LINK

LAVA

IDE Drive Enclosures

What are IDE drive enclosures?

Lava's FireDrive® and Kazan hard drive enclosures are the best way to add fast external data storage to a computer system. The enclosures provide users with the benefits of high-speed throughput and the convenience of carry-any-where portability. Designed by Lava, the enclosures' interface boards make any 3½" standard IDE hard disk drives IEEE 1394 and USB 2.0 compatible. The FireDrive® and Kazan come in sturdy cases and ship complete with either IEEE 1394-to-IDE or USB 2.0-to-IDE internal interface boards, switching power supplies, and all necessary cables.

What makes these enclosures so convenient?

Any standard, inexpensive 3½" IDE hard disk drive fits the solid, attractive FireDrive® and Kazan cases.

The Fire Drive's® IEEE1394 and Kazan's USB 2.0 interfaces make data movement a breeze. Users can work on their MP3, AVI, or graphic files quickly and efficiently.

Hot-pluggable and daisy-chainable, the enclosures help users work without any interruptions and downtime.

The FireDrive® is supported on both PC and Mac platforms. It provides a simple and transparent means of moving files between PCs and Macs.

The Kazan is backwards compatible with USB 1.1, so current users of USB 1.1 can use a Kazan right away. To get the full benefit of the Kazan's speed, however, a USB 2.0 port is needed.

What about speed and capacity?

Compared to ZIP™ drives, tape drives, CD-RW drives, and other external drive technologies, FireDrive's® IEEE 1394 and Kazan's USB 2.0 capabilities are far ahead.

Device	Throughput rate
Parallel port ZIP drives	800 kbps
IDE tape drives	1 Mbps
USB ZIP drives	1.2 Mbps
CD-RW IDE drives	4.8 Mbps
FireDrive® & Kazan	15 Mbps

The enclosures' capacity depends on the hard disk drive users install: Lava's drive enclosures hold hard disk drives, which now exceed 80 gigabytes.

Uses and Benefits:

- Adding external/portable drive capability for MPEGs, AVIs, DTP files
- Working directly on the FireDrive® or Kazan, as if they were internal drives
- Making existing hard drives IEEE 1394 or USB 2.0 compatible
- Backing up data fast
- Converting smoothly from USB 1.1 to high-speed USB 2.0
- Taking advantage of the Kazan's backward compatibility with USB 1.1
- Securely storing sensitive materials
- Expanding the drive capacity of notebook computers
- Carrying work between office and home

Selling tips

- An excellent means of adding value to low-margin hard drive sales.
- A cost-effective way to make drives USB 2.0 and/or IEEE 1394 compatible.
- Easier to install than conventional external storage devices.
- More convenient to use than conventional external storage devices.
- Low cost per megabyte for external storage.
- Highest-speed means of external storage.

How fast are Kazans and FireDrives?

Two things matter when talking about hard drives: capacity and speed. When looking at drive enclosures, assessing capacity is simple: the capacity of a hard drive does not change when you put it into the Lava enclosure. Using a 60 gigabyte hard drive will give you a 60 gigabyte external drive enclosure.

Assessing speed is more complicated. To start with, the faster the drive you put into the enclosure, the faster the overall result. At the same time, because external drives must communicate with the system across a bridging hardware interface, some overhead is introduced. In no case will any external drive —Lava's or any other type —be as fast as the same hard drive with a direct motherboard IDE connection. That said, in most cases a user will see no difference between a hard disk directly connected, and a hard disk in a FireDrive® or Kazan drive enclosure.
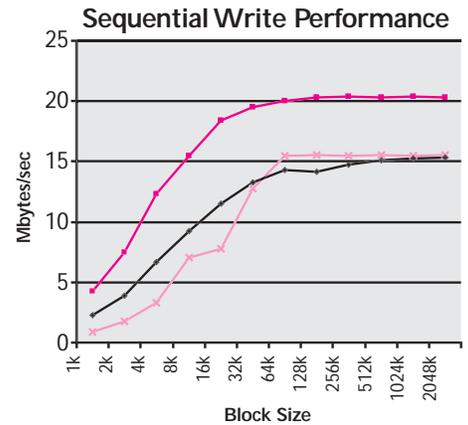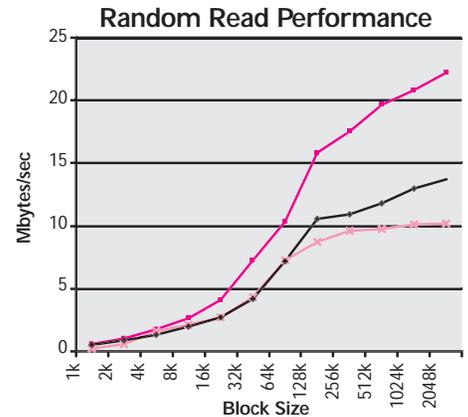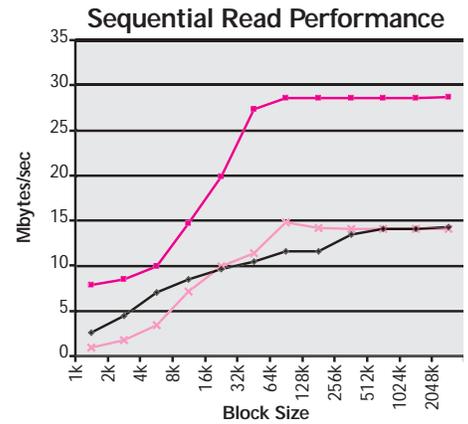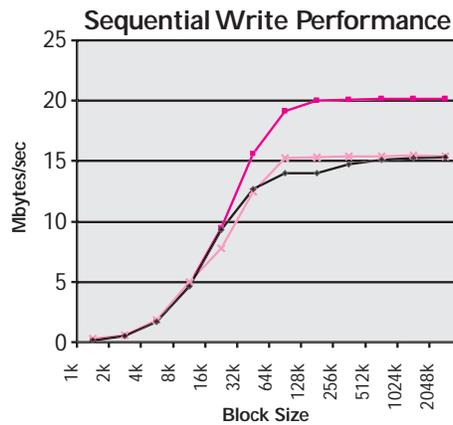
These graphs show the performance of a typical 7200 rpm, 20 gigabyte hard drive in three scenarios: directly attached to the computer's motherboard, installed in a Kazan USB 2.0 IDE drive enclosure, and installed in a FireDrive® IEEE 1394 drive enclosure. In each case, the drive's read and write speeds were tested. Random access testing evaluates how well a drive writes or retrieves data randomly located on a drive. Random access speed is important for applications such as databases where the drive needs to process a large number of small transfer demands. Sequential access performance is more important for graphical and video applications, when file data accesses are relatively few, but files can be large.

Lava tested each drive with various sizes of data transfer (block sizes) to gain the fullest possible picture of the performance of its drive enclosures.

The basic conclusions from testing these drives are:

1) the FireDrive® IEEE 1394 and the Kazan USB 2.0 are similar in performance

2) both the FireDrive® and the Kazan move data at between 50% and 75% of the speed of a direct motherboard connection

3) with the FireDrive® and Kazan IDE drive enclosures, you can have the best of both speed and capacity

Legend	Internal Connection
	Kazan
	Fire Drive

Sequential Read Performance

Random Read Performance

Sequential Write Performance

Sequential Write Performance

Kazan's Speed: Comparing USB 2.0 and USB 1.1

Our customers say that one of the reasons they like the Kazan is because it is both USB 2.0 and USB 1.1 compatible. With a Kazan, users can continue working with USB 1.1 and upgrade to USB 2.0 whenever they see it fit. There is, however, one very clear benefit to start using the USB 2.0 interface as soon as possible: Kazan's blazing USB 2.0 speed.

The chart on the right compares the Kazan's performance with USB 2.0 and USB 1.1 hosts. With USB 2.0, the improvement is extremely impressive. Of course, as USB 2.0 is still new, most users will need to add USB 2.0 capability to their systems with a USB 2.0 host adapter, such as Lava's two-port USB 2.0 Host Adapter. It makes a great companion sale to a Kazan.

Legend	Sequential Read
	Sequential Write
	Random Seek & RW

Sequential Write Performance

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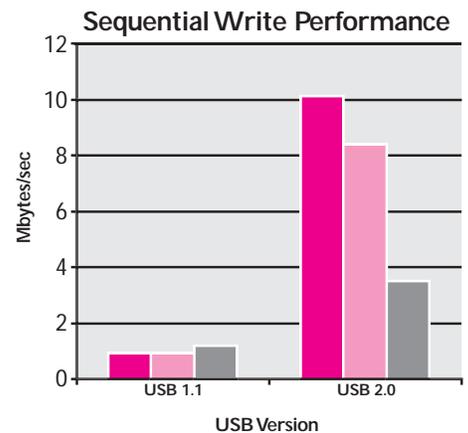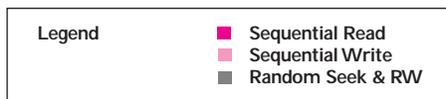
Understanding Throughput Numbers

When describing data throughput rates to hard drives or across I/O interfaces, the terminology and abbreviations can be confusing. Here's what it all means.

To start, quantities of data are measured in "bits" or "bytes." A byte is simply eight bits. When describing data *storage* capacity, the industry typically speaks of *bytes* of data: a floppy disk has 1440 kilobytes of storage capacity, a hard disk has 20 gigabytes of storage capacity, and so on. When it comes to data *flows*, however, we tend to speak of *bits* of data: a hard disk has a throughput of 25 megabits per second, a 16550 UART serial port has a speed of 115.2 kilobits per second, a Fast Ethernet connection is a 100 megabit per second connection, etc.

Throughput measurements specify a given quantity of data transferred in a given length of time, usually a minute or a second. When comparing products' relative speeds, it is important to be aware of inconsistent and overlapping abbreviations for "megabits per second" and "megabytes per second" to avoid misconceptions. The table below lists some of the standard throughput measures and their abbreviations, and points out a possible area of confusion.

Full Term	Correct Abbreviation	Other Abbreviations Used
kilobits per second	kbps	Kbps
megabits per second	Mbps	mbps; Mb/s; MBps, MB/s
megabytes per second	MB/s	Mb/s; MBps

For example, Lava's FireDrive® has a maximum sustained throughput of about 15 Mbps. A competing product might claim a maximum sustained throughput of 15 MB/s. Do not be misled; the two drives transfer data at the same speed.

How do I hook up a FireDrive® or Kazan drive enclosure?

Simple:
- Connect the IDE cable and power cable
- Insert the IDE hard drive into the FireDrive® or Kazan case
- Connect the power supply to your enclosure
- Connect the IEEE 1394 or USB cable to your PC or Mac

Connect cables

Secure bracket & close cover

Done
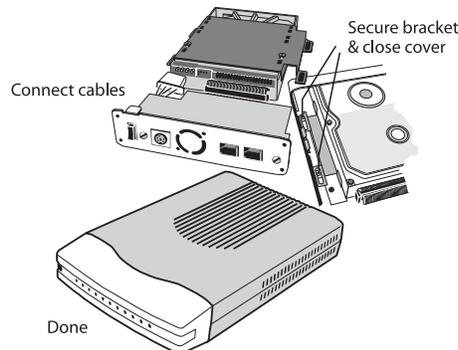
Profile File

Located on the east coast, Atlantic Cable is a leading service-oriented, wholesale distributor/manufacturer of computer cables, networking products, and accessories. With locations in Southern NH and Metro Atlanta, they offer next day delivery on thousands of products at low shipping rates. They have a "No Order Too Small" policy, stock only quality products — including Lava cards — and deliver them for a reasonable value.

Atlantic Cable has a fully-staffed production area making small quantities of specialized cables, and a main factory in China producing their stock line of molded cable assemblies as well as custom configurations in as low as 100 piece quantities. They stock a complete assortment of products that support LAN/WAN requirements and distribute products from Lava, KTI Networks, Middle Atlantic Datatel, Raritan Computer, ICC, and many others.

Atlantic Cable's knowledgeable, helpful sales consultants, reliable in-stock products, and unsurpassed technical support show they are eager to earn the business of their customers.

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Get caught in the Lavalanche & WIN!

You may get caught by the Lavalanche of prizes from Lava for completing our survey!

Getting snowed in has never been better! We at Lava believe that gifts are great, but an avalanche of gifts is even better. That is why we would like you to get caught in the Lavalanche of Lava prizes. How do you get in the way of the Lavalanche? Simply fill out the Lavalanche survey, forward it to Lava, and you may **WIN**!

For more details please see the attached survey or visit
www.lavalink.com/lavalanche.html

PRODUCT SUMMARY

Serial Cards

PCI	SSerial-PCI	Single 9-pin serial, 16550 UART
	SSerial-PCI/LP	Single 25-pin serial, 16550 UART, low profile
	DSerial-PCI	Dual 9-pin serial, 16550 UARTs
	DSerial-PCI/LP	Dual 9-pin serial, 16550 UARTs, low profile
	Quattro-PCI	Four-port 9-pin serial, 16550 UART, IRQ sharing
	Octopus-550	Eight-port 9-pin serial, IRQ sharing
	LavaPort-650	Single 9-pin serial, 16650 UART
	LavaPort-PCI	Dual 9-pin serial, 16650 UARTs
	LavaPort-Quad	Four-port 9-pin serial, 16650 UART, IRQ sharing
ISA	SSerial-550	Single 25-pin serial, Com 1-4, 16550 UART, IRQ 3/4/5/7
	DSerial-550	Dual 9-pin serial, Com 1-4, 16550 UART, IRQ 2/3/4/5/7/10/11/12/15
	RS422-550	Dual 9-pin serial, 16550 UART, RS422 pinout
	LavaPort-ISA	Single 9-pin serial, Com 1-4 16650 UART, IRQ 2/3/4/5/10/11/12/15
	LavaPort-PnP	Single 9-pin serial, plug & play

Parallel Cards

PCI	Parallel-PCI	Single EPP parallel
	Parallel-PCI/LP	Single EPP parallel, low profile
	Dual Parallel-PCI	Dual EPP parallel
ISA	Parallel	Single bi-directional parallel port, LPT 1/2/3, IRQ 5/7
	Parallel-ECP/EPP	Single ECP/EPP parallel, LPT 1-6, IRQ 2/3/4/5/7/10/11/12

Combo Cards

PCI	SP-PCI	Single 9-pin serial, 16550 UART + single bi-directional parallel
	2SP-PCI	Dual serial (9 & 25-pin), 16550 UART + single EPP parallel
	LavaPort-Plus	Dual serial (9 & 25 pin), 16650 UART + single EPP parallel
ISA	2SP-550	Dual 9-pin serial, Com 1-4, 16550 UART + single bi-dir. parallel, LPT 1-2

USB 2.0 and 1.1 Devices

USB 2.0 Host Adapter	Two/four USB ports, 480 Mbps, fits in PCI slot
USB 2.0 Kazan	Hard drive enclosure with USB 2.0-to-IDE interface
USB 1.1 Host Adapter	Dual USB ports, 12 Mbps, fits in PCI slot
SPH-USB 1.1 Hub	Three powered USB ports, parallel port, serial port, connects to USB

IEEE 1394 (FireWire®) Devices

IEEE 1394 FireHost	Dual IEEE 1394 ports, fits in PCI slot
IEEE 1394 FireDrive	Hard drive enclosure with FireWire®-to-IDE interface
IEEE 1394/IDE Controller	FireWire®-to-IDE hard drive interface

Specialty Cards

8255-PIO	8255 PIO interface card