

KINGSTON TECHNOLOGY
EtheRx 4-PORT AND 8-PORT WORKGROUP
100BASE-TX FAST ETHERNET HUBS
USER'S GUIDE

MODELS: KNE4TX/WG
KNE8TX/WG

Kingston Technology's

EtheRx Workgroup

4-Port and 8-Port

100BASE-TX

Fast Ethernet Hubs

User's Guide

Part No. 4460057-001.A00



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

TABLE OF CONTENTS

Introduction.....	1
Model Types.....	1
Special Features	2
Package Contents	2
Design Features	3
Repeater Functions	3
Receive Jabber Protection	3
Collision-Handling	3
Error-Handling	3
Automatic Port Partitioning/Reconnection	3
Hardware Installation.....	4
Front Panel.....	4
Power LED.....	4
Utilization LEDs.....	5
Collision LED	5
4 or 8 UTP Port LEDs	5
Cascade Switch	6
Rear Panel.....	8
4 or 8 UTP Ports	8
DC Power Connector	8
Appendices.....	9
Appendix A Pin Assignments	10
UTP Pin Assignments	10

Appendix B	Cabling Guidelines	11
	UTP Cable Wiring	11
	Cable Wiring Standards	11
	Rating Codes	13
Appendix C	Specifications	14
Appendix D	Commonly Asked Questions	16
Appendix E	Mounting Templates	17
Appendix F	Warranties and Notices	19
	Limited Warranty Statement	19
	Duration of Warranty	19
	Free Technical Support	20
	Disclaimers	20
	F.C.C. Certification	21
	CE Notice	21

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 100BASE-TX Fast Ethernet hubs. There are two models available in this series: KNE4TX/WG, which is the 4-Port model, and KNE8TX/WG, which is the 8-Port model. The EtherX Workgroup series hubs are Class ② repeaters that conform to IEEE 802.3u 100BASE-TX standards. Please refer to Appendix D for further information on Class ② repeaters.

The EtherX Workgroup hubs support up to four (4) or eight (8) UTP (Unshielded Twisted-Pair) ports for 100BASE-TX network connections. Both models include a cascade switch on the last UTP port (Port 4 or Port 8) which supports both straight-through and crossover cable types. The UTP ports use dual-color LEDs to show **three** states of operation: link, activity and partition/error. The EtherX hubs also include a collision LED for collision detection and five (5) utilization LEDs to display the level of network traffic in percentages of the total available bandwidth.

For the remainder of this manual, the KNE4TX/WG (4-port model) and the KNE8TX/WG (8-port model) hubs will be referred to as the EtherX hubs.

- KNE4TX/WG 4-Port 100BASE-TX Hub
- KNE8TX/WG 8-Port 100BASE-TX Hub

Model Types

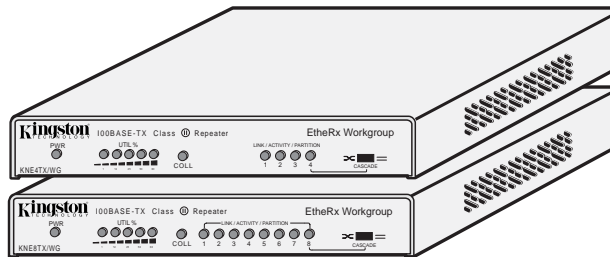


Fig. 1-1 – KNE4TX/WG & KNE8TX/WG

Special Features

- 100BASE-TX Class ① compliant repeater
- Conforms to IEEE802.3u 100BASE-TX standard
- 4 or 8 UTP ports for 100BASE-TX connections
- 4 or 8 Link, Activity, and Partition/Error status LEDs for easy troubleshooting
- Utilization LEDs for displaying network traffic rates in percentages
- Power LED and Collision LED for collision detection
- Automatic Port Partitioning/Reconnection
- Uplink port that supports both crossover and straight-through cable wiring
- External auto-sensing power supply operating at 100-240VAC (50/60Hz)
- Desktop and Wall-mountable

Package Contents

EtherX Workgroup hubs should contain the following items:

- EtherX KNE4TX/WG or KNE8TX/WG Fast Ethernet hub
- (4) Rubber Feet
- External DC power supply
- Power cord
- 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 the 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 802.3u. These functions include all Repeater Functions, Signal Regeneration, Receive Jabber Protection, Collision-Handling, Error-Handling, and Auto Partitioning/Reconnection.

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 802.3u specification in terms of preamble structure, voltage amplitude, and timing characteristics. These timing regenerations prevent cumulative signal loss, jitters, and distortion caused by network cabling, thus allowing the EtherX hubs to be cascaded to other 100BASE-TX Class ⑩ repeaters.

Receive Jabber Protection

The EtherX hub provides a Receive Jabber Protection scheme to ensure that the network is not disabled due to reception of excessively long data packets. This protection scheme will automatically interrupt the receiver if the EtherX hub has been continuously receiving for more than 65,536-bit times.

Collision-Handling

The EtherX hub will detect and respond to collision conditions as outlined in the IEEE 802.3u specifications.

Error-Handling

The 100BASE-TX standard uses an improved method of error-handling called *block coding*. With 100BASE-TX Fast Ethernet, the new error-handling feature prevents substandard links from generating streams of false carrier and interfering with other links.

Automatic Port Partitioning/Reconnection

If any of the ports on the EtherX hub experience excessive 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.

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 Fast Ethernet *Workgroup* hubs are illustrated below.

Front Panel

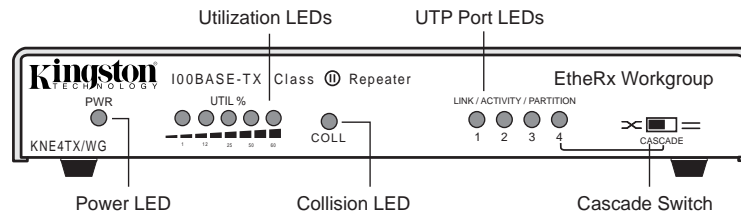


Fig. 1-2 KNE4TX/WG Front Panel

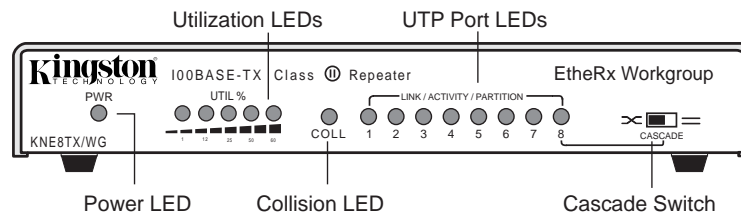


Fig. 1-3 KNE8TX/WG Front Panel

Power LED

The green LED indicates the power status. The LED will light up when the unit is properly connected to the accompanying DC power supply. For further details, please refer to *Figure 1-8* on page 8.

Utilization LEDs

The five Utilization LEDs display the rate of network traffic in percentages of the total available bandwidth. The amount of data traffic is measured in frames per second (FPS), then calculated into percentage values: 1%, 12%, 25%, 50%, and > 60%. The appropriate LED will light up based on network activity.

Collision LED

If a collision is detected on the network, the Collision LED will flash amber. A collision occurs when the hub receives data from two or more nodes simultaneously.

4 or 8 UTP Port LEDs

The LINK/ACTIVITY/PARTITION LEDs use two colors to display three states of operation for the 4 or 8 UTP ports. If a good link is established on any given port, the LED will light up steady green, indicating a valid network connection between the network node and the hub. 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.
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 thru 4 are correct, the cable may be defective or not wired correctly. Please refer to Appendix A for pin assignments and Appendix B for cabling guidelines.

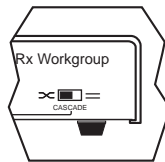
A flashing green light indicates when data is being received. A flashing amber light indicates one of the following occurrences:

1. A port has been partitioned due to an excessive number of collisions **or**
2. A port has encountered errors due to invalid packets or jabber conditions.

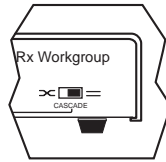
Cascade Switch

The Cascade Switch provides cable wiring flexibility on the last UTP Port (i.e., Port 4 or Port 8) 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 Class ② repeater using a straight-through cable, move the Cascade Switch to “Straight-Through” (right side). If a crossover UTP cable is used to cascade to another Class ② repeater, leave the Cascade Switch in the “Crossover” position. See Figure 1-4 for a diagram showing the cascade switch settings. To verify the pin wiring of your UTP cable, refer to “Appendix B Cabling Guidelines” on page 11.

Using a Straight-Through Cable

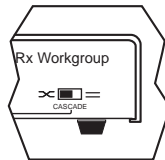


Leave the cascade switch in the default crossover (MDI-X) position when connecting the last UTP port (port 4 or port 8) on the EtherX Hub to a network card or router (or other MDI-configured device.)



Move the cascade switch to the straight-through position when connecting the last UTP port (port 4 or port 8) on the EtherX Hub to another Class ② repeater (or other MDI-X configured device.)

Using a Crossover Cable



Leave the cascade switch in the default crossover (MDI-X) position when connecting the last UTP port (port 4 or port 8) on the EtherX Hub to another Class ② repeater (or other MDI-X configured device.)



Move the cascade switch to the straight-through position when connecting the last UTP port (port 4 or port 8) on the EtherX Hub to a network card or router (or other MDI-X configured device.)

Fig. 1-4 Cascade Switch functions

Notes on MDI and MDI-X Ports

MDI (Media Dependent Interface) is the IEEE 802.3 standard for the interface to the UTP cable. For two 100BASE-TX 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 3 (or 7) respectively, like all normal hub ports, are configured MDI-X, whereas the last UTP ports, Port 4 or Port 8, support both port configurations, MDI and 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 1-1 Cascade Switch functions

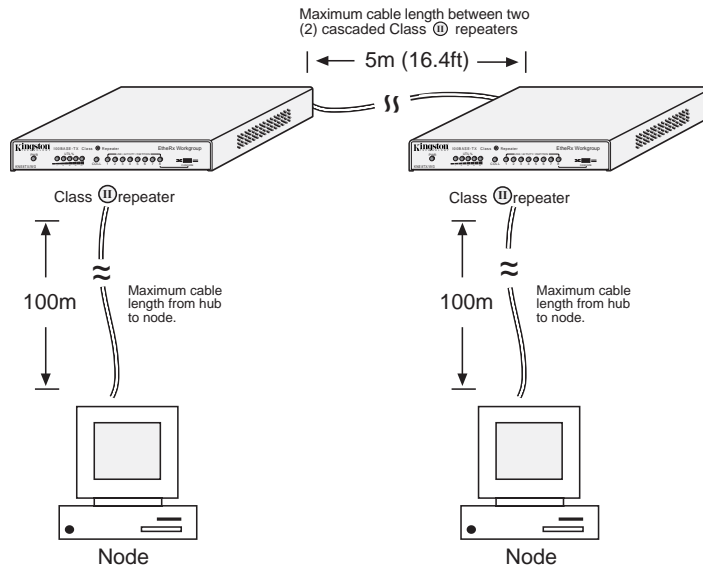


Fig. 1-5 - Typical Class II Repeater Cascade Configuration

Rear Panel



Fig. 1-6 KNE4TX/WG Rear Panel



Fig. 1-7 KNE8TX/WG Rear Panel

4 or 8 UTP Ports

The UTP ports are numbered 1 through 4 or 1 through 8 for 100BASE-TX connections. Since crossover function is implemented on all UTP MDI-X ports, a straight-through UTP cable should be used. (**Note:** Port 4 and Port 8 support both cable types using the cascade switch. Refer to Appendix A & B for details on RJ-45 pin assignments and cable guidelines.)

DC Power Connector

The EtherX hub gets its power from the auto-sensing power supply. Insert the power jack into the DC power connector located to the far right. For safety purposes, **ONLY** use the included power supply for proper operation. The wrong type of power supply may cause damage to both the EtherX hub and the power supply. (**NOTE: The power supply output voltage is 5VDC/2.0A. Polarity on the power jack and DC power connector is negative (-) on the outside and positive (+) on the inside.**)

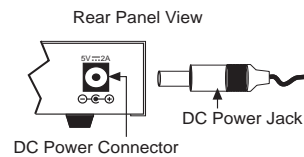


Fig. 1-8 DC Power Connector

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 Cabling Guidelines" for reference in creating a twisted-pair cable.

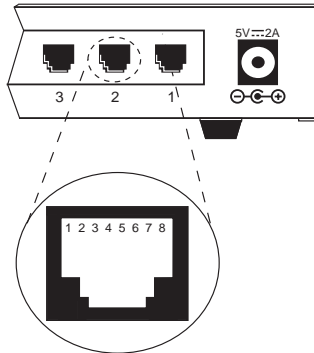


Fig. A-1 RJ-45 Connector Pin Numbers

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-1 UTP Pin Assignments

Appendix B Cabling Guidelines

UTP Cable Wiring

100BASE-TX 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-1. In some instances, you may want to use "Crossover" wiring illustrated below in Table B-2.

**"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-1. 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

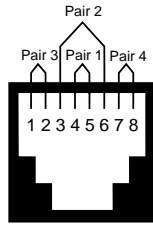
Table B-2. Crossover Wiring

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 100BASE-TX networks, Category (CAT) 5 should be used.

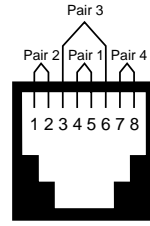
With the advent of 100Mbit network products, it is best to use higher quality CAT 5 cables like Belden or Helix as well as CAT 5-compliant patch panels and connectors while following the EIA/TIA wiring standards. 100 Ohm UTP/STP CAT 3, 4 & 5 type cables use 4-pair UTP wiring.

Refer to the illustrations on page 12 for standard 100BASE-TX wiring and 4-pair 100Mbit wiring using either T568A (Table B-3) or T568B (Table B-4) wiring standards. Both T568A and T568B wiring configurations are compatible with 10BASE-T and 100BASE-TX and require no special hardware configurations. However, it is highly recommended that only one wiring scheme be used in premise wiring to avoid potential problems.



T568A

Fig. B-1 4-Pair T568A Wiring



T568B

Fig. B-2 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

Table B-3 4-Pair T568A Wiring

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-4 4-Pair T568B Wiring

Rating Codes

UTP cables meet different UL-NEC requirements based on cable-jacket quality. Below is an explanation of the rating codes for each cable type.

UL – The National Electrical Code (NEC), published by the National Fire Protection Association (NFPA), details advisory safety considerations for electrical wiring. NEC Article 800 Communications Cables are manufactured to meet these different cable types.


1. **CMP** – Cables meeting type CMP requirements are suitable for installation in ducts and plenums without the use of conduit. These cables are designed for fire resistance and low-smoke producing characteristics.
2. **CMR** – Riser type cables are engineered to prevent the spread of fire from floor to floor and are suitable for vertical shaft applications.
3. **CM** – Cables for general building wiring. CM cables are used in areas other than plenums and risers. These cables are resistant to the spread of fire and pass the UL 1581 Vertical Tray Flame Test.
4. **MP, MPR & MPP** – Within Article 800, the Multi-purpose Cables Category, allows conditional substitutions between different cable types & are restricted by number, AWG size and stranding of the cable conductors.

Terms You Should Be Familiar With

1. **BACKBONE WIRING** – The physical/electrical interconnections between telecommunications closets and equipment rooms.
2. **COMPLIANCE** – A wiring device that meets all characteristics of a standard is said to be in compliance with that standard.
3. **TWISTED PAIR (UTP)** – Two insulated copper wires twisted around each other to reduce interference from one wire to the other. The twists are varied in length to reduce the potential for signal interference between pairs. Several sets of twisted pair wires may be enclosed in a single cable.

4. **NEAR-END CROSSTALK (NEXT)** – In wires packed together within a cable, the signals generated at one end of the link can flush out the weaker signals coming back from the recipient.

Appendix C Specifications

EtherX 4- and 8-Port Fast Ethernet Workgroup Hubs	
Compliance:	IEEE 802.3u 100BASE-TX Standard
Media Interface: KNE4TX/WG KNE8TX/WG	4 UTP ports for 100Mbps connections 8 UTP ports for 100Mbps connections
Diagnostic LEDs: 1 LED for each port	1 LED for Power Indicator (steady green) 5 LEDs for Utilization status (steady green) 1 LED for Collision Detection (flashing amber) Link (steady green) Activity (flashing green) Partition / Error (flashing amber)
Connection Type:	RJ-45, Female
Cable Type:	Category 5 UTP 26 to 22 AWG
Maximum Cable Length: Cascading 2 Class II repeaters (2 max.): Repeater to node:	5m (16.4ft) 100m (328ft)
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, 2A
Power Polarity:	
Power Consumption: KNE4TX/WG KNE8TX/WG	4.5W 8.5W
Physical:	
Dimension (HxWxD):	1.1" (28mm) x 6.5" (165mm) x 6.1" (155mm)
Weight:	1.9 lbs (0.86 kg)
Certification:	

EMI Standards:	FCC Class A, CE CISPR A
EMC Standards:	EN55022, IEC801-2, IEC801-3, IEC801-4
Low Voltage Directive:	EN60950

Appendix D Commonly Asked Questions

Class ① vs. Class ② 100BASE-TX Fast Ethernet Repeaters

There are currently two classes of Fast Ethernet repeaters, defined as Class ① and Class ②.

Class ①: in a maximum length segment topology, only **one** Class ① repeater may exist between any two nodes within a single collision domain.

Class ②: in a maximum length segment topology, **two** Class ② repeaters may exist between any two nodes within a single collision domain.

Will 100BASE-TX run on Category 3 cable?

No! Category 3 (CAT 3) cabling even in short lengths generates too much near end crosstalk for 100BASE-TX networks. The IEEE 802.3u 100BASE-TX Fast Ethernet standard requires Category 5 100 Ω UTP or 150 Ω STP which complies with ISO/IEC 11801:1995.

What is Category 5?

Category 5 (CAT 5) is a further extension of the EIA/TIA-568 cabling system to 100 MHz. Category 5 components (i.e., UTP trunk and patch cables, modular plug, and patch panel, etc.) are defined by EIA/TIA-568, but with the characterizations extended to 100 MHz by TSB-36 and TSB-40. The cable grades are categorized as follows:

- **Category 3:** up to 16 MHz
- **Category 4:** up to 20 MHz.
- **Category 5:** up to 100 MHz.

Category 5 Compliance vs. Category 5 Performance?

Having CAT 5 components in your network installation does not necessarily achieve full Category 5 performance. To achieve any category-rated performance, make sure all cabling components are at least of the minimum category required.

To achieve full CAT 5 performance, all components must be CAT 5 compliant and terminated properly according to EIA/TIA-568 TSB-36 and TSB-40 guidelines.

What are the Guidelines for Proper Termination?

It is important to maintain the twists of the cable as close to the termination on the outlet as possible, to avoid NEXT (Near End Cross Talk) and to maintain the transmissions characteristics of the Category. Category specifications require that pair twisting be maintained to within the following distances from the outlet termination:

- **Category 3 maximum allowed untwisting:** 3 inches
- **Category 4 maximum allowed untwisting:** 1 inch
- **Category 5 maximum allowed untwisting:** 1/2 inch

Can I mix CAT 3 and CAT 5 cabling in the same building?

Yes, but keep in mind, you will not have CAT 5 performance. It is a good idea to keep the lines separated when installing any new lines. Use CAT 5 UTP cabling only.

Can a Four-Pair CAT 5 cable support two 100BASE-TX devices?

Although only two pairs are used in the standard four-pair CAT 5 UTP cable, it is not recommended because it exceeds the specifications outlined by IEEE 802.3u.

Appendix E 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.

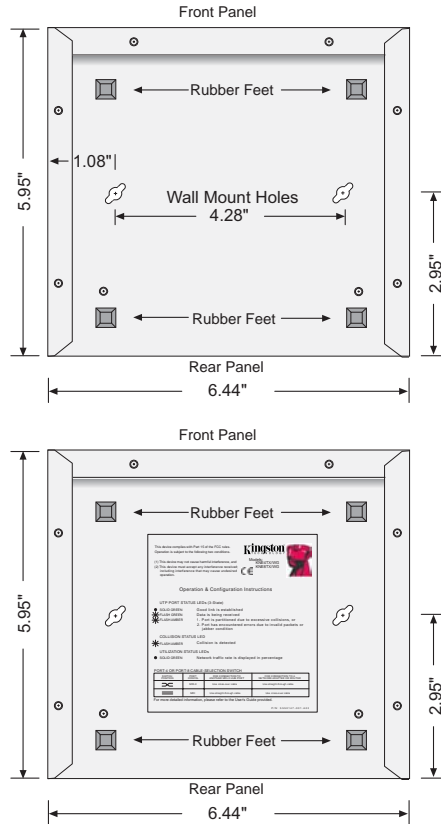


Fig. E-1 Mounting Template specifications

Appendix F 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.

Rev. 10/97

Copyright © 1997 Kingston Technology Company. All rights reserved. Printed in the U.S.A. Kingston Technology and the Kingston logo are trademarks of Kingston Technology Company.

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.

