

# R2D3 Serial Digital Data Capture Cards

Real-time capture, recording and replay of LVDS (to 60 Mbits/s) or RS-422A (to 15 Mbits/s) data + clock bitstream



**R2D3 PCI data capture cards provide the basis for development of software solutions for real-time signal surveillance, monitoring, recording, archiving, analysis and processing applications.**

**Cards provide access to, and output of, real-time digital signals on a PC. Under software control, bitstreams can be transferred to and from host memory, recorded to disk or replayed from disk.**

The LVDS card supports serial data + clock transfers at sustained rates up to 60 Mbits/s and the RS-422A card supports serial data + clock transfers at sustained rates up to 15 Mbits/s.

With the appropriate control and application software R2D3 can be used to record, replay and monitor real-time signals, with real-time data being transferred to or from disk or system memory.

Real-time data can be recorded on standard PC fixed or removable hard disks. Once captured, the bitstream is available for processing or storing-to-disk as binary data. On-board buffering ensures that there is none of the data loss that is often associated with high-speed data capture on PCs.

SomerData supports OEM, developer and system integrator applications, including the provision of programming information with code examples. For application software development, comprehensive Programmer's Reference Guides and code examples are available on request.

LVDS and RS-422A Cards are available as part of a PC-HSR High-Speed Recorder. Transportable and rack-mounting Recorders provide several hours recording to disk on a standard PC-based workstation.

*SomerData designs and manufactures a unique range of real-time digital data capture and recording products Capturing raw data streams on a PC provides opportunities for the development of innovative software applications for signal surveillance, monitoring, recording, archiving, analysis and processing.*



**Specifications**

*LVDS Card*

*Maximum Data transfer Rate*  
60 Mbits/s sustained

*Input / Output Signal*  
Single-stream data + clock  
Compatible with EIA 644

*Input/Output Impedance*  
100Ω differential

*Input Receiver Device*  
DS90LV031ATM

*Output Driver Device*  
DS90LV032ATM

*General*

*PCI Interface Compatibility*  
32-bit 33 MHz PCI bus  
PCI specification revision 2.1  
(card requires +3.3V and 5V)

*Signal Input / Output Connector*  
15-pin D-Type

*RS-422A Card*

*Maximum Data Transfer Rate*  
15 Mbits/s sustained

*Input/Output Signal*  
Single-stream data + clock  
Compatible with EIA RS-422A / RS-423A

*Input/Output Amplitude*  
Differential input amplitude ±200 mV minimum to ±14 V maximum  
Output amplitude 3.8 V minimum

*Input Receiver Device*  
34C86

*Output Driver Device*  
34C87

*On-board Buffer*

16 Mbits SDRAM on-board memory to buffer data to / from the PCI Bus

*Physical*

Length: 174 mm  
Height: 106 mm

Short PCI board compatible with standard 32-bit PC slot.  
Components fit within the PC I/O panel 19 mm width.

**Application Development**

*Controlling the Card*

R2D3 uses a command and status structure based on the mailboxes of an AMCC 5935 device.

A series of control and status commands are implemented, using the mailbox registers of the AMCC PCI interface device. These allow control and interrogation of the on-board buffer. This buffer is implemented as fast memory cascaded to form the equivalent of a very large FIFO memory.

Data transfers take place by reading data into or writing data out of the Buffer, across the PCI bus. For fast (burst) transfers, the memory is divided into two areas, with independent status and control of each.

Settable thresholds are provided to indicate the fullness and emptiness of the Buffer. Interrupt control is provided to enable the card to signal its status, including data states.

Data transfers into and out of the card are in serial form. Transfers across the PCI bus take place in Double Word (DWORD) 32-bit form.

*Functional Block Diagram*

