

Applied Data Sciences / PCEHSD®
EISA PC to an Encore HSDII Data Link

The PCEHSD board provides an EISA bus PC controlled emulation of the Encore HSDII board. This board is an intelligent interface with an onboard processor and data buffering.

Transfer rate between the PCEHSD's HSD port and the external device's HSD port are in excess of 12MBytes/second. Transfer rate between the PCEHSD board and the EISA bus are dependent upon the PC's system configuration and tasks in progress. EISA burst rates are 33MBytes per second.

This product has a special feature whereby an external device can interrupt the PCEHSD. The interrupt signal is configured as either a differential or single ended edge triggered pulse.

This product has a special feature whereby an external device can interrupt the PC through the PCHSD2. The interrupt signal is configured as either a differential or single ended edge triggered pulse.

Ordering Information:

Specify **PCEHSD, Part number: 0700350**. Includes Adapter Board, technical and user documentation, 20' cables, binary interactive test and diagnostic program, and binary "C" callable I/O routines for DOS and software examples. You can E-mail us at sales@appdatasci.com or call us at 972-242-7944 for pricing information.

Optional UNIX driver available.

Applications:

- Network
- Interfacing
- Gateway
- Drive HSD peripherals from an ISA bus PC
- Data Link between an ISA PC and Encore host
- Test existing HSD compatible devices with a PC
- Monitor Encore host memory via external mode

Benefits:

- **Save on host overhead** - the PCEHSD has much lower overhead for networking or communication applications and is faster than conventional ethernet.
- **Save money** - continue to use your exiting HSD peripherals without having to make changes.
- **Save on installation time** - simple to install and easy to use software drivers.

- **Save on evaluation time** - simple to use interactive diagnostic/test program performing wrap around self tests.
- **Save on repair and testing** - fast and economical way to verify the integrity of an existing data link.

Features:

- External device interrupt.
- Emulation of the following Encore HSD modes:
 - HSD normal device mode,
 - IBL mode,
 - External mode,
 - Device emulation mode (optional)
- EISA bus Master using onboard DMA chip.
- Byte or Word swapping.
- PC data and addressing is 32-bits.
- On-board 512 word FIFO.
- Standard PC EISA board form factor.
- Compatible with Encore HSD device or IBL operations using standard flat ribbon cables.
- Built in self-tests for memory and data paths.
- External device interrupt.
- Motorola 68020 processor.
- Intel BMIC chip for bus compatibility.
- Timing is deterministic.

Functional Description:

The PC initiates all transfers with the external device. Once transfer begins, the PCEHSD executes and monitors the flow of control, status, and data between the PC's memory and the external device.

The PC and external device connected to the PCEHSD operate independently of each other. Transfers between the PCEHSD and the PC are at the speed of the PC I/O bus. Control and status transfers are by I/O. Data transfers are by DMA or Programmed I/O. The transfer rate between the PCEHSD and the external device are dependent upon the speed of the 32-bit transfers between the PCEHSD board FIFO and external device.

Software Support:

The PCEHSD comes with a Microsoft C, FORTRAN or PASCAL compatible relocatable object code device driver that is used to control the board. It is written for DOS version 3.1 or higher. There are 6 separate subroutines for the HSD and the IBL modes. The subroutine names and functions are:

- **HSDOPEN/IBLOPEN:** installs the driver in the DOS interrupt structure and initializes the data structures.
- **HSDSTRT/IBLSTRT:** starts a data transfer.
- **HSDTEST/IBLTEST:** waits for completion of a NOWAIT operation.
- **HSDTERM/IBLTERM:** terminates any existing transfer that is in progress.
- **HSDCTL/IBLCTL:** direct control of functions that are not available through other I/O routines.
- **HSDCLOS/IBLCLOS:** restores the DOS interrupt structure back to its normal configuration.

Optional File Transfer software is available.

Interactive Test Program:

An Interactive Test/Diagnostic program supplied with the PCEHSD, which is DOS compatible, has an Encore HSD IOCB structure compatible format. It does not require a device driver and can be installed on any DOS system allowing direct user level access to the PC EISA bus memory space. The user can create IOCBs on a PC system that can then be executed, automatically verified, and saved for future usage. The user can then transfer the IOCBs to the Encore computer for incorporation into the respective program under development, including programs for either HSD or IBL mode of operation. The user can create a list of up to 20 Encore compatible IOCBs (where each IOCB is composed of four 32-bit words) and then execute the list. This IOCB list may also be validated and saved for future usage.

Installation:

Installation of the PCEHSD is easy because the board configuration is entirely software selectable. Just plug the PCEHSD into any EISA slot in the PC chassis. Attach the adapter board to the PCEHSD. Then attach the two 50-conductor ribbon cables to the adapter board and at the other end attach the cables to the Encore host or external device. Each PCEHSD comes complete with installation and programming instructions, and the supporting software includes software example programs for the Encore host. The PCEHSD is typically configured via software in one of the four following ways.

1. PCEHSD (IBL mode) ----- Encore (IBL mode)
2. PCEHSD (IBL mode) ----- MBHSD, PCHSD2, or VMEHSD (IBL mode)
3. PCEHSD (HSD mode) ----- HSDII compatible external device
4. PCEHSD (EXT mode) ----- HSDII compatible external device

Data Formats:

The PCEHSD can reformat the 32-bit data transferred between the VME and Encore host or its external device. The data can be:

1. Byte swapped,
2. 16-bit word swapped,
3. Byte and word swapped or
4. Passed straight through.

Specifications:

Physical:

- **Board:** PCB is .06 inch thick FR-4 flame retardant epoxy glass. Eight layers.
- **Dimensions:** Length: 13.25 inches, Height: 4.5 inches, and Thickness: .60 inches.
- **Connectors:**
 - **PC to Chassis:** Two edge connectors - 124 pin & 72 pin gold edge wiping contacts.
 - **PC to Adapter Board:** One 100-pin hi-density connector on rear edge of board.
 - **Adapter Board to HSD Interface:** Two 50-pin IDC compatible male headers.
- **Weight:** 1.2 pounds.

Electrical:

- Power is supplied via the PC EISA chassis backplane. Voltage is +5 VDC, and Current is 2.2 amps.

Environmental:

- **Temperature:** 0 to 55 degrees Celsius operating, and -40 to +80 standby.
- **Humidity:** Up to 95% RH without condensation.
- **Altitude:** 0 to 10,000 feet AMSL operating, and 0 to 40,000 feet AMSL standby.
- **Vibration:** Withstands normal transportation stresses.
- **Cooling:** Provided by built-in fans in the Encore chassis.

Modes Supported:

- **IBL:** PC to PC, or PC to Host (Host may be Encore, MBHSD, PCEHSD or VMEHSD)
- **HSD:** PC to External Device
- **EXTERNAL:** PC to External Device
- **EMULATION:** PC to Host Device (Optional)

Transfer Rates:

- **PCEHSD to EISA bus:** Determined by PC Host processes and internal bus. Burst rate in excess of 33MBytes per Second.
- **PCEHSD to HSD bus:** In excess of 12MBytes per second.