



# V/SCSI 4210 Jaguar

High-performance VMEbus  
Dual SCSI Host Adapter

The V/SCSI 4210 Host Adapter is Interphase® Corporation's high-performance SCSI host adapter for the VMEbus. With two, full function SCSI ports and the Interphase's proprietary BUSpacket Interface<sup>SM</sup> on the VMEbus, the V/SCSI 4210 Host Adapter provides unparalleled functionality and ultrahigh-speed in a VMEbus SCSI host adapter.

The V/SCSI 4210 Host Adapter is a member of the family of Interphase products for the VMEbus and represents a commitment to design excellence and superiority in:

- Performance
- Ease of Integration
- Reliability
- Application Support

It is but one element in the array of Interphase products that provides a comprehensive approach to the development of high-performance VMEbus systems.

## DUAL SCSI PORTS

The V/SCSI 4210 Host Adapter can have either one or two high-performance, totally independent SCSI ports which can operate simultaneously. Both ports can support 1.5 MB/s asynchronous and 4.0 MB/s synchronous data transfers. They support the full Common Command Set (CCS), Disconnect/Reconnect, and virtually all vendor-specific commands. Both ports also support the Initiator and Target Modes, enabling the V/SCSI 4210 Host Adapter to be used in computer-to-computer interconnect schemes.

The dual SCSI port arrangement of the V/SCSI 4210 Host Adapter allows significant flexibility in system configuration. For example, devices with inherently slow data rates can now be relegated to their own SCSI bus. They do not impair system response time by monopolizing the SCSI bus when a high data rate device (such as the disk system) needs it. Alternatively, two SCSI ports also allow one port to be dedicated to computer-to-computer transactions and the other to conventional peripherals. Disk striping techniques that spread files across multiple disks are also feasible. The combinations are limitless. And of course, if the application only requires one port, a lower cost, single port configuration of the V/SCSI 4210 is available.

## BUSpacket INTERFACE

With the proprietary Interphase BUSpacket Interface, the V/SCSI 4210 Host Adapter can achieve very fast DMA data rates, up to 30 MB/s, over the VMEbus. This is accomplished through the use of a large RAM buffer, a very fast, deep BUSpacket FIFO, and a unique delay-line based asynchronous state machine that controls the VMEbus timing. The result is that VMEbus activity is effectively decoupled from on-board processes and SCSI bus activity.

The BUSpacket Interface preformats "packets" of data and stores them in the fast bus FIFO prior to acquiring the VMEbus. Once the VMEbus is acquired, data in the FIFO is transferred across the VMEbus at up to 30 MB/s and the bus is released for other users. This reduces the bus bandwidth used by the V/SCSI 4210 Host Adapter, resulting in improvements in overall system performance.

## REALTIME MULTITASKING KERNEL

The 68000 microprocessor on the V/SCSI 4210 Host Adapter runs a Realtime Multitasking Kernel that manages multiple tasks concurrently. It is capable of keeping the VMEbus and both SCSI ports active simultaneously.

## Command Queuing

The V/SCSI 4210 Host Adapter can also queue up multiple commands for each attached SCSI device. Device drivers in the host can issue multiple commands for each device and the V/SCSI 4210 Host Adapter will queue them up internally. This keeps the driver command processing out of the time critical portion of the command execution path because the V/SCSI 4210 Host Adapter can be queuing commands from the host while a SCSI device is busy.

There is a command queue for each attached device which can work in concert with the disconnect and reconnect SCSI facilities to provide true multitasking operation. Thus the next command can be issued to a device as soon as the SCSI bus is available and a device is ready for it. Because commands are queued, the V/SCSI 4210 Host Adapter can issue commands to the devices as fast as they can accept them. This decouples driver command processing from host adapter command processing. And this also decouples host adapter command processing from command processing at the device level. This is particularly important in systems with a large number of attached devices.

## **Virtual Buffer Architecture<sup>SM</sup>**

The on-board 68000 microprocessor dynamically allocates and deallocates sections of the 128 KByte buffer for use by the various tasks of the host adapter. The Virtual Buffer Architecture is the key to insuring that multithreaded transactions have sufficient buffers to run efficiently. It is particularly important in the SCSI environment where there can be multiple attached devices, each with a transaction pending. The Virtual Buffer Architecture optimizes the allocation of the RAM because the buffer requirements of each device can vary dynamically, dependent upon the operation in progress. It is this Virtual Buffer Architecture that eliminates read overruns and write underruns often experienced in less sophisticated FIFO-based designs or fixed allocation, RAM-based schemes.

## **FLEXIBILITY**

The V/SCSI 4210 Host Adapter accommodates virtually any type of SCSI peripheral, including magnetic and optical disks, half-inch and quarter-inch tape transports and printers. In addition, by supporting both Initiator and Target Modes, it can support computer-to-computer transactions. The V/SCSI 4210 Host Adapter also supports a wide range of VMEbus system parameters, including burst rates, multiple interrupt vectors, and virtually all variable VMEbus configurations.

## **EASY TO DESIGN IN**

Interphase provides two powerful resources with the V/SCSI 4210 Host Adapter or any of the other Interphase family products. Unique to Interphase and available to you are the services of:

- The Design Assistance Group
- The Applications Engineering Group

Depending upon your specific design and application requirements, one or both of these Interphase teams can be called upon to solve specific problems, assist with actual project design decisions, or help build a system outright. There is always a team member prepared to assist as needed at each step of your project. From recommending parameter settings and software drivers to consulting on the most difficult system design problems, these two groups can virtually become a part of your staff.

## **SUMMARY OF FEATURES**

- Two Independent SCSI Ports Capable of Supporting up to 14 SCSI Devices
- Available in Single SCSI Port Model
- Both SCSI Ports Support Synchronous Data Rates to 4.0 MB/s and Asynchronous Data Rates to 1.5 MB/s
- Full Function SCSI Ports, Supporting Initiator/Target Modes and Disconnect/Reconnect Commands
- Both SCSI Ports Provide On-board Single-Ended Drivers or Optional Differential Drivers
- Realtime Multitasking Kernel Supports Concurrent Activity on Multiple Devices
- Command Queuing
- Command Order Optimization
- Virtual Buffer Architecture with On-board 68000 Microprocessor
- 128 KBytes Cache Buffer
- VMEbus Data Rates to 30 MB/s
- 16- and 32-bit VMEbus Data Transfers
- 16-, 24- and 32-bit VMEbus Addressing
- Supports VMEbus Throttling and Bus Clear
- Software Programmable Interrupt Levels (1-7)
- Selectable Bus Priority (0-3)
- Single Double-height VMEbus Board
- Software Drivers Available on a Variety of Media

## **THE NEXT STEP**

Interphase is ready to help you get that project up and running... NOW. All you need to do is tell us you want an Evaluation Reference Guide for the V/SCSI 4210 Host Adapter, or even better, that you want to receive the V/SCSI 4210 Host Adapter under our First Time User Program.

The Evaluation Reference Guide contains specifications and operational information to get your evaluation started. The First Time User Program permits hands-on evaluation of the V/SCSI 4210 Host Adapter and puts you in contact with our Applications Engineering Group.

Call us today or complete the enclosed card to take the next step. There is no obligation... except to yourself... to check out the high-performance value of the V/SCSI 4210 Host Adapter from Interphase Corporation.

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