Kingston Technology
EtheRx 10BASE-T WorkGroup and Stackable Ethernet Hubs
User's Guide

Models: **KNE8TP/WG**
KNE8TP/SE
KNE16TP/WG
KNE16TP/SE

Kingston's Technology's

EtheRx 10BASE-T
WorkGroup and Stackable
8-Port and 16-Port
Ethernet Hubs

User's Guide

Part No. 4460001-001.B00

Kingston Technology Company
17600 Newhope
Fountain Valley, CA 92708
(714) 435-2600

TABLE OF CONTENTS

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 Kingston EtheRx *WorkGroup* (WG) series and *Stackable-Enhanced* (SE) series 10BASE-T Ethernet hubs. There are two models for each series: KNE8TP/WG and KNE16TP/WG, 8 and 16-Port WorkGroup hubs, and KNE8TP/SE and KNE16TP/SE, 8 and 16-Port Stackable hubs. The SE hubs have the same list of features as the WorkGroup hubs, but also include stacking ports located on the front panel to stack up to five (5) SE hubs in the same network segment. The EtheRx WG and SE hubs are multi-port repeaters that conform to IEEE 802.3 10Mbit/sec CSMA/CD (Carrier Sense Multiple Access with Collision Detection) Network.

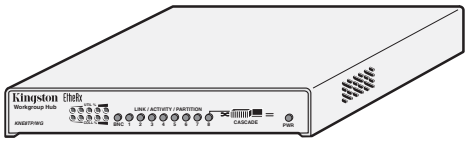
The EtheRx WG and SE hubs support eight (8) or sixteen (16) UTP (Unshielded Twisted-Pair) ports for 10BASE-T network connections, and one BNC port for 10BASE2 thin Ethernet connection. The 16-Port models also include one AUI (Attachment Unit Interface) port for either 10BASE2 Cheapernet, 10BASE5 thick Ethernet connection, 10BASE-T or FOIRL (Fiber Optic Inter Repeater Link) segment using a proper external transceiver. All models include: a cascade switch on the last UTP port (Port 8 or Port 16) which supports both straight-through or crossover cable types by simply moving the switch on the front panel. The UTP ports use 2-color LEDs to show **three** states of operation: link, activity and partition. The AUI and BNC ports use 2-color LEDs to show **two** states of operation: activity and partition. The EtheRx hubs also include utilization and collision LEDs to visually monitor the level of network traffic and number of collisions in five LED percentage levels.

For the remainder of this manual, these hubs will be referred to collectively as the EtheRx hubs. When necessary for clarification, the four models will be differentiated as follows:

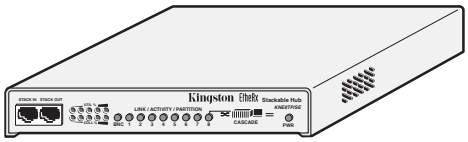
- KNE8TP/WG 8-Port *WorkGroup* hub
- KNE16TP/WG 16-Port *WorkGroup* hub
- KNE8TP/SE 8-Port *Stackable* hub
- KNE16TP/SE 16-Port *Stackable* hub

Model Types

8-Port Hub Models

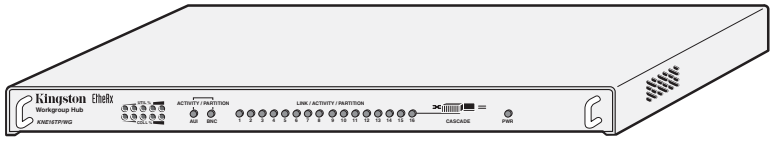


KNE8TP/WG 8-Port WorkGroup Hub

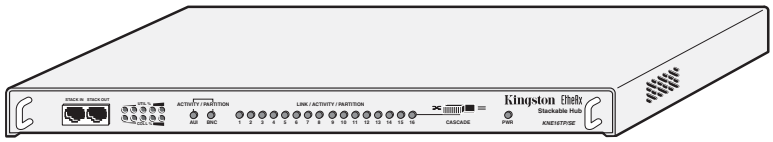


KNE8TP/SE 8-Port Stackable Hub

16-Port Hub Models



KNE16TP/WG 16-Port WorkGroup Hub



KNE16TP/SE 16-Port Stackable Hub

Special Features

- 8 or 16 UTP ports for 10BASE-T connection
- 1 BNC port for 10BASE2 thin Ethernet connection
- 1 AUI port for backbone or mixed media **(16-Port models only)**
- UTP Link, Activity, and Partition Status LEDs
- BNC Activity and Partition Status LED
- AUI Activity and Partition Status LED **(16-Port models only)**
- Utilization and Collision LEDs displays network traffic and number of collisions in five LED percentage levels
- Cascade Switch on last UTP port (Port 8 or 16) to support crossover or straight-through cable wiring types
- Automatic partition and reconnection
- Full preamble, amplitude, and timing regeneration
- Conforms to IEEE 802.3 Basic Repeater Functions and 802.3i Twisted-Pair Transceiver Functions
- Apple Mac™ OS compatible
- External AC Power Transformer included
- Stacking Ports **(SE hubs only)** stacks up to 5 hubs on same network segment for greater UTP port expansion

Package Contents

EtheRx WG and SE hubs should contain the following items:

- o One EtheRx 10BASE-T Ethernet hub
- o External AC Power Transformer (120VAC or 230VAC)
- o BNC T-Connector
- o (4) Rubber Feet
- o 5.5” Stacking Cable **(SE hubs only)**
- 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 hub complies with the full set of repeater basic functions as defined by IEEE 802.3, Section 9. 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 hub implements a built-in MAU jabber lockup protection (MJLP) scheme to ensure that the network is not disabled due to transmission of excessively long data packets. This protection scheme will automatically interrupt excessively long transmissions 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 hub will detect and respond to collision conditions as outlined in the IEEE 802.3 specifications.

Automatic Partitioning/Reconnection

If any of the ports on the EtheRx hub experience excessive 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 received without 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 802.3 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 hubs. The front and rear panels of the Stackable hubs are used for illustration.

Note: WorkGroup hubs have identical features except for the Stacking Ports.

Front Panel

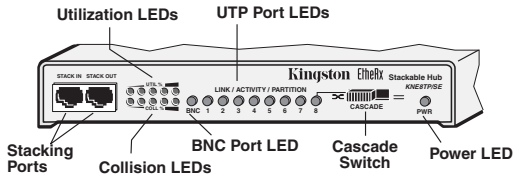


Fig. 1-1 KNE8TP/SE Front Panel

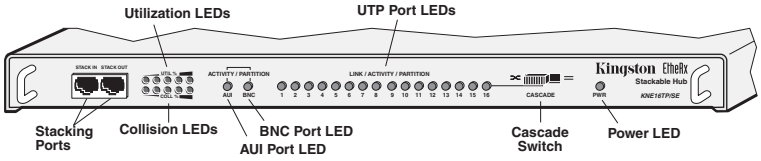


Fig. 1-2 KNE16TP/SE Front Panel

Power LED

The green LED indicates the power status. The LED will light when the AC power transformer is connected from a power source to the hub.

Stacking Ports (SE models only)

The Stackable hub models (KNE8TP/SE and KNE16TP/SE) include a *"Stack-In"* and *"Stack-Out"* port for stacking up to five (5) SE hubs in any combination of 8-Port and 16-Port models. Refer to the section, *"Stacking EtheRx SE Hubs"* on page 13 for additional information.

Utilization and Collision LEDs

There are five Utilization and five Collision LEDs to display the network traffic and number of collisions on the network. The utilization LEDs measure the amount of data traffic in frames per second (FPS). The LEDs will light in relation to the amount of traffic. The collision LEDs measure the collisions per second (CPS). The LEDs will light in relation to the amount of collisions.

FPS/CPS	% Activity	LED 1	LED 2	LED 3	LED 4	LED 5
1-49	1%	ON				
50-99	7%	ON	ON			
100-199	15%	ON	ON	ON		
200-399	30%	ON	ON	ON	ON	
400 +	≥ 60%	ON	ON	ON	ON	ON

Table 1-3 Utilization and Collision Percentage LEDs

AUI LED

For 16-Port models only. 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.

8 or 16 UTP Port LEDs

The LINK/ACTIVITY/PARTITION LEDs use two colors to display three states of operation for the 8 or 16 UTP ports. 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. A flash may be longer or shorter depending on the length of the data packet being received. If the port is partitioned, it will display solid red.

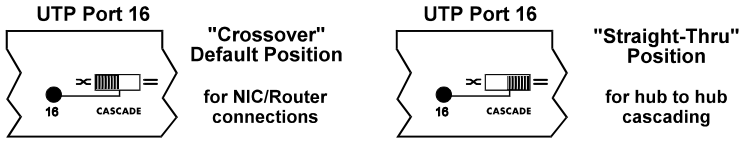
If the LED does not display solid green indicating a good link, check the following:

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 adapter has loaded its drivers from the PC. Some network 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 8 or Port 16) 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-crossed port, or MDI-X port. Depending on the wiring of your UTP cable (normally "Straight-Through"), the port is used to connect a workstation. For cascading to another hub using a straight-through cable, move the Cable Switch to "Straight-Through" (right side). If a crossover UTP cable is used to cascade to another hub, leave the Cable Switch in the "Crossover" position. See Figure 1-3 for a diagram showing the 16-Port KNE16TP/WG model. To verify the pin wiring of your UTP cable, refer to *"Appendix B Cabling Guidelines"* on page 17.

Using a Straight-Through Cable



Using a Crossover Cable

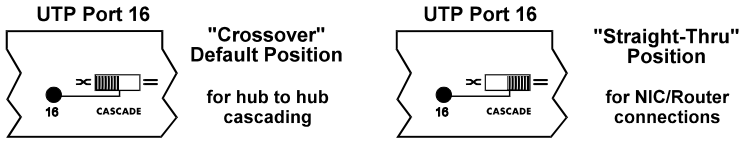


Fig. 1-4 Cable Switch functions

Notes on MDI and MDI-X Ports

MDI (Media Dependent Interface) is the IEEE 10BASE-T standard for the interface to the UTP cable. For two 10BASE-T devices to communicate with each other, 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.

Port 1 through Port 7 (or 15), like all normal hub ports, are configured MDI-X. All NICs (Network Interface Cards) and Router ports are usually by default configured MDI. A simple illustration shows the relationship of cable types to port types:

Switch Position	Port Config	For Connection to another Hub Port (MDI-X)	For Connection to a Network Adapter (MDI)
⋈	MDI-X	Use Crossover cable	Use Straight-through cable
=	MDI	Use Straight-through cable	Use Crossover cable

Table 1-5 Cable Switch functions

Rear Panel

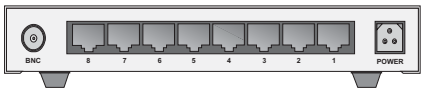


Fig. 2-1 KNE8TP/SE Rear Panel

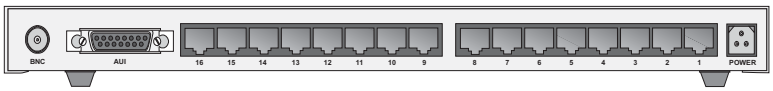


Fig. 2-2 KNE16TP/SE Rear Panel

BNC Port

This port is labeled BNC, and has a built-in transceiver for direct 10BASE2 connection via 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.

AUI Port

On 16-Port Models only. 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.

8 or 16 UTP Ports

The UTP ports are numbered 1 through 8 or 1 through 16 for 10BASE-T connections. Since crossover function is implemented on all UTP MDI-X ports, a straight-through UTP cable should be used. **Note:** Port 8 and Port 16 support both cable types using the Cable Switch. Refer to Appendix B for details on RJ-45 pin assignments and cable specifications.

3-Pin AC Power Jack

The EtheRx hub gets its power from the accompanying AC power transformer. Insert the 3-pin power cable connector into the AC power jack at far right. For safety purposes, please use ONLY the included AC power transformer for proper operation. The wrong type power transformer may cause damage to both the hub and the power transformer.

Network Configurations

The installation of the EtheRx hub is simple and can be configured for either the Ethernet Star topology, Linear Bus topology, or vertically stacked (SE models only), 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 Cable Switch to support both cable types), a Straight-Through UTP cable should be used. The physical network connection is illustrated in Figure 3-1.

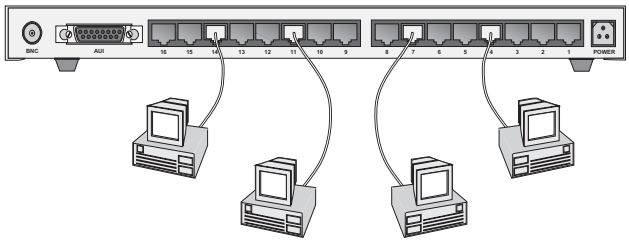


Fig. 3-1 Star Network Connection

Linear Bus Network

The typical network configuration for 10BASE2 networks is a Linear Bus topology in which nodes are connected to the BNC connector via a thin coaxial cable. This configuration allows 10BASE2 nodes to communicate with a 10BASE-T segment. A BNC 50Ω (Ohm) terminator must be attached to each end of the trunk segment. One of the terminators must be grounded. The purpose of the terminators is to terminate the network and block electrical interference.

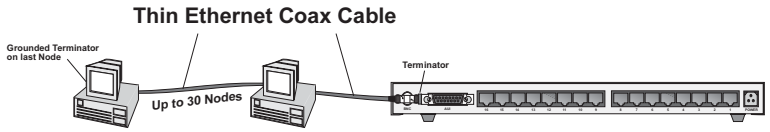


Fig. 3-2 Linear Bus Connection

Horizontal Cascading

The EtheRx hubs can be horizontally cascaded to other hubs as long as the Ethernet 5-4-3 Rule is met (Refer to page 11). This connection can be made through the BNC port, AUI port (16-Port models only), 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 through or crossover cable types. Figure 3-3 below is an example of horizontal cascading using the KNE16TP/WG under the Ethernet 5-4-3 rule.

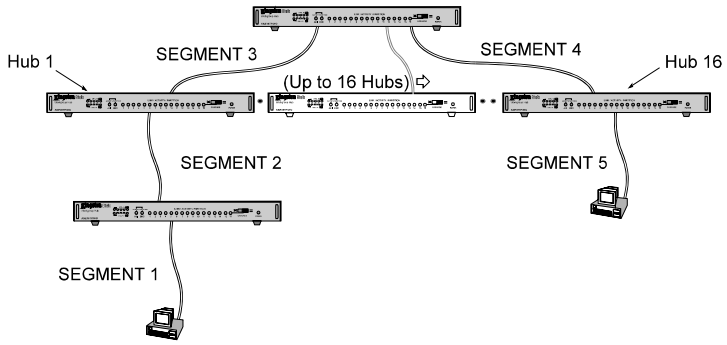


Fig. 3-3 Horizontal Cascading

Stacking EtheRx SE Hubs

The EtheRx SE hubs use stacking ports located on the front panel to stack up to five SE hubs in any combination of 8-Port KNE8TP/SE and the 16-Port KNE16TP/SE models. Follow the directions below to stack up to five SE hubs together:

1. Locate the 5.5" shielded twisted-pair 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 power to each hub using the external AC power transformer included with your package contents.
5. Repeat the process to stack additional hubs up to a maximum of five (5) hubs.

Figure 3-4 below illustrates the stacking cable connections for five 8-Port KNE8TP/SE hubs expanding the total number of UTP port connections from 8 to 40 UTP ports and still be recognized as one Ethernet repeater on the network. A maximum of five (5) SE hubs can be stacked in any combination of 8 and 16-Port SE hub models.

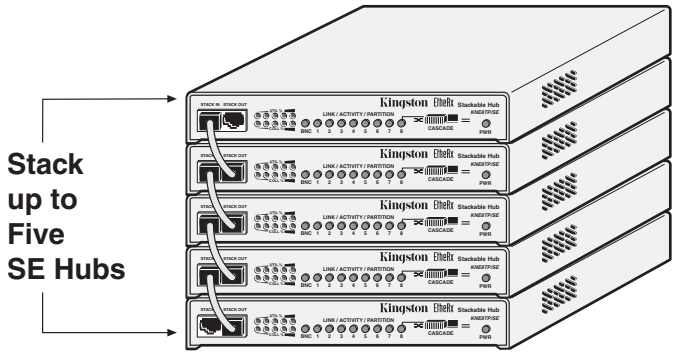


Fig. 3-4 Stackable SE Hub Configuration

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-Through or Crossover pin assignments. Both wiring schemes are mentioned in *"Appendix B Cable Connections"* for reference in creating a twisted-pair cable.

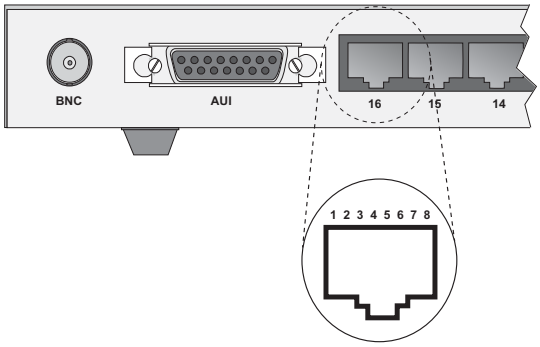


Fig. A-1 RJ-45 Connector Pin Numbers

Pin Number	Function
1	Transmit Data +
2	Transmit Data -
3	Receive Data +
4,5	Not Used
6	Receive Data -
7,8	Not Used

Table A-2 UTP Pin Assignments

AUI Pin Assignments (16-Port models only)

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

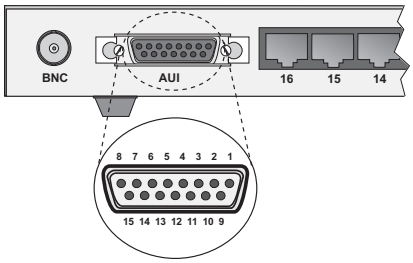


Fig. A-3 AUI Connector on Rear Panel

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 Type

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-58A/U or RG-58C/U	UTP 26 - 22 AWG
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-Through" or, in some cases, "Crossover" depending on the application. For workstations connected to a hub, use "Straight-Through' wiring illustrated in Table B-2. In some instances, you may want to use "Crossover" wiring illustrated below in Table B-3.

"Straight-Through" 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-Through 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

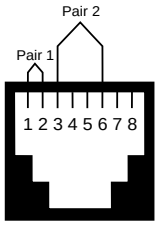
Table B-3. Crossover Wiring

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. For unshielded twisted-pair (UTP) cabling, Category (CAT) 3, 4 or 5 can be used.

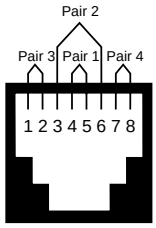
With the advent of 100Mbit network products, it is best to use higher quality CAT 5 cables like Belden or Helix as well as CAT 5-compliant patch panels and connectors while following the EIA/TIA wiring standards. 100 Ohm UTP/STP CAT 3, 4 & 5 type cables use 4-pair UTP wiring. Standard 10BASE-T uses 2-pair UTP wiring.

Refer to the illustrations below for standard 2-pair 10BASE-T wiring (see Fig B-4), and 4-pair 100Mbit wiring using either T568A (Fig. B-5) or T568B (Fig. B-6) wiring standards. Both T568A and T568B wiring is compatible with 10BASE-T and require no special configurations, but mixing the T568A and T568B wiring schemes will not work.



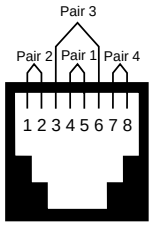
10BASE-T

Fig. B-4 2-Pair UTP Wiring



T568A

Fig. B-5 4-Pair T568A Wiring



T568B

Fig. B-6 4-Pair T568B Wiring

Appendix C Specifications

EtheRx 8-Port WorkGroup and Stackable Hubs		
KNE8TP/WG KNE8TP/SE	8-Port 10BASE-T WorkGroup hub 8-Port 10BASE-T Stackable hub	
Compliance:	IEEE 802.3 Section 9 Basic Repeater Functions IEEE 802.3i 10BASE-T Twisted-Pair Transceiver Functions	
Media Interface:	8 UTP for 10BASE-T connection 1 BNC for 10BASE2 connection	
Diagnostic LEDs:	8 UTP LEDs for Link, Activity, and Partition 1 BNC Activity and Partition LED 1 Power LED 5 Utilization level LEDs 5 Collision level LEDs	
Cable Connections: 10BASE-T 10BASE2	 RJ-45, UTP 26 to 22 AWG BNC, thin coaxial RG-58 A/U or RG-58 C/U	
Stackable Ports: Stack-In Stack-Out Cable	**(SE Hubs only)** RJ-45 Shielded Modular Jack RJ-45 Shielded Modular Jack 5.5” Shielded Stacking Cable	
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:		
AC Power Transformer:	U.S. version	European version:
Input Voltage:	120VAC, 60Hz	230VAC, 50Hz
Output Voltage:	12VAC / 1.5A	12VAC / 1.5A
Power Consumption:	0.52A/6.2 Watts typical, 0.54A/6.5 Watts max.	
Physical:		
Dimension (HxWxD):	1.1” (28mm) x 6.5” (165mm) x 6.1” (155mm)	
Weight:	2.0 lbs (0.9 kg)	
Certification:		
EMI Standards:	FCC Class A, CE CISPR A	
EMC Standards:	EN55022, IEC801-2, IEC801-3, IEC801-4	
Low Voltage Directive:	EN60950	
Optional Accessories:		
AC Power Transformer	KNA110PS (U.S.) or KNA220PS (Europe)	

EtheRx 16-Port WorkGroup and Stackable Hubs		
KNE16TP/WG KNE16TP/SE	16-Port 10BASE-T WorkGroup hub 16-Port 10BASE-T Stackable hub	
Compliance:	IEEE 802.3 Section 9 Basic Repeater Functions IEEE 802.3i 10BASE-T Twisted-Pair Transceiver Functions	
Media Interface:	16 UTP for 10BASE-T connection 1 BNC for 10BASE2 connection 1 AUI for 10BASE5 connection	
Diagnostic LEDs:	16 UTP LEDs for Link, Activity, and Partition 1 BNC Activity and Partition LED 1 AUI Activity and Partition LED 1 Power LED 5 Utilization level LEDs 5 Collision level LEDs	
Cable Connections: 10BASE-T 10BASE2 10BASE5	 RJ-45, UTP 26 to 22 AWG BNC, thin coaxial RG-58 A/U or RG-58 C/U 15-Pin D-Sub, female, RG-11	
Stackable Ports: Stack-In Stack-Out Cable	**(SE Hubs only)** RJ-45 Shielded Modular Jack RJ-45 Shielded Modular Jack 5.5” Shielded Stacking Cable	
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:		
AC Power Transformer:	U.S. version	European version:
Input Voltage:	120VAC, 60Hz	230VAC, 50Hz
Output Voltage:	12VAC / 1.5A	12VAC / 1.5A
Power Consumption:	1.04A/12.5 Watts typical, 1.08A/12.9 Watts max.	
Physical:		
Dimension (HxWxD):	1.1” (28mm) x 13.1” (333mm) x 6.1” (155mm)	
Weight:	3.56 lbs (1.6 kg)	
Certification:		
EMI Standards:	FCC Class A, CE CISPR A	
EMC Standards:	EN55022, IEC801-2, IEC801-3, IEC801-4	
Low Voltage Directive:	EN60950	
Optional Accessories:		
AC Power Transformer:	KNA110PS (U.S.) or KNA220PS (Europe)	

Appendix D Mounting Templates

The EtheRx WorkGroup hubs can be stationed on a flat surface using the four rubber feet provided, or mounted vertically by using the mounting holes on the bottom side of the unit. The illustrations below detail the measurements and mounting holes and rubber feet locations. They are drawn to scale, although not actual size.

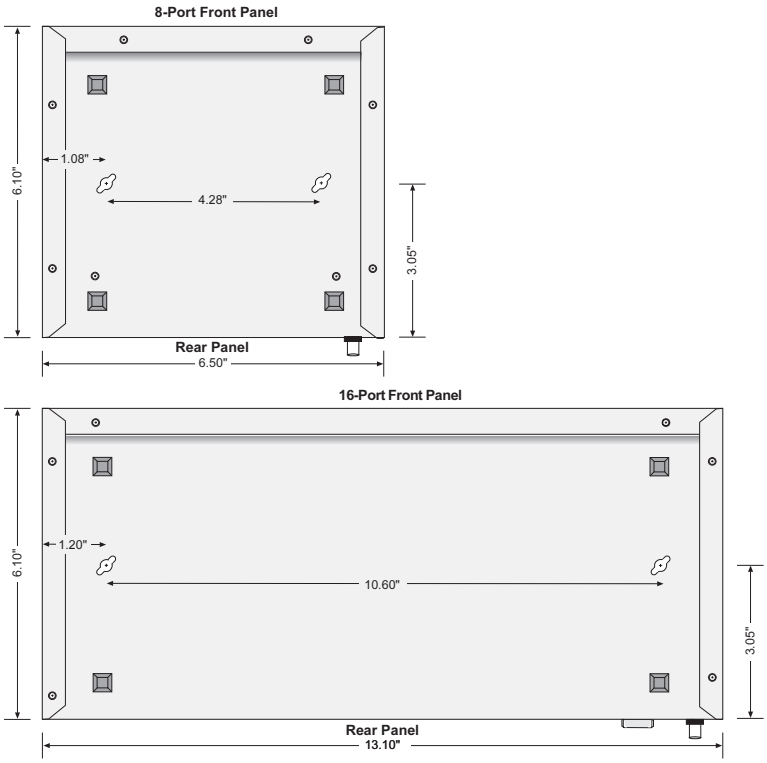


Fig. D-1 Mounting Template specifications

Appendix E Product Warranties and Notices

Limited Warranty

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 and hubs (excluding power supply and cooling fan), solid state PCMCIA interface 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 power supply units, 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: networking hub power supply unit and cooling fan; and all other Kingston products (other than those products covered by a two-year or one-year warranty, as provided below).

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: 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 reading and 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 at either: (714) 435-2639 U.S. headquarters, or Kingston Germany Office at (089) 62 71 56-21, prior to servicing your system. 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 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.

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.

CE

Mac OS

How to Reach Kingston

If you have any problems, questions, or comments associated with installing or using your EtheRx WorkGroup or SE hub, please call Kingston Technical Support. For the latest file updates and information, access the Kingston Bulletin Board Service, CompuServe or the Internet using your modem. To receive product information sent to you by fax, call Kingston's RAMfax™.

Technical Support:	6:00 am to 6:00 pm Pacific Time Monday through Friday (800) 435-0640 or (714) 435-2639 (714) 437-3310 fax
Kingston Europe:	44 1 932 738 842
within the U.K.	0800 435 978 phone 44 1 932 738 880 fax
From Germany:	0130 115 639 phone 0130 860 599 fax
Austria:	0660 5569 phone 0660 7434 fax
Switzerland:	0800 557 748 phone 0800 552 182 fax
France:	0800 905 701 phone 0800 900 910 fax
Belgium:	0800 72763 phone 0800 72763
BBS:	Kingston's Bulletin Board Service (714) 435-2636, up to 28.8Kbps, 8-N-1
CompuServe:	71333,3714 or type: **GO KINGSTON** from any CIS prompt.
Internet:	Visit Kingston's Web site at **http://www.kingston.com** For Product Information: **sales@kingston.com** For Technical Support: **tech_support@kingston.com**
RAMfax:	Automatic Faxback System (U.S. and Canada) (800) 435-0056 or (714) 435-2677

Revision History

Revision Level	Comment
A1	General Release.
A2	Added "Appendix D Mounting Templates".
A3	New Enhanced design with cable switch, two-color LEDs (red for partition status), and LEDs for AUI and BNC ports on front panel. **For 16-Port model only.**
A04	Same as above. **For both 8-Port and 16-Port models.** Added CE logo and Part No. to title page.
B00	Combined Workgroup and SE hubs.