traffic via shielded (STP) or unshielded twisted pair (UTP) segments. The Media Converters feature an up-link or cross-over switch to eliminate the need for a special cross-over cable when connecting to a hub or concentrator.

Note: experience shows that the maximum number of 10Mb Media Converters that can be used in series is three. The cumulative signal noise from 4 or more units together in series may cause packet alignment errors.

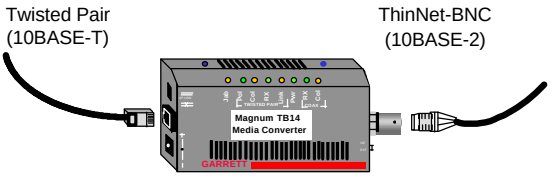
Fiber models: The Magnum TF14 (multi-mode ST), TF14s (single-mode ST), and TF14-LP (Link Pass-through, ST) are equipped with one fiber-ST and one twisted pair RJ-45 connector for use in IEEE FOIRL or 10BASE-FL compliant networks. The up-



link (or crossover) switch on the RJ-45 port simplifies cable installation and connection.

All operate in transparent full- or half-duplex mode, supporting matched sets of either mode type, i.e., attached devices are either both full-duplex or both half-duplex.

BNC model:



The Magnum TB14 is equipped with one BNC and one RJ-45 port. The BNC port has an internal termination switch, allowing BNC attachment without a “T” connector. The BNC connector complies with IEEE 802.3 10BASE2 specifications.

2.3 Features and Benefits

- **Reduces Network Costs**

  Magnum Media Converters offer the ideal solution to quickly and inexpensively connect Twisted Pair with Fiber or ThinNet media within an expanding Ethernet network where full repeaters are not required.

- **No added Repeater Hop Count**

  Media Converters do not add signal timing delays associated with full repeaters, and can be installed without increasing the repeater hop count of an existing network.

- **Fiber / twisted-pair models for all fiber modes**

  A variety of twisted-pair-to-fiber models provide for multi-mode or single-mode fiber, transparent full- or half-duplex mode, ST connectors, and normal or Link Pass-through operation.

- **Small, Compact, Rugged Design**

  Featuring a compact steel case with an external power supply, Magnum TF14 and TB14 Media Converters can be conveniently installed in minimal space in rack cabinets, on table-tops or wall-mounted.

- **Full Complement of LEDs.**

  Each model is equipped with a full complement of LEDs (7 for TF14, 11 for TB14) to provide network traffic status and basic diagnostic information without additional network diagnostic equipment.

- **Highly Reliable and Dependable**

  Magnum Media Converters are based on a robust design and are packaged in a metal enclosures to ensure high reliability and durability.

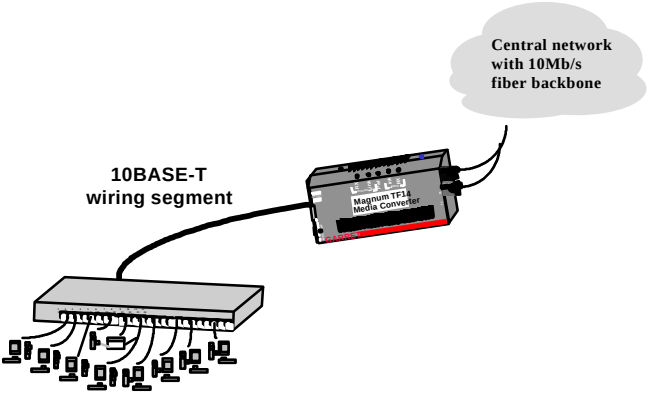
2.4 Applications

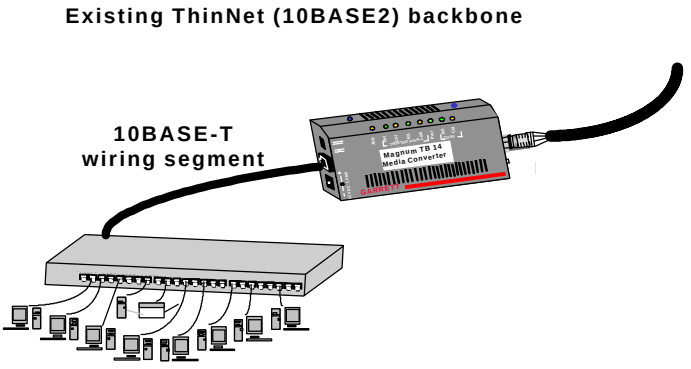
The primary function of a 10Mb Ethernet Media Converter is to permit two different 10Mb media types to coexist inexpensively within the same network by allowing data to be transmitted and received between different media types.

Magnum Media Converters are typically used where new 10BASE-T networking equipment is being installed and connected to new / existing fiber or BNC Ethernet cabling. Alternatively, two twisted-pair-to-fiber models (typically TF14 for multi-mode and TF14s for single-mode) are convenient for inserting a fiber segment, either full- or half-duplex, into a twisted pair environment in order to connect to a remote workstation, hub or switch via fiber cabling, without increasing the repeater hop count.

The TF14-LP, with the Link Pass-through feature, is often desired for managed networks, where the LINK indication passes-through from the fiber side to the TP side. See Section 2.6 below for additional details.

Magnum Media Converters have an external power supply, enabling them to be used to convert signals among media that does not have a power source as part of the cabling system, such as twisted pair, BNC and Fiber. (AUI ports can supply power).


Central network
with 10Mb/s
fiber backbone
10BASE-T
wiring segment
Magnum TF14
Media Converter



The TB14 10Mb Ethernet Media Converter connects twisted-pair cabling to existing BNC cabling. The operation is half-duplex in all situations. See Section 3.5 for calculations of cable distance limits.

2.5 Full / half-duplex applications.

Of the various 10Mb media types, only the twisted-pair to fiber combination is capable of full-duplex (i.e., simultaneously transmitting and receiving on the same cable segment) operation. Full-duplex is rarely required at 10Mb, but might occasionally be desired to connect a 10Mb RJ-45 Switching Hub port over a fiber link to a full-duplex RJ-45 NIC in a remote server, or to connect one port of a full-duplex Switching Hub via fiber to another full-duplex 10Mb RJ-45 Switching Hub port.

All the TF14-series operate in transparent half-and full-duplex mode. For half-duplex traffic, the TF14-series work correctly but do not detect or indicate collisions.

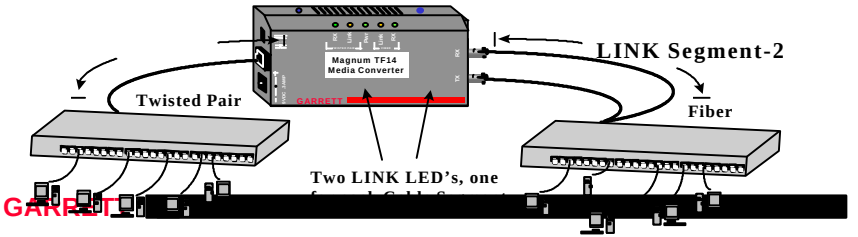
2.6 Link Pass-through applications.

In managed networks, the LINK signal on a managed switch (or hub) port is used as an indicator that the attached cable segment is installed and operable. The network manager, using the SNMP agent, can troubleshoot the cabling by examining the LINK status on each port. This works fine as long as all of the cabling is twisted pair.

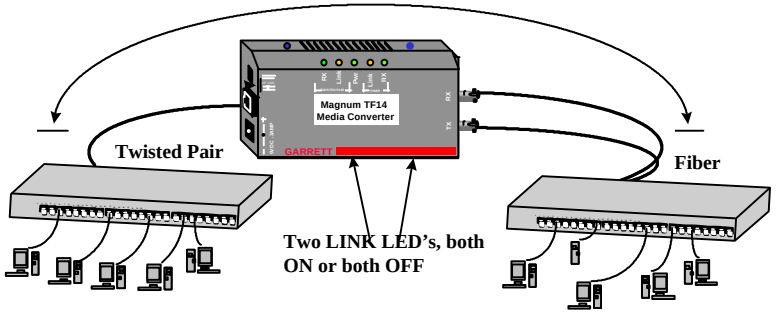
When a twisted-pair to fiber media converter is introduced, the standard models of these products (such as the Magnum TF14) treat each attached cable segment as a separate entity. The LEDs on the media converter separately indicate LINK on each port, enabling an installer to see the LINK (or no-LINK) status of each port and each piece of cable independently. This is ideal for the installer. But it introduces a discontinuity for the managed network software which wants to “see through” the media converter and wants to treat it as part of the cable attached to a particular port.

The Link-Pass-through model, TF14-LP, provides the LINK “see-through” feature desired for managed networks. On these models, either both LINK LEDs are lit or neither is lit. And, the TF14-LP operates in transparent half- and full-duplex mode.

The following diagram illustrates the standard condition, no Link Pass-through.



This diagram illustrates the Link Pass-through feature.



Note that two TF14 media converters in series could be used to go from an RJ-45 port, through a fiber segment, and into another RJ-45 port. Where both media converters have Link Pass-through, the LINK on each RJ-45 port can “see through” both of the TF14 media converters to the other RJ-45 port.

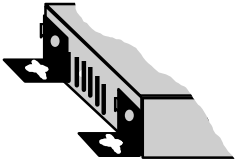
3.0 INSTALLATION

This section describes the installation of the Magnum TF14 and TB14 Media Converters, including location, segment distance calculation and media connection.

3.1 Locating the Media Converter Unit

The compact and lightweight design of the Magnum Media Converter allows it to be easily installed in almost any location. A Velcro strip is included for mounting the unit on a vertical surface such as a wall or cabinet, or for securing the unit on a table-top or shelf. Alternatively, metal mounting clips and screws are included for a rugged and secure mounting in any orientation.

Installation of the Magnum TF14 and TB14 Media Converters is a simple

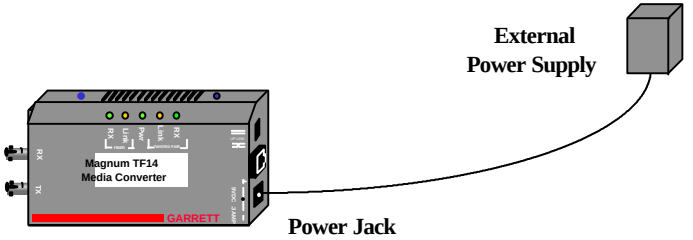


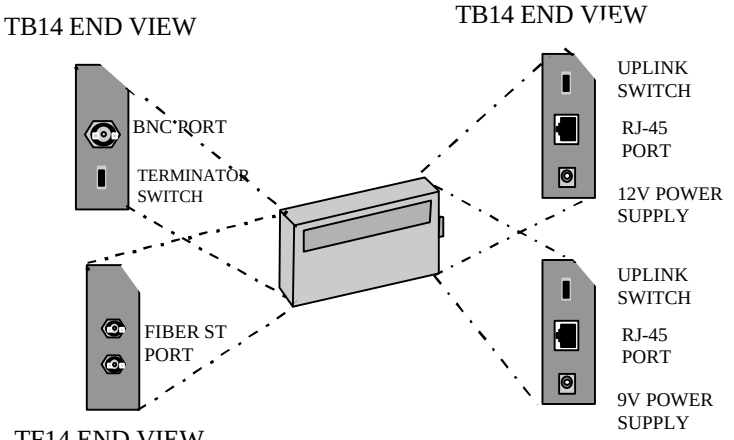
Secure attachment of mounting clips for wall mounting

Locating the Media Converter Unit (continued)

procedure. First, locate an AC receptacle that is within six feet (2 meters) of the intended unit location and plug in the external power supply unit (provided as part of the unit). The small DC power cord from the power supply plugs into the matching “RJ-45 end” power jack of the “14” Media Converter unit, and when power is applied the green PWR LED will illuminate.

Second, make sure the unit is installed in a location where convection cooling is not inhibited.




TB14 END VIEW
BNC PORT
TERMINATOR SWITCH
FIBER ST PORT
TF14 END VIEW
TB14 END VIEW
UPLINK SWITCH
RJ-45 PORT
12V POWER SUPPLY
UPLINK SWITCH
RJ-45 PORT
9V POWER SUPPLY
TF14 END VIEW

3.2 TF14-series (fiber units) Power Supply

The TF14-series external power supply unit supplied is one of two types; one version for AC input power of 115 vac 60 Hz, and one version for 230 vac 50 Hz. Examine the power supply to make sure the version you have is the right type for your AC power system. The 115 vac version has a small transformer integral with a convenience power outlet plug, and a lightweight DC power cord to the applicable power jack on the hub. The 230 vac version has a small transformer integral with an IEC-type power plug for a user-supplied AC power cord with a convenience power outlet plug. It also includes a lightweight DC power cord to the power jack on the TF14. unit. Both power supply models supply 9 volt (at 2 watts typical) of DC power to the TF14 Media Converter.

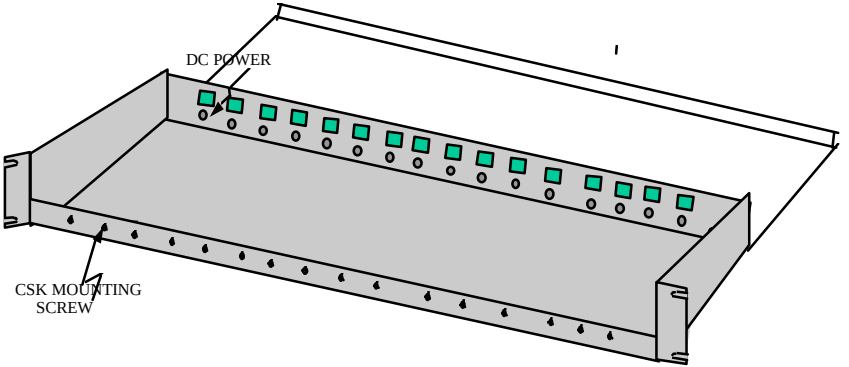
3.3 TB14 (BNC units) Power Supply

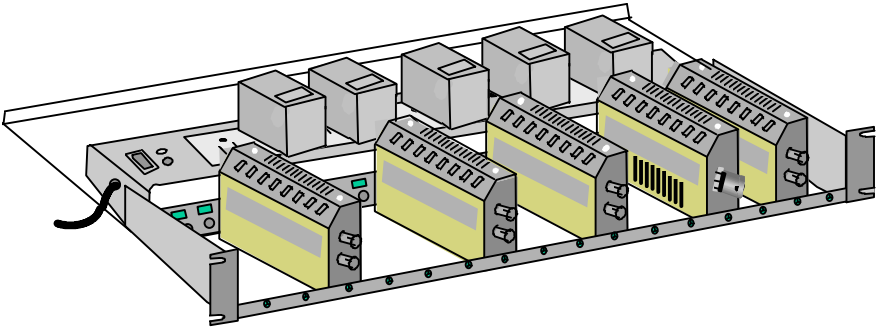
The TB14 external power supply unit supplied is one of two types; one version for AC input power of 115 vac 60 Hz, and one version for 230 vac 50 Hz. Examine the power supply to make sure the version you have is the right type for your AC power system. The 115 vac version has a small transformer integral with a convenience power outlet plug, and a lightweight DC power cord to the applicable

power jack on the media converter. The 230 vac version has a small transformer integral with an IEC-type power plug for a user-supplied AC power cord with a convenience power outlet plug. It also includes a lightweight DC power cord to the power jack on the TF14. unit. Both power supply models supply 12 volt (at 4 watts typical) of DC power to the TB14 Media Converter.

3.4 Rack Mounting of TF14 and TB14 Media Converters

For rack-mounting of Magnum “14 series”media converters, a rack-mount tray is available.





3.5 Calculating Overall Segment Distance

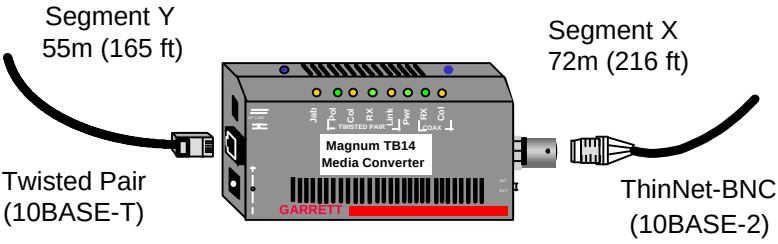
Important Note: Special consideration must be given to maximum cable segment lengths on each side of a Magnum TF14 and TB14 Media Converter. It is recommended that IEEE 802.3 specifications for overall maximum segment distances be adhered to in order to maintain optimum network performance. (See also Technical Specs, Maximum Standard Ethernet Segment Distances, Section 1.1 of this manual.)

When installing the Magnum Media Converter, it is important to consider the combined overall segment length of both of the attached media types. The overall segment length is calculated by adding together the segment lengths on both sides of the Magnum Media Converters. Cable segment length on each side of the Media Converter is measured as a percentage of the maximum allowable standard media distance for the given media type. The percentages, when added together, must not exceed 100%.

Media Distance Formula for Magnum Media Converters:

$X\% + Y\% \leq 100\%$

Where **X** = The segment distance on one side of the Magnum Media Converter divided by the Standard Maximum Media Distance for that media type, x 100%.
Where **Y** = The segment length on the other side of the Magnum Media Converter divided by the Standard Maximum Media Distance for that media cabling type, x 100%



Notes: 1) Media distance calculation is the same for both half and full duplex media converters. 2) Single-mode fiber distances more than about 4Km will exceed the 10Mb

collision domain limits, and should be operated at either full-duplex or with light traffic.

A Distance Calculation Example:

Connectivity between ThinNet and TP Ethernet Media.

In the figure shown above, the length of Segment X is 72m (216 ft). This is 39% of the maximum allowable distance for 10BASE2 media (185 m) [72/185 x 100% = 39%]. The length of Segment Y is 55m (165 ft). This is 55% of the maximum allowable distance for UTP 10BASE-T media (100 m) [55/100 x 100% = 55%]. The total of the two percentages (39% + 55%) is 94%, which is allowable.

***Note 1**:* Where more than one media converter is used in one segment run, the percentages for all of the cabling lengths in the run must be added together and must not exceed 100%.

***Note 2**:* If the total segment distance calculation result is greater than 100%, consider using a Magnum Repeater so that each cable type can be 100% of its maximum allowed length.

Note 3: The maximum number of 10Mb Media Converters that can be used in series is three. The cumulative noise from four or more units together causes packet alignment errors.

3.6 Connecting Ethernet Media

Connecting Ethernet media to the Magnum Media Converter is very simple and straightforward. Using a properly terminated media segment, simply attach the cable end to the appropriate connector.

See Sections 4.2 - 4.3 for details of the LEDs on the media converter models.

3.6.1 Connecting Twisted Pair (RJ-45 ports)

The following procedure describes how to connect a 10BASE-T twisted pair segment to the RJ-45 port on the Magnum Media Converters. The procedure is the same for both unshielded and shielded twisted pair segments.

1. Using standard 10BASE-T media, insert either end of the cable with an RJ-45 plug into the RJ-45 connector of the Magnum Media Converter.
2. Connect the other end of the cable to the corresponding device.
3. Use the LINK LED (non-Link pass-through models) to ensure proper connectivity by noting that the LED will be illuminated when the units are powered and proper connections established. If the LINK LED is not illuminated, change the setting of the up-link switch (See Section 4.4 for up-

link switch information.) If this does not help, ensure that the cable is connected properly at both ends and is not defective.

4. For the TF14-LP model with the Link-Pass-through feature, The two LINK LEDs operate together, and either both LEDs are lit or neither is lit. Both of the attached cables must be operable for LINK to be indicated. Absence of LINK does not point to the problem cable segment, and the fault may be in either.

3.6.2 Connecting Fiber Optic multi-mode, single mode (half- and full-duplex)

The following procedure applies to 10BASE-FL multi-mode and single mode applications using the TF14, TF14s, TF14SC, and TF14-LP Media Converters. All have ST-type fiber connectors, except the TF14SC which has SC-type connectors.

The TF14s single-mode differs from the other fiber media converters in terms of the maximum distance allowed. The others are used for a multi-mode fiber segment lengths of up to 2km. The TF14s is used for single-mode fiber segments of up to 10km in length. The following table (continued next page) is provided for general information:

Fiber Cable Type	cable diameter *	Max. length	Wavelength

Fiber Cable Type	cable diameter *	Max. length	Wavelength
Multi-mode fiber	50/125, 62.5/125.	2km	850 nm
Single-mode fiber	2/15 - 8/60	10km	1300 nm

* xx/yy are the diameters of the core and the core plus cladding respectively

The values shown are typical values

Procedure for connecting multi-mode and single-mode fiber cables:

1. Before connecting the fiber cable, remove the protective dust caps from the tips of the connectors on the media converter. Save these dust caps for future use.

2. Wipe clean the ends of the dual connectors with a soft cloth or lint-free lens tissue dampened in alcohol. Make certain the connectors are clean before connecting.

Note: One strand of the duplex fiber optic cable is coded using color bands at regular intervals; you must use the color-coded strand on the associated ports at each end of the fiber optic segment.

3. Connect the Transmit (TX) port (light colored post) on the Magnum Media Converter to the Receive (RX) port of the remote device. Begin with the color-coded strand of the cable for this first TX-to-RX connection.

4. Connect the Receive (RX) port (dark-colored post) on the product to the Transmit (TX) port of the remote device. Use the non-color coded fiber strand for this.

5. The LINK LED corresponding to the fiber port on the front of the product will illuminate (for standard non-Link-Pass-through models) when a proper connection has been established at both ends (and when power is ON in the units at each end). If LINK is not lit after cable connection, the normal cause is improper cable polarity. Swap the fiber cables on the product connector to remedy this situation.
6. For the Link Pass-through model, connection is the same except that the LINK indication will not be present unless LINK is made for the cables on both sides.

3.6.3 Connecting ThinNet 10BASE2

Connect the ThinNet coax cable to the BNC connector on the TB14 Media Converter in the same manner as is done for any standard BNC connection. Be sure that the BNC segment is properly terminated using a standard “T” connector and terminator.

4.0 OPERATION

This section describes the operation of the Magnum TF14 and TB14 10Mb Media Converters, including power supply requirements, up-link switch functionality, and a description of all LEDs.

4.1 Power Requirements, Power Supply Types for TF14 vs. TB14

Magnum TF14 Media Converters are very power-efficient. They only require about 2 watts of power and are designed to be used with a tiny external 9-volt power supply. This power supply is different from other power supplies used with any other Magnum products, including even the companion TB14 unit.

Magnum TB14 Media Converters require 12v internal for the BNC port.. They typically use about 5 watts of power and are designed to be used with an external 12-volt power supply. This power supply is the same as the power supplies used with several other Magnum products, including 10Mb Magnum Personal Hubs and the TF14 and TB14 models of 10Mb Magnum Media Converters.

4.2 Front Panel LEDs - Magnum TF14, TF14s, and TF14-LP fiber-series

LED	Description
PWR	Illuminates GREEN to indicate the unit is receiving DC power.
LINK	(per port) Illuminates to indicate proper connectivity on each segment (non-Link Pass-through models). LINK will turn off in the event connectivity is lost between the ends of each cable

segment or a loss of power occurs in the unit or in the attached device. For Link Pass-through models, see Section 3.3.3 #6.

RX (per port) Illuminates GREEN to indicate data is being received.

4.3 Front Panel LEDs - - Magnum TB14

LED **Description**

PWR Illuminates GREEN to indicate the unit is receiving DC power.

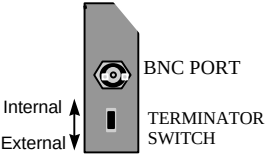
LINK (TP) Illuminates GREEN, to indicate proper connectivity on the 10BASE-T network segment. LINK will turn off in the event connectivity is lost between the ends of the twisted pair segment or a loss of power occurs in the unit or remote device.

RX (per port) Illuminates GREEN to indicate data is being received.

POL (TP) Illuminates AMBER to indicate inverse polarity detected.

JAB Illuminates AMBER to indicate jabber (illegal packet length).

COL (per port) Illuminates AMBER to indicate a collision on the segment.



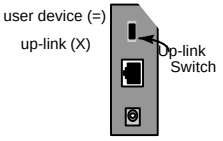
End view, BNC port

4.4 TB14, BNC Internal Termination Switch

An internal termination switch is provided on the TB14 Model only The BNC port is specially equipped with an internal termination switch that eliminates the need to use a "tee" connector when the BNC cable is ending at the TB14. When the switch is in the “INT” position, the connection is internally terminated. When switched to the “EXT” position, external termination (using a “tee” connector, not supplied) is required. Some applications may require a "tee" connector, used as a tap, to allow the 10BASE2 coax segment to continue on past the TB14 port connection.

4.5 Up-Link (Cross-over) Switch

When set to the UP position (=), the Magnum Media Converter is wired for normal twisted-pair connection to a user node device. When set to the DOWN position (X), the Media Converter is wired with cross-over functionality for direct up-link to a network hub or concentrator. Switch ports may be of either polarity, and this feature is most convenient with switches.



End view, TP port

4.6 Full- and half-duplex transparent operation for fiber models

All the TF14-series operate in transparent half-and full-duplex mode. For half-duplex traffic, the TF14-series work correctly but do not detect or indicate collisions. See Section 2.5 for more details and applications information.

5.0 TROUBLESHOOTING

All Magnum Ethernet products are designed to provide reliability and consistently high performance in all network environments. The installation of Magnum TF14 and TB14 10Mb Media Converters is a simple procedure (see Section 3.0, INSTALLATION); their operation is described in Section 4.0, OPERATION.

Should problems develop during installation or operation, this section should help to locate, identify and correct such problems. Please follow the suggestions listed below prior to contacting your supplier. However, if you are unsure of any procedure described in this section, or if the Magnum Media Converter is not operating as expected, do not attempt to repair or alter the unit. Contact your supplier (or if unknown, contact Garrett Communications) for assistance.

5.1 Before Calling for Assistance

1. If difficulty is encountered when installing or operating the Magnum Media Converter, refer back to Section 3.0, Installation and Section 4.0, Operation. Check to make sure that the various other components of the network are operable.

2. Check the cables and connectors to ensure that they have been properly connected, and the cables/wires have not been crimped or in some way impaired during installation. (About 90% of network downtime can be attributed to wiring and connector problems.)

3. Make sure that the external DC power supply is properly attached to the unit, that it is of the proper type, and that it is plugged into a functioning electrical outlet. Use the PWR LEDs to verify the unit is receiving proper power.

4. If the problem is isolated to a network device other than the Magnum Media Converter, it is recommended that the problem device be replaced with a known good device. Verify whether or not the problem is corrected. If not, go to Step 5 below. If the problem is corrected, the Magnum Media Converter and its associated cables are functioning properly.

5. If the problem continues after completing Step 4 above, contact your supplier of the Magnum Media Converter (or if unknown, contact Garrett Communications) by fax, phone or email for assistance.

5.2 When Calling for Assistance

Please be prepared to provide the following information.

1. A complete description of the problem, including the following points:
   a. The nature and duration of the problem;
   b. Situations when the problem occurs;
   c. The components involved in the problem;
   d. Any particular application that, when used, appears to create the problem;
2. An accurate list of Garrett Communications product model(s) involved, with serial number(s). Include the date(s) that you purchased the products from your supplier.
3. It is useful to include other network equipment models and related hardware, including personal computers, workstations, terminals and printers; plus, the various network media types being used.
4. A record of changes that have been made to your network configuration prior to the occurrence of the problem. Any changes to system administration procedures should all be noted in this record.

5.3 Return Material Authorization (RMA) Procedure

All returns for repair must be accompanied by a Return Material Authorization (RMA) number. To obtain an RMA number, contact Garrett Communications Customer Support at (510) 438-9071 (office hours: 8AM - 5PM Pacific Standard Time) or send email to *support@garrettcom.com*. Please have the following information available when calling:

Name and phone number of your contact person.
Name of your company / institution
Your shipping address
Product name
Serial Number (or Invoice Number)
Packing List Number (or Sales Order Number)
Date of installation
Failure symptoms, including a full description of the problem.

Garrett Communications will carefully test and evaluate all returned products, will repair products that are under warranty at no charge, and will return the warranty-repaired units to the sender with shipping charges prepaid (see Warranty Information, Appendix A, for complete details). However, if the problem or condition causing the return cannot be duplicated by Garrett Communications, the unit will be returned as:

No Problem Found.

Garrett Communications, Inc. reserves the right to charge for the testing of non-defective units under warranty. Testing and repair of product that is not under warranty will result in a customer (user) charge.

5.4 Shipping and Packaging Information

Should you need to ship the unit back to Garrett Communications, please follow these instructions:

1. Package the unit carefully. It is recommended that you use the original container if available. Units should be wrapped in a "bubble-wrap" plastic sheet or bag for shipping protection. (You may retain all connectors and this Installation Guide.)

CAUTION : Do not pack the unit in Styrofoam "popcorn" type packing material. This material may cause electro-static shock damage to the unit.

2. Clearly mark the Return Material Authorization (RMA) number on the outside of the shipping container.
3. Garrett Communications is not responsible for your return shipping charges.
4. Ship the package to:

Garrett Communications
48531 Warm Springs Blvd.
Fremont, CA 94539
Attn.: Customer Service