**Kingston Technology
EtheRx Pro-Series
19" Rack-Mount Stackable
10BASE-T Ethernet Hubs
User's Guide**

**Models: KNE16TP/RS
             KNE24TP/RS**

Kingston Technology's

EtheRx Pro-Series™

16-Port and 24-Port
Stackable 19-inch Rack-Mount
10BASE-T Ethernet Hubs

User's Guide

Part No. 4460053-001.A01

Kingston® TECHNOLOGY

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Important Safety Instructions

1. Read all these instructions.
2. Save these instructions for later use.
3. Follow all warnings and instructions marked on the product.
4. Do not use this product near water.
5. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
6. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risk. Refer all servicing to service personnel.

Wichtige Sicherheitshinweise

1. Diese Hinweise sollten vollständig durchgelesen werden.
2. Diese Hinweise für einen späteren Gebrauch aufbewahren.
3. Allen auf dem Gerät angebrachten Warnungen und Hinweisen folgen.
4. Das Gerät nicht in der Nähe von Wasser verwenden.
5. Das Gerät nur mit dem Aufkleber bezeichneten Netzspannung betreiben. Bei Fragen über die Art der Netzspannung sollte der Händler oder das Energieversorgungsunternehmen zu rate gezogen werden.
6. Nicht versuchen das Produkt selbst zu reparieren. In allen Produkten existieren gefährliche elektrische Spannugen. Nicht das Gehäuse öffnen.

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Introduction

Intended Audience: This manual assumes that the user has a general working knowledge of networking principles and architecture and is familiar with network systems in general.

Congratulations on the purchase of your new Kingston *Pro-Series*® 19-inch rack-mount, stackable 10BASE-T Ethernet Hub. There are two models: the KNE16TP/RS and KNE24TP/RS, 16-Port and 24-Port Ethernet hubs, respectively. The Pro-Series models offer several new enhancements. The *Stack-n-Play*® feature allows for easy installation without the need to configure ID switches. The *Hot-Stack*® feature allows adding new hubs without powering down. The *Smart Monitor*® feature offers network traffic monitoring through a bar-graph LED display.

The EtheRx hubs provide sixteen (16) or twenty-four (24) UTP (Unshielded Twisted-Pair) ports for 10BASE-T Ethernet connections, one BNC port for 10BASE2 thin Ethernet connection, and one AUI (Attachment Unit Interface) port for either 10BASE2 Cheapernet, 10BASE5 thick Ethernet, 10BASE-T, 10BASE-FL, or FOIRL (Fiber Optic Inter Repeater Link) segment using a proper external transceiver. The last UTP port (i.e., Port 16 or Port 24) uses a cascade switch to support both crossover and straight-thru cable wiring for uplinking to another 10BASE-T hub.

The EtheRx models can also be stacked up to five hubs using the stacking cable (provided) expanding your network to a maximum of 80 or 120 UTP ports (depending on the model) as a single repeater unit. The EtheRx hubs can be used on desktop or 19-inch rack-mount installations (mounting hardware included). The front panel includes pull handles for rack-mounting and a variety of diagnostic LEDs including: Power, five levels of Utilization and Collision status, AUI, BNC, and UTP port LEDs which display Link, Activity and Partition status.

*Models **KNE16TP/RS** and **KNE24TP/RS***

Special Features

- *Stack-n-Play*™ ports connect up to **five** EtheRx hubs as a single repeater unit
- *Hot-Stack*™ additional hubs without powering down
- *Smart Monitor*™ bar-graph LEDs for network traffic monitoring
- 16 or 24 UTP ports for 10BASE-T connections
- 1 BNC port for 10BASE2 thin Ethernet connection
- 1 AUI port for backbone or mixed media connection
- Cascade switch on last UTP port
- UTP Link, Activity, and Partition Status LEDs for easy troubleshooting
- BNC Activity and Partition LED
- AUI Activity and Partition LED
- 5 Utilization LEDs to monitor network traffic
- 5 Collision LEDs to monitor data collision
- Automatic partition and reconnection
- Internal auto-sensing power supply operating at 110VAC or 240VAC
- Complies with IEEE 802.3 and 802.3i Ethernet standards
- 19-inch rack mountable (mounting kit included)

Package Contents

Your EtheRx package should contain the following items:

- o   KNE16TP/RS or KNE24TP/RS Ethernet Hub
- o   5.5" shielded stacking cable
- o   AC power cord
- o   BNC T-connector
- o   Mounting kit includes:
    - (2) Angle brackets
    - (8) Bracket mounting screws
    - (4) 10/32" Rack-mount screws
    - (4) Rubber Feet
- o   User's Guide

If any of the items are missing or damaged, please contact your Kingston dealer for a replacement. Be sure the items you receive are genuine Kingston Technology products. If the Kingston name and logo are not on the front panel of your unit, it's not a genuine Kingston product.

Design Features

The EtheRx Pro-Series hubs comply with the full set of repeater functions as defined by IEEE802.3 CSMA/CD and IEEE 802.3i 10BASE-T Ethernet standard. These functions include all Repeater Functions, Signal Regeneration, Jabber Lockup Protection, Fragment Extension, Collision-Handling, Auto Partitioning/Reconnection and Link Test. These functions are usually transparent to all network activities and are summarized below.

Repeater Functions

If any single port senses the start of a valid packet on its receiving line, the EtheRx hub will re-transmit the received data to all other ports on the network. The re-transmission of packets complies with the IEEE 802.3 specification in terms of preamble structure, voltage amplitude, and timing characteristics. These timing regenerations prevent cumulative signal loss, jitter, and distortion caused by the network cabling, and allow the EtheRx hubs to be cascaded to other Ethernet hubs.

Jabber Lock-up Protection

The EtheRx hubs implement a built-in jabber protection scheme to ensure that the network is not disabled due to transmission of excessively long data packets. This protection scheme will automatically interrupt the reception of abnormally long streams of data to prevent jabber lock-up.

Fragment Extension

If the total packet length received by the EtheRx hub is less than 96 bits, including preamble, then the hub will automatically extend the repeated packet length to 96 bits by appending a jam sequence to the original fragment. The extension of a fragmented packet allows the reliable detection of a collision by all stations attached to the network.

Collision-Handling

The EtheRx hubs will perform collision detection and respond to collision conditions as defined in the IEEE 802.3 specifications.

Automatic Partitioning/Reconnection

If any of the ports on the EtheRx hub experience excessive numbers of consecutive collisions, duration collisions, or faulty conditions, that particular port can be partitioned. Once partitioned, the hub will continue to monitor that port. If the error conditions have been corrected or a good data packet is transmitted or received without incurring a collision, the hub will automatically reconnect that port to the network.

Link Test

For UTP port connections, the EtheRx hub implements the link integrity test function as specified in the IEEE 802.3i 10BASE-T standard. The hub will transmit link test pulses to any UTP port after that port's transmitter is inactive for a range of 8ms to 17ms. These pulses are sent to confirm that a valid connection exists between each UTP port on the hub and its attached device.

Hardware Installation

Before you begin installing network cables, please take a few moments to familiarize yourself with the EtheRx 16-Port and 24-Port Ethernet Hubs. The functions on the front and rear panels are illustrated below.
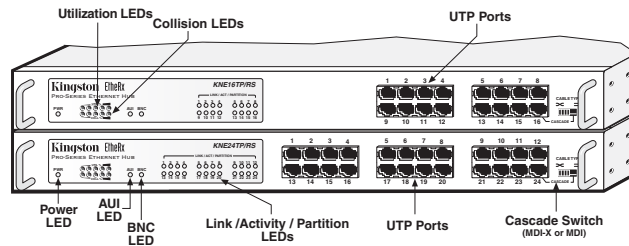
Front Panel

Fig. 1. Hub Front Panels

Power LED

The green LED indicates the power status. The LED will light when the AC power cord is connected from a power source to the hub and the power switch is turned on.

Utilization LEDs

Kingston's *Smart Monitor*™ bar-graph LEDs for utilization and collision provide easy monitoring of network traffic. There are five Utilization LEDs to display the amount of network traffic in five percentage levels. The amount of data traffic is measured in frames per second (FPS), then calculated into the following percentage forms: 1%, 7%, 15%, 30%, and 60%. The LEDs will light in a bar-graph fashion based on the network activity.

Collision LEDs

There are five Collision LEDs to display the amount of data packet collisions in five percentage levels. The amount of data collisions is measured in collisions per second (CPS), then calculated into the following percentage levels: 1%, 7%, 15%, 30%, and 60%. The LEDs will light in a bar-graph fashion based on the amount of collisions.

AUI LED

The two-color LED displays two states of operation for the Activity and Partition status on the AUI port. When data is received, the LED will flash green. If the port has been partitioned due to excessive collision or other faulty condition, it will display solid red.

Note: Upon power up, the AUI port LED will not be lit unless a transceiver is attached to the port and there is activity.

BNC LED

The two-color LED displays the Activity and Partition status on the BNC port. When data is received, the LED will flash green. If the port is partitioned due to excessive collision or other faulty condition, it will display solid red.

Note: Upon power up, if the BNC port has no cable attached or is not properly terminated at both ends, the LED will display red to show the port has been partitioned. Upon receipt of good packets, the LED will automatically change from red to green indicating that the port is functioning properly.

UTP Port LEDs

The sixteen or twenty-four UTP Port LEDs offer condition status for Link, Activity, and Partition. If a good link is established on any given port, the green LED will be continuously lit, indicating a valid network connection between the network node and the hub. When data is received, the LED will flash green. If the port is partitioned, the LED will display solid red.

If the LED does not display solid green indicating a good link, check the following:

1.   Make sure the power is turned on for both the PC and EtheRx Hub. The power LED should be lit.

2.   Verify the network drivers have been loaded from the PC. Some adapters require the drivers to be loaded to establish a proper link.

3.   Make sure the correct cable type is selected.

4.   Make sure the cable is wired properly and connected on both ends.

5.   If steps 1, 2, 3, and 4 are correct, the cable may be defective or not wired correctly. Replace the cable and try again. Please refer to Appendix A for pin assignments and Appendix B for cabling guidelines.

Cascade Switch

The cascade switch provides cable wiring flexibility on the last UTP Port (i.e., Port 16 or Port 24) for connecting to a workstation or cascading to another hub. By default, the last UTP port is set to "Crossover" (left side) as a standard, internally-crosse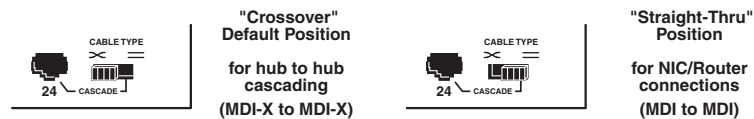d port, or MDI-X port. Depending on the wiring of your UTP cable (normally "Straight-Thru"), the port is used to connect a workstation.

For cascading to another hub using a straight-thru cable, move the cascade switch to "Straight-Thru" (right side). If a crossover UTP cable is used to cascade to another hub, leave the cascade switch in the "Crossover" position.

Using a Straight-Thru Cable

	"Crossover" Default Position		**"Straight-Thru" Position**
CABLE TYPE 24 ⎯ CASCADE	**for NIC/Router connections** **(MDI-X to MDI)**	**CABLE TYPE** 24 ⎯ CASCADE	**for hub to hub cascading** **(MDI to MDI-X)**

Using a Crossover Cable

	"Crossover" Default Position		**"Straight-Thru" Position**
CABLE TYPE 24 ⎯ CASCADE	**for hub to hub cascading** **(MDI-X to MDI-X)**	**CABLE TYPE** 24 ⎯ CASCADE	**for NIC/Router connections** **(MDI to MDI)**
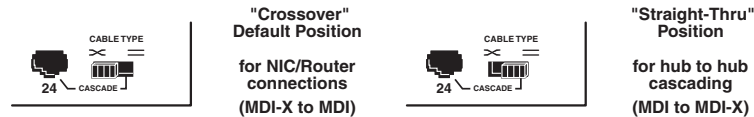
MDI (Media Dependent Interface) is the standard that defines the mechanical and electrical configuration of a UTP port. For any two devices to communicate on the network, the transmitter of one device must be connected to the receiver of the other device. This can be achieved by using a crossover cable, or by using one MDI-X port that implements the cross-over internally.

Switch Position	Port Config	For Connection to Another Hub Port (MDI-X)	For Connection to a Network Adapter or Router (MDI)
✕	MDI-X	Use Crossover cable	Use Straight-Thru cable
═	MDI	Use Straight-Thru cable	Use Crossover cable

Table 1. Switch Position and Cable Types

Rear Panel
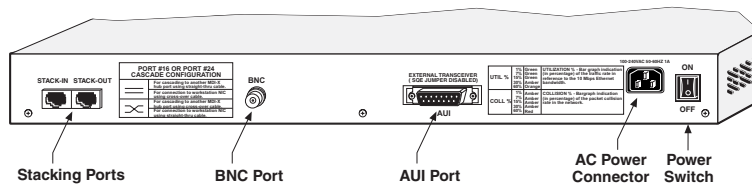
Fig. 2. Hub Rear Panel

Power Switch

The power switch toggles power on and off to the unit. The switch can also be used to reset the hub.

AC Power Connector

The EtheRx hubs use an auto-sensing 100VAC-240VAC, 50/60Hz internal power supply. Connect the AC power cord from the rear of the unit to an AC electrical outlet.

AUI Port

The AUI port is a 15-pin D-sub connector. It is a general purpose port for backbone or mixed media connections for 10BASE2, 10BASE5, 10BASE-T, or FOIRL connections using a proper external transceiver.

BNC Port

This port is labeled BNC, and has a built-in transceiver for direct 10BASE2 connection using thin coaxial cable. Use RG-58 A/U or RG-58 C/U type cable. Refer to Appendix B for 10BASE2 cabling guidelines when connecting to this port.

Stacking Ports

The two ports are labeled *"Stack-In"* and *"Stack-Out"* for stacking up to five (5) EtheRx Pro-Series hubs in any combination of 16-Port and 24-Port models. Refer to the section, *"Stacking EtheRx Hubs"* on the next page for instructions.
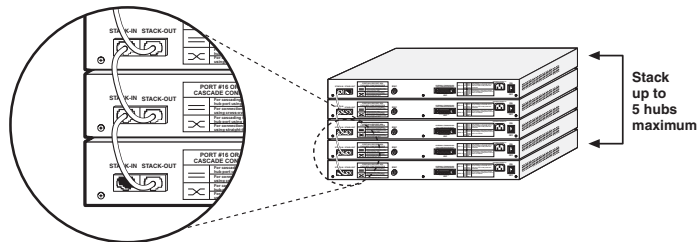
Stacking EtheRx Hubs

The EtheRx hubs use stacking ports located on the rear panel to stack up to five hubs in any combination of 16-Port KNE16TP/RS and 24-Port KNE24TP/RS models. Follow the directions below to stack up to five hubs together:

1. Locate the 5.5" shielded stacking cable included with your package contents.

2. Plug one end of the cable into the port labeled, *"Stack-Out"* on the first hub.

3. Plug the other end of the cable into the *"Stack-In"* port on the second hub.

4. Connect the AC power cord to each hub, then flip the power switch to turn on power to the unit.

5. Repeat the process to stack additional hubs up to a maximum of five (5) hubs.

Kingston's *Stack-n-Play*™ feature offers greater scalabilty to add UTP ports without the need to configure ID or termination switches. EtheRx hubs when stacked together are recognized as a single repeater unit on the network. By stacking hubs together, you can expand the total number of UTP port connections from 16 to 80 or from 24 to 120 UTP ports, depending on the model. A maximum of five (5) Pro-Series hubs can be stacked in any combination of 16 and 24-Port hub models.

Kingston's *Hot-Stack*™ feature allows the addition of new hubs to the top or bottom of a stack without the need to power down the existing hubs.

Fig. 3. Stacking Additional Hubs

Network Configurations

The installation of the EtheRx hub is simple and can be configured for either the Ethernet Star topology or Linear Bus topology. The hubs may also be vertically stacked or horizontally cascaded to other Ethernet hubs. For cascading, please observe the Ethernet 5-4-3 Rule.

Ethernet 5-4-3 Rule

The Ethernet 5-4-3 rule states that the maximum transmission path permitted between any two stations is:

- 5 segments

- 4 repeater sets

- 3 coax segments. The remaining 2 segments may be linked segments

Ethernet Star Network

The typical network configuration for 10BASE-T Ethernet is a Star Topology, in which nodes are connected to a central Ethernet hub. Since a Crossover function is implemented on all ports (except the last UTP port which uses a cascade switch to support both cable types), a straight-thru UTP cable should be used. The physical network connection is illustrated in Figure 4.
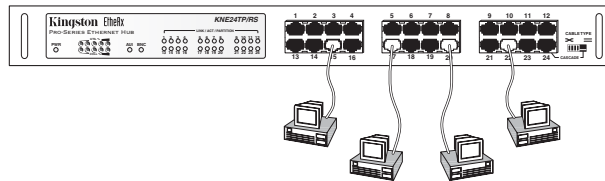
Fig. 4. Star Network Connection

Linear Bus Network

The typical network configuration for 10BASE2 networks is a Linear Bus topology in which nodes are connected via thin coaxial cabling using the BNC connector. A 50Ω (Ohm) terminator must be attached to each end of the trunk segment and one of the terminators must be grounded. The maximum cable length is 185M per segment. To minimize cable-related pro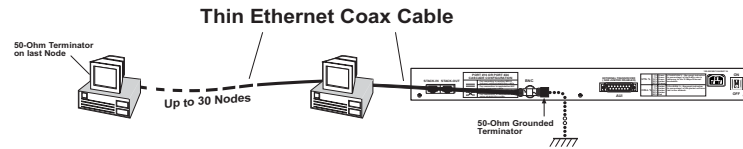blems, do not mix single filament (black PVC jacket) with stranded filament (DEC grey) coaxial cables on the same network.

Thin Ethernet Coax Cable

50-Ohm Terminator on last Node

Up to 30 Nodes

50-Ohm Grounded Terminator

Fig. 5. Linear Bus Connection

Horizontal Cascading

The EtheRx hubs can be horizontally cascaded to other hubs as long as the Ethernet 5-4-3 Rule is met. This connection can be made through the BNC port, AUI port, or one of the UTP ports. To cascade to another hub, use the last UTP port which has a cascade switch to support either straight-thru or crossover cable types. Figure 6 below is an example of horizontal cascading using the KNE24TP/RS under the Ethernet 5-4-3 rule.

Segment 3

Segment 4

Segment 2

Segment 5

100M max. per segment
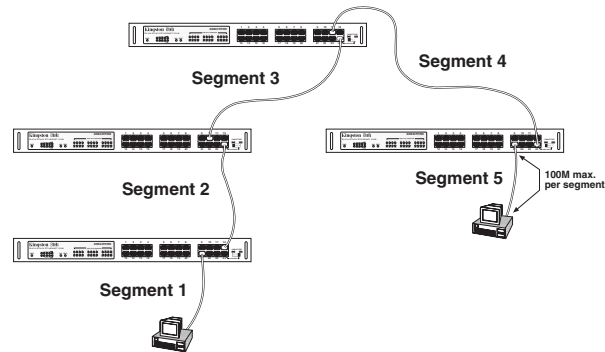
Segment 1

Fig. 6. Horizontal Cascading

Cascading with Stacked Hubs

By stacking up to five Pro-Series hubs per segment, the number of UTP ports increases dramatically. The total number of UTP ports changes from 90 (shown in Figure 6) to 474 (shown below). Figure 7 listed below is an example of horizontal cascading with stacked hubs under the Ethernet 5-4-3 rule.

Segment 3   **Segment 4**

Segment 2   **Segment 5**

Segment 1
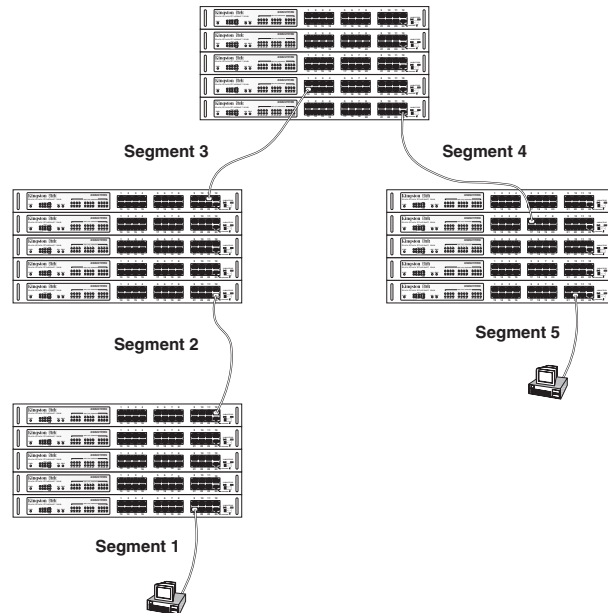
Fig. 7. Cascading Stacked Hubs

Appendices

Appendix A   Pin Assignments

UTP Pin Assignments

UTP Ports use RJ-45 Unshielded Twisted Pair (UTP) cabling. Cable Pin Numbers and Pin Wiring Assignments are listed below in Figure A-1 and Table A-2, respectively. Twisted-Pair cables can be wired with either Straight-Thru or Crossover pin assignments.   Both wiring schemes are mentioned in *"Appendix B Cabling Guidelines"* for reference in creating a twisted-pair cable.
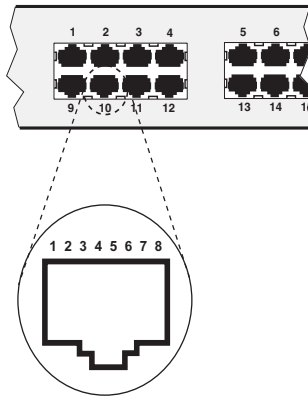
Fig. A-1 RJ-45 Connector Pin Numbers

Pin Number	MDI-X / ✕	MDI / ═
1	Receive Data +	Transmit Data +
2	Receive Data -	Transmit Data -
3	Transmit Data +	Receive Data +
4,5	Not Used	Not Used
6	Transmit Data -	Receive Data -
7,8	Not Used	Not Used

Table A-1 UTP Pin Assignments

AUI Pin Assignments

The AUI port, labeled AUI on the rear panel of the hub, is a general purpose port for backbone or mixed media connection using: 10BASE2 thin coaxial, 10BASE5 thick coaxial, 10BASE-T UTP, 10BASE-FL and Fiber Optic Inter-Repeater Link (FOIRL), using an external transceiver.

When attaching a 10BASE-T hub to a Thinnet or Thicknet network through the AUI port, the SQE jumper must be disabled on the attaching transceiver.
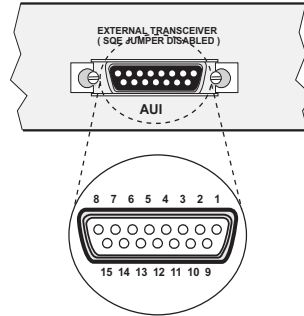
Fig. A-3 AUI Connector on Rear Panel

Pin Number	Function
1	Collision Shield
2	Collision +
3	Transmit +
4	Receive Shield
5	Receive +
6	Power Return
7	Not Used
8	Circuit Shield
9	Collision -
10	Transmit -
11	Transmit Shield
12	Receive -
13	Voltage +
14	Voltage Shield
15	Not Used

Table A-4 AUI Pin Assignments

Appendix B   Cabling Guidelines

Cable Types

When connecting network cables, the following table shows appropriate networking guidelines associated with each cable type.

Ethernet Standard:	10BASE5	10BASE2	10BASE-T
Cable Type:	RG-11	RG-58/U	UTP CAT 3, 4 or 5
Max. Segment Length:	500M (1640ft)	185M (600ft)	100M (328ft)
Max. Number of Nodes per Segment:	100	30	1024
Connector:	15-pin D-Sub	BNC	RJ-45
Network Topology:	Linear Bus	Linear Bus	Star

Table B-1 Network Cable Guidelines

UTP Cable Wiring

10BASE-T unshielded twisted-pair cables can be wired as "Straight-Thru" or, in some cases, "Crossover" depending on the application. For workstations connected to a hub, use "Straight-Thru' wiring illustrated below in Table B-2. In some instances (e.g. cascading from one hub to another), you may use "Crossover" wiring illustrated below in Table B-3.

"Straight-Thru"
Cable Wiring

Pin Number	Pin Number
1 (TRX +)	1 (TRX +)
2 (TRX -)	2 (TRX -)
3 (RCV +)	3 (RCV +)
6 (RCV -)	6 (RCV -)
4, 5, 7, 8	Not Used

Table B-2. Straight-Thru Wiring

Crossover"
Cable Wiring

Pin Number	Pin Number
1 (TRX +)	3 (RCV +)
2 (TRX -)	6 (RCV -)
3 (RCV +)	1 (TRX +)
6 (RCV -)	2 (TRX -)
4, 5, 7, 8	Not Used

Table B-3. Crossover Wiring

Cabling Suggestions

When connecting UTP network cables, the following guidelines are suggested for trouble-free operation.

- **Use CAT 5 Equipment for Future 100Mbps Networks**
  For true Category 5 compliance, all components including: UTP trunk cables, UTP patch cables, patch panels and modular wall plugs must be CAT 5 certified. A CAT 5 cable certifier may be used to ensure CAT 5 compliance.

- **Never Exceed a Cable's Minimum Bend Radius**
  For Category 5 cables, the cable may not be bent beyond 5 times its own diameter (i.e., 1.25").

- **Do Not Exceed the Maximum Tensile Loading**
  The maximum tensile load is the amount of stress a cable can withstand **before** performance begins to decline. This level usually occurs far before the breaking point of the cable. Tensile loading is measured in pound-foot (lbf). For 24 AWG Category 5 cables, the maximum tensile loading should not exceed 25 lbf.

- **Do Not Over-Cinch the Cables**
  When grouping a set of cables with cable ties, cords, or staples, over-cinching can cause the cable jackets to compress causing a deterioration of cable integrity. Use proper cable clamps or "D" rings which allow for the cable's width and girth.

- **Do Not Untwist the Pairs on CAT 5 Cables Beyond 0.5"**
  Care should be taken to never untwist the pairs beyond 0.5 inches from the point of termination. This rule is in accordance with TIA/EIA-568 guidelines.

- **Keep UTP Cables Away From Power Lines**
  A minimum of five inches should be kept from electrical fixtures, such as fluorescent lights, transformers, and other high power devices to avoid possible interference.

- **Do Not Run Cables Longer Than The Maximum Length**
  The maximum cable lengths includes all patch cords from node to wall plug and patch panel to hubs.

Cable Wiring Standards

There are two governmental agencies: the Electronic Industry Association (EIA) and the Telecommunications Industry Association (TIA), which set the standard for all cable wiring requirements for commercial buildings.

With the advent of 100Mb/s networking products, it is best to use higher quality CAT 5 cables like Belden or Helix as well as CAT 5-compliant patch panels, patch cables, and connectors while following the EIA/TIA wiring standards. 100 Ω UTP CAT 5 type cables use 4-pair UTP wiring.

Refer to the illustrations below for 4-pair wiring using either T568A (Fig. B-4) or T568B (Fig. B-5) wiring standards. Both T568A and T568B wiring is compatible with 10BASE-T and 100BASE-TX and require no special configurations, but stick to one wiring standard. If your building is wired for T568A, any changes or additions must be done with the T568A wiring scheme. Mixing the T568A and T568B wiring schemes will not work.
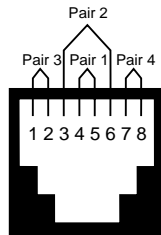
T568A

Fig. B-4. 4-Pair T568A Wiring

T568B

Fig. B-5. 4-Pair T568B Wiring

T568A	Pairs	Strand	Solid
Pin 1	Pair 3	Blue	White/Green
Pin 2	Pair 3	Orange	Green/White
Pin 3	Pair 2	Black	White/Orange
Pin 4	Pair 1	Red	Blue/White
Pin 5	Pair 1	Green	White/Blue
Pin 6	Pair 2	Yellow	Orange/White
Pin 7	Pair 4	Brown	White/Brown
Pin 8	Pair 4	White	Brown/White

T568B	Pairs	Strand	Solid
Pin 1	Pair 2	Black	White/Orange
Pin 2	Pair 2	Yellow	Orange/White
Pin 3	Pair 3	Blue	White/Green
Pin 4	Pair 1	Red	Blue/White
Pin 5	Pair 1	Green	White/Blue
Pin 6	Pair 3	Orange	Green/White
Pin 7	Pair 4	Brown	White/Brown
Pin 8	Pair 4	White	Brown/White

Table. B-6. 4-Pair T568A Wiring   *Table B-7. 4-Pair T568B Wiring*

Kingston Technology Company   KNE24TP/RS User's Guide - Rev. A01

Appendix C   Specifications

EtheRx Model KNE16TP/RS	
Compliance:	IEEE 802.3 CSMA/CD standard IEEE 802.3i 10BASE-T standard
Media Interface:	16 UTP ports for 10BASE-T connection 1 BNC port for 10BASE2 connection 1 AUI port for mixed media connection

Diagnostic LEDs:	16 UTP LEDs for Link (solid Green) /
	            Activity (flashing Green) /
	            Partition (solid Red)
	5 Utilization LEDs
	5 Collision LEDs
	1 Power LED
	1 BNC LED for activity (flashing Green) /
	            partition (solid Red)
	1 AUI LED for activity (flashing Green) /
	            partition (solid Red)

Cable Connections:
    10BASE-T
    10BASE2
	
	RJ-45 CAT 3, 4, 5 or better (26 to 22 AWG)
	BNC, thin coax (RG58/U)

Stacking Ports:	5.5" braid-shielded straight-thru cable (26AWG)
Environmental:	
Operating Temp.	0°C to 45°C (32°F to 113°F)
Storage Temp.	-20°C to 60°C (-4°F to 140°F)
Relative Humidity	10% to 90% non-condensing
Electrical:	
Input Voltage:	100VAC - 240VAC, 50/60Hz Auto-sensing
Output Voltage:	5VDC / 12VDC
Power Consumption:	6.77 Watts
Physical:	
Dimension (H x L x D):	1.64" x 17.32" x 6.69" (41.75mm x 440mm x 170mm)
Weight:	5.34 lbs (2.42 kg)
Certification	
EMI Standards:	FCC Class A, CE CISPR A
EMC Standards:	EN55022, IEC801-2, IEC801-3, IEC801-4
Low Voltage Directive	EN60950
Safety Standards:	UL, cUL, TUV

| EtheRx Model KNE24TP/RS	
Compliance:	IEEE 802.3 CSMA/CD standard IEEE 802.3i 10BASE-T standard
Media Interface:	24 UTP ports for 10BASE-T connection 1 BNC port for 10BASE2 connection 1 AUI port for mixed media connection

Diagnostic LEDs:	24 UTP LEDs for Link (solid Green) /
	                         Activity (flashing Green) /
	                         Partition (solid Red)
	5 Utilization LEDs
	5 Collision LEDs
	1 Power LED
	1 BNC LED for activity (flashing Green) /
	                    partition (solid Red)
	1 AUI LED for activity (flashing Green) /
	                    partition (solid Red)

Cable Connections:
    10BASE-T
    10BASE2
	
	RJ-45 CAT 3, 4, 5 or better (26 to 22 AWG)
	BNC, thin coax (RG58/U)

Stacking Ports:	5.5" braid-shielded straight-thru cable (26AWG)
Environmental:	
Operating Temp.	0°C to 45°C (32°F to 113°F)
Storage Temp.	-20°C to 60°C (-4°F to 140°F)
Relative Humidity	10% to 90% non-condensing
Electrical:	
Input Voltage:	100VAC - 240VAC, 50/60Hz Auto-sensing
Output Voltage:	5VDC / 12VDC
Power Consumption:	8.77W
Physical:	
Dimension (H x L x D):	1.64" x 17.32" x 6.69" (41.75mm x 440mm x 170mm)
Weight:	5.69 lbs (2.58 kg)
Certification	
EMI Standards:	FCC Class A, CE CISPR A
EMC Standards:	EN55022, IEC801-2, IEC801-3, IEC801-4
Low Voltage Directive	EN60950
Safety Standards:	UL, cUL, TUV

Appendix D   Mounting Templates

The EtheRx hubs can be stationed on a flat surface using the four rubber feet provided, or mounted to a standard 19-inch rack by using the mounting brackets on each side of the unit.

Rubber Feet for Desktops

The EtheRx hubs may use rubber feet applied to the bottom of the unit for desktop surfaces or stacking hubs on top of one another. The four (4) rubber feet have peel-off adhesive backing. Remove the backing and attach the feet to the bottom of the hub.

Brackets for Rack Mounting

The EtheRx hubs can also be mounted to a standard 19-inch rack by attaching the angle brackets to each side of the hub. Align the holes in the brackets with the side mount holes on the hub. Use the 8 bracket screws provided to attach the brackets. When the hub is placed into a 19-inch rack, use the 4 large knob rack mount screws to secure the hub to the rack. See Figure D-1 below:
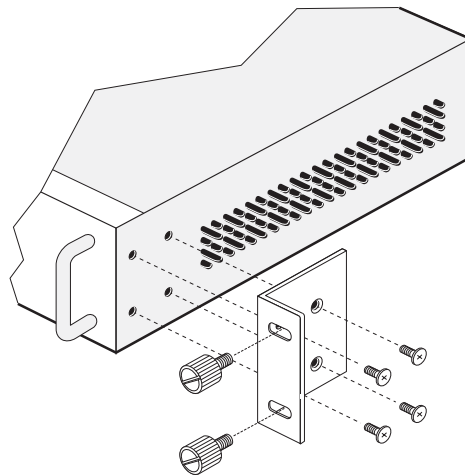
Fig. D-1-Attaching the Mounting Brackets

Appendix E   Warranties and Notices

Limited Warranty Statement

KINGSTON TECHNOLOGY COMPANY ("Kingston") warrants that this product is free from defects in material and workmanship. Subject to the conditions and limitations set forth below, Kingston will, at its option, either repair or replace any part of this product which proves defective by reason of improper workmanship or materials. Repair parts or replacement products will be provided by Kingston on an exchange basis, and will be either new or refurbished to be functionally equivalent to new.

This warranty does not cover any damage to this product which results from accident, abuse, misuse, natural or personal disaster, or any unauthorized disassembly, repair or modification.

Duration of Warranty

*Lifetime Warranty***:** The following Kingston products are covered by this warranty for life: solid state memory (e.g., memory modules and boards), networking adapters, networking hubs without cooling fans (excluding the power supply), solid state PC Card (PCMCIA) adapters, and microprocessor upgrade products.

*Seven Year Warranty***:** The following Kingston products are covered by this warranty for a period of seven years from the date of original retail purchase: storage enclosures (including the power supply), cables, terminators, and accessories.

Five Year Warranty: The following Kingston products are covered by this warranty for a period of five years from the date of original retail purchase: the power supply in networking hubs without cooling fans; and all other Kingston products (other than those products covered by a three-year, two-year, or one-year warranty, as provided below).

Three Year Warranty: The following Kingston products are covered by this warranty for a period of three years from the date of original retail purchase: networking hubs with cooling fans (including the power supply).

Two Year Warranty: The following Kingston products are covered by this warranty for a period of two years from the date of original retail purchase: Solid State Floppy Disk Cards (SSFDC), and Winchester hard disk drives in a 2.5 inch, 3.5 inch or 5.25 inch form factor.

*One Year Warranty***:** The following Kingston products are covered by this warranty for a period of one year from the date of original retail purchase: Winchester hard disk drives in a 1.8 inch form factor, optical storage products, and magnetic tape storage products.

Warranty Claim Requirements

To obtain warranty service, return the defective product, freight prepaid and insured, to your local authorized Kingston dealer or distributor, or to the Kingston factory service center located at 17600 Newhope Street, Fountain Valley, California 92708, U.S.A. You must include the product serial number (if applicable) and a detailed description of the problem you are experiencing. You must also include proof of the date of original retail purchase as evidence that the product is within the applicable warranty period. If you return the product directly to the Kingston factory, you must first obtain a Return Material Authorization ("RMA") number by calling Kingston Customer Service at (714) 438-1810, and include the RMA number prominently displayed on the outside of your package. Products must be properly packaged to prevent damage in transit.

Free Technical Support

Kingston provides free technical support. If you experience any difficulty during the installation or subsequent use of a Kingston product, please contact Kingston's Technical Support department prior to servicing your system.

Kingston Technical Support can be reached in the U.S. at (714) 435-2639 or toll-free at (800) 435-0640 (U.S. and Canada only). Kingston European Technical Support can be reached from within the U.K. at 01932 738858. Kingston provides other service numbers when calling from Germany 0130 115 639 or fax 0130 860 599, from Austria 0660 5569 or fax 06 607 434, from Switzerland 0800 557 748 or fax 0800 552 182, from France 0800 905 701 or fax 0800 900 910, or from Belgium (in English) 0800 72763.

This warranty covers only repair or replacement of defective Kingston products, as provided above. Kingston is not liable for, and does not cover under warranty, any costs associated with servicing and/or the installation of Kingston products.

Disclaimers

The foregoing is the complete warranty for Kingston products and supersedes all other warranties and representations, whether oral or written. Except as expressly set forth above, no other warranties are made with respect to Kingston products and Kingston expressly disclaims all warranties not stated herein, including, to the extent permitted by applicable law, any implied warranty of merchantability or fitness for a particular purpose. In no event will Kingston be liable to the purchaser, or to any user of the Kingston product, for any damages, expenses, lost revenues, lost savings, lost profits, or any other incidental or consequential damages arising from the purchase, use or inability to use the Kingston product, even if Kingston has been advised of the possibility of such damages.

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F.C.C. Certification

This device has been tested and found to comply with limits for Class A digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and
(2) This device must accept any interference received; including interference that may cause undesired operation.

CE Notice

The official CE symbol indicates compliance of this Kingston Technology product to the EMC directive of the European Community. The CE symbol found here or elsewhere indicates that this Kingston product meets or exceeds the following standards:

❑ **EN50081-1**   "Electromagnetic Compatibility-generic emissions standard"

EN55022:   "Limits and methods of measurement of radio interference characteristics."

❑ **EN50082-1**   "Electromagnetic Compatibility-generic immunity standard"

IEC 801-2: "Electrostatic discharge requirements"
IEC 801-3: "Radiated immunity requirements"
IEC 801-4: "Electrical fast transient requirements"

❑ **EN60950**   "Low Voltage Directive (LVD)"

❑ **Declaration of CE Conformity** in accordance with the above standards has been made and is on file at Kingston Technology.

$$C \epsilon$$

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