

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Modular PCI Range of Cards

Summary features

- Modular Architecture
- Interface compatible with PCI Local bus Specification, revision 2.1, June 1995
- 2 or 4 Module General Purpose Carrier Cards
- 8 Channels per Module

  32 Cyclic Data Buffers, each 1k x 4 byte words deep
- Direct access to Cyclic Data Buffer Read / Write Pointers
- PCI interrupts on Module Events
- Direct access to Module Registers and Application Memory
- User Installable Plug and Play Modules:
  - ARINC-429, 575 compatible Modules:
    - 8 Receivers
    - 8 Transmitter
    - 4 Transmitters and 4 Receivers
  - Other Modules:
    - ARINC-561, 568, 571, 582 (6-wire)
      - 2 Transmitters and 2 Receivers
    - RS422 -- 4 Duplex Channels
- Windows XX Support





General Description:

The SYxxxPCI-M4 is a general purpose PCI interface card which can accommodate up to four dedicated interface modules. A half length variant is also available (SYxxxPCI-M2) which can accommodate up to two modules. The card design provides memory support of 1k x 4 bytes per channel, with up to 32 channels for the larger card, organised as Cyclic Buffers.

Typical modules include interfaces to ARINC-429, ARINC-561, ARINC-629 and RS-422. Each module supports up to 8 Rx or 8Tx channels.

The card provides configuration registers which allow the host to:

- Automatically identify the carrier card and its revision status.
- Automatically identify which modules are fitted to the carrier card and their revision status
- Identify connector cables connected to the card
- Assign address space for the card's data buffer memory and registers. (Plug-in and Play).
- Control and monitor the PCI bus interface to the card.
- Read card interrupt configuration as assigned by the POST software as it initialises and configures the system.

Sycos Copyright ©2007

The carrier card supports the resident interface modules with:

- 32 Cyclic Data Buffers, each with a capacity for 1k x 4 byte words
- each module may have up to 8 channels, each with its own Cyclic Data Buffer
- Direct access to the Cyclic Data Buffer Read / Write Pointers
- PCI interrupts on Module Events
- Direct access to Module registers and application memory
- Interface compatible with PCI Local bus Specification, revision 2.1, June 1995

The carrier card is designed to be used in a "Plug-in and Play" environment which is made possible, not only by the choice of PCI interface, but also by the provision of various identification and module present registers. These include:

- Device ID
- Vendor ID
- Subsystem ID
- Subsystem Vendor ID
- Module Present
- Connector ID / Present
- Module ID

Using these registers the host can detect the presence of the card, its resident modules and its connector, determine if this is consistent with system requirements and respond accordingly by configuring the system or reporting system deficiencies. The carrier cards do not require any specific hardware configuration other than fitting the correct modules and connectors. Any errors in the fitting of Modules and connectors can easily be detected by the software and appropriate warnings reported.

Cyclic Data Buffers:

The SYxxxPCI-M4 card provides high speed PCI interfacing to 32 Cyclic Data buffers, eight of which are available for each resident module.

Each channel associated with a module is automatically assign to be either a Tx Channel or a Rx Channel.

The user is free to read and write to any of the Cyclic Buffers independent of their type (Tx or Rx). However, the Cyclic Buffer data transfer system only responds in strict accordance to the channel type. That is, it will transfer data, written to a Tx Cyclic Buffer, to the appropriate module channel and write received data to the corresponding Rx Cyclic Buffer.

The Cyclic Buffers are controlled according to simple rules. The buffer read and write pointers can be read by the host to assist in the data transfer process.

In practice, the user writes data for transmission to consecutive long word locations in the Cyclic Buffer. Only valid bytes are transmitted.

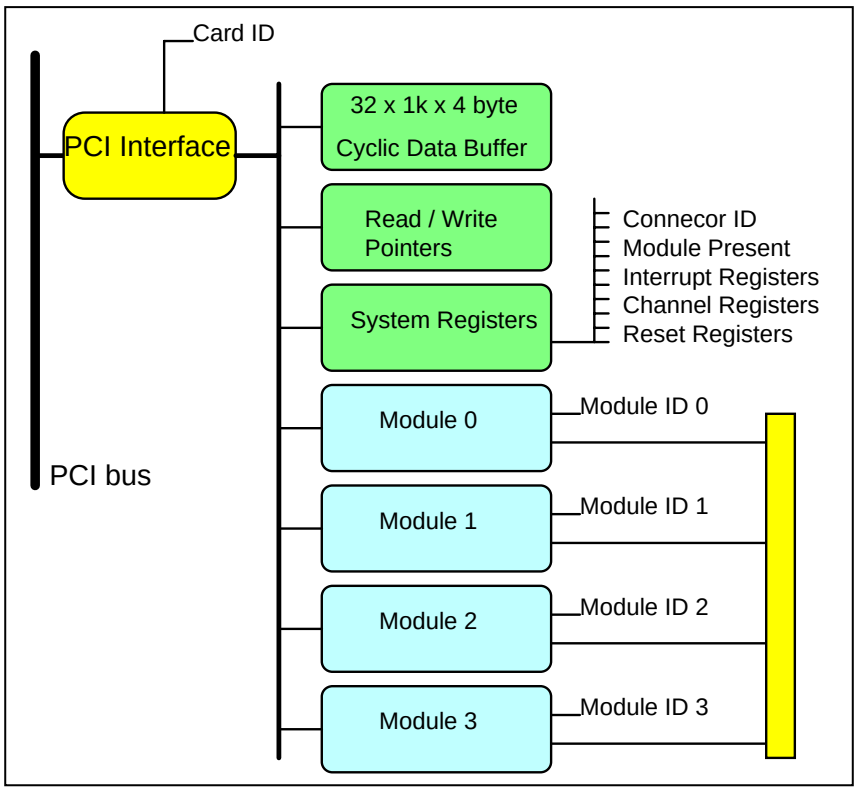
Receive data is automatically written to consecutive byte locations in the cyclic buffer.

Interrupt Facilities:

PCI interrupts can be generated for both DMA and Module events. Interrupt Control and status registers are provided for enabling interrupts and determining which events occur.

Module Control:

Separate user manuals are provided for each module. Modules have a maximum of 8 channels which are used for either transmission or reception of data. Modules may also have registers and memory accessible to the user. Access to this register and memory address space is relatively slow compared with that of the Cyclic Buffers and is therefore only intended for configuration and control purposes.



Functional Block Diagram for the SyPCI-M4 card

The Module interface has been designed so that any user of the carrier card can develop a module for his application, making use of the general features, registers, memory and management features of the carrier card to great effect.

Details of the mechanical format of a module can be obtained by contacting Sycos by e-mail at support@sycos.co.uk

Mechanical Description:

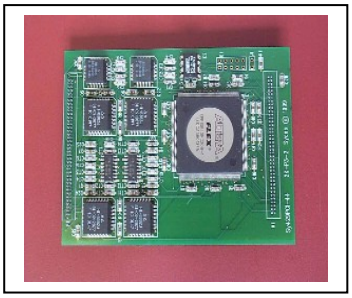
The carrier card, with its associated modules installed, occupies a single PCI slot, with Input/Output access via a SCSI connector mounted on the front panel. The four module carrier card has 100 pin connector and the two module carrier card has a 68 pin connector.

Specification:

Power Requirements (maximum)	3.3 V ± 10% +5 V ± 5% -12 V ± 5%
Address/Data Lines	AD00 - AD31
PCI Interface	Interface compatible with PCI Local bus Specification, revision 2.1, June 1995
Connector Type: (PCI Connector) P1 (General Input/Output) J1	 5V / 32-bit Card Edge Connector 2-Module Carrier Card SCSI 68 pin Female 4-Module Carrier Card SCSI 100 pin Female
Operating Temperature	0°C to + 70°C
Storage Temperature	-25°C to + 85°C
Relative Humidity	0 to 95% non-condensing

Modules Available:

1. Sy429PCI-RT44 Module



The Sy429PCI-RT44 is an ARINC-429 interface module with 4 Tx and 4 Rx channels for use with the general purpose PCI interface cards SyPCI-M2 and SyPCI-M4. When the module is installed in to one of these cards, the combined unit provides the following features:

- 4 ARINC-429 Transmit Channels
- 4 ARINC-429 Receive Channels
- Time stamp of received data with 1µS resolution is an option
- Eight 1k x 4 byte Cyclic Data Buffers
- PCI Interface
- Individual configuration of high and low speed operation all receive and transmit channels
- Automatic selection of Tx Driver Capacitors to provide appropriate signal rise and fall rates in accordance with transmit speed.
- Choice of odd, even or no parity.
- Each transmit channel can be internally looped-back onto its corresponding receive channel for test purposes. A channel configured for loop-back has its transmit driver output disabled.
- PCI interrupts can be triggered on the reception of ARINC-429 data.

Technical Description

The Sy429PCI-RT44 module when fitted to the SyPCI-M2 or SyPCI-M4 General Purpose PCI Interface card provides a high performance ARINC-429 Interface with 4 transmit and 4 receive channels.

The module uses eight of the 1k x 32 bit Cyclic-Data-Buffers provided on the General Purpose PCI Interface base card. Four of these are configured for reception of ARINC-429 data and the other four for transmission.
Data written to a Transmit Cyclic-Data-Buffer is card is automatically transferred to the corresponding transmitter in a manner which ensures the maximum usage of the ARINC-429 data bus. That is, while data is available, ARINC-429 data is transmitted with the minimum 4-bit gap between data words. Similarly, received data can be captured at this maximum data rate and automatically transferred to the corresponding Cyclic-Data-Buffer from where it can be easily transferred over the PCI interface to the host processor.

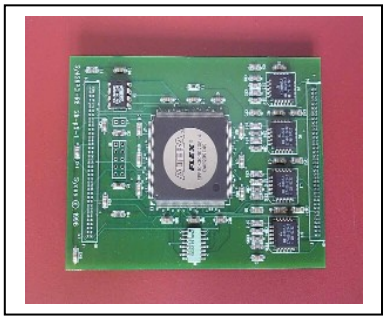
For test purposes, the individual transmitter outputs can be looped-back on to the corresponding receive channel. When a channel is configured in this way its transmit driver outputs are disabled to prevent the test signals being received by other equipment on the ARINC-429 data bus.

PCI interrupts can be triggered immediately following reception of complete ARINC-429 data words. The interrupts are controlled and handled in a hierarchical manner so that the reception of ARINC-429 data generates a module interrupt on the mother card which generates a PCI interrupt to the host computer.

2. Sy429PCI-R8 Module

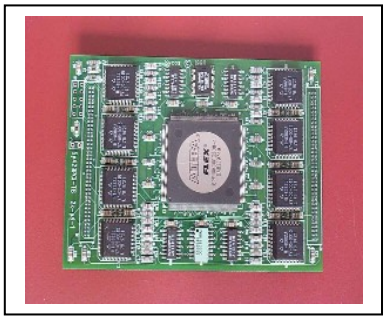
This module is a dedicated receiver card with identical receive functionality to that used on the RT44 module. Time stamp of receive data with 1 µS resolution is provided as an option.

A 32-bit time-stamp word with 1µS resolution can be interleaved with received data.



3. Sy429PCI-T8 Module

This module is a dedicated transmitter card with identical transmit functionality to that used on the RT44 module.



4. Sy561PCI-RT22 Module

The Sy561PCI-RT22 is six-wire ARINC-561 interface module with 2 Tx and 2 Rx channels for use with the general purpose PCI interface cards SyPCI-M2 and SyPCI-M4. The module is also compatible with ARINC-568, 571 and ARINC-582. When the module is installed in to one of these cards, the combined unit provides the following features:

- 2 ARINC-561 Transmit Channels
- 2 ARINC-561 Receive Channels
- Time stamp of received data with 1µS resolution is an option
- Four 1k x 4 byte Cyclic Data Buffers
- PCI Interface
- Individual configuration of channel speed between 3kbits/s and 125kbits/s
- Choice of odd, even or no parity.
- PCI interrupts can be triggered on the reception of ARINC-561 data.

Technical Description

The Sy561PCI-RT22 module when fitted to the SyPCI-M2 or SyPCI-M4 General Purpose PCI Interface card provides a high performance six-wire ARINC-561 Interface with 2 transmit and 2 receive channels.

The module uses four of the 1k x 32 bit Cyclic-Data-Buffers provided on the General Purpose PCI Interface base card. Two of these are configured for reception of ARINC-429 data and the other two for transmission.

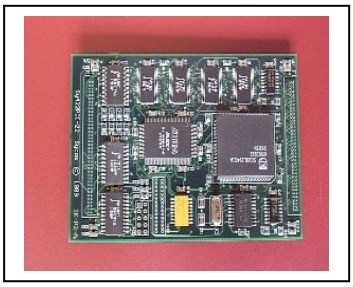
Data written to a Transmit Cyclic-Data-Buffer is card is automatically transferred to the corresponding transmitter in a manner which ensures the maximum usage of the ARINC-561 data bus. That is, while data is available, ARINC-561 data is transmitted with the minimum 4-bit gap between data words. Similarly, received data can be captured at this maximum data rate and automatically transferred to the corresponding Cyclic-Data-Buffer from where it can be easily transferred over the PCI interface to the host processor.

For test purposes, the individual transmitter outputs can be looped-back on to the corresponding receive channel. When a channel is configured in this way its transmit driver outputs are disabled to prevent the test signals being received by other equipment on the ARINC-561 data bus.

PCI interrupts can be triggered immediately following reception of complete ARINC-561 data words. The interrupts are controlled and handled in a hierarchical manner so that the reception of ARINC-561 data generates a module interrupt on the mother card which generates a PCI interrupt to the host computer.

Sycos Copyright ©2007

5. Sy422PCI-RT44 Module



The Sy422PCI-RT44 is a RS422 module for use with the general purpose PCI interface cards SYxxxPCI-M2 and SYxxxPCI-M4.

In addition to eight 1k x 4 byte Cyclic Data Buffers provided by the General Purpose PCI interface card, the Sy422PCI-RT44 module provides the following features:

- Four Phillips industry standard full duplex UART channels
- Flow control using programmable Xon/Xoff characters
- Flow control using CTSN RTSN hardware handshaking (optional)
- Automatic address detection in multi-drop mode
- Three byte general purpose character recognition
- Programmable interrupt priorities
- Automatic identification of highest priority interrupt pending
- Global interrupt and control registers ease set-up and interrupt handling
- Vectored interrupts with programmable interrupt vector formats
    - Interrupt vector modified with channel number
    - Interrupt vector modified with channel number and channel type
    - Interrupt vector not modified
- Watch dog timer for each receiver
- Programmable Data Formats
    - 5 to 8 data bits plus parity
    - odd, even or no parity
    - 1, 1.5 or 2 stop bits
- Flexible baud rate selection for receivers and transmitters:
    - 22 fixed rates; 50-230.4K baud or 100 to 460.8K baud
    - Additional non-standard rates to 500K baud with internal generators
    - Two reload-counters provide additional programmable baud rate generation
    - Simplified baud rate selection
- MHz 1x and 16x data rates full duplex all channels
- Parity, framing and overrun error detection
- False start bit detection
- Line break detection and generation
- Programmable channel mode
    - Normal (full duplex)
    - Diagnostic modes
    - automatic echo
    - local loop back
    - remote loop back
- Four I/O ports per UART for modem controls, clocks, RTSN, I/O etc.
    - All I/O ports equipped with “Change of State Detectors”
- Two global inputs and two global outputs for general purpose I/O.

Sycos Copyright ©2007

Technical Description

The Sy422PCI-RT44 module is based on the Philips QUART SC28L194 and provides 4 Rx and 4 Tx RS422/485 channels. Each pair of Rx / Tx channels is capable of Full Duplex operation at rates up to 250k bits / s.

The module uses eight of the 1k x 32 bit Cyclic-Data-Buffers provided on the general purpose SYxxxPCI-M2 card. Four of these are configured for reception and four for transmission.

The user has direct access to the QUART internal registers and consequently can configure individual channels for their particular application.

Once the QUART is configured for operation, the user simply transfers transmit data to the corresponding transmit Cyclic Data Buffer. On detection of data in the Cyclic Data Buffer and the module's readiness to accept data, the system will automatically transfer Cyclic-Buffer data, byte by byte, to the appropriate TX FIFO from where it will be transmitted over the RS422/485 data bus.

In a similar manner, data received by the QUART is automatically transferred to the corresponding Cyclic Data Buffer from where it can be easily accessed by the host processor, via the PCI interface.

The QUART can be configured to generate interrupts in response to various events and these in turn can be directed to trigger PCI interrupts to the Host System.. The interrupts are controlled in a hierarchical manner so that QUART events generate module interrupts on the mother card which generates a local interrupt to the PCI Interface Chip which finally generates a PCI interrupt to the host computer. Consequently, interrupts are also handled, by the software, in a hierarchical manner. For interrupts to occur they must be enabled at all three levels and, when they do occur, their status checked at each level. At the card level, the interrupt status determines which module(s) generated the interrupt(s) and at the module level the interrupt status determines which QUART event caused the interrupt.

Ordering Information and Variants:

SYxxxPCI-M4 :	Full Length 4 module carrier card
SYxxxPCI-M2 :	Half Length 2 module carrier card
Sy429PCI-RT44 :	4Tx, 4Rx module. ARINC-429/575 compatible
Sy429PCI-R8 :	8 Rx module. ARINC-429/575 compatible
Sy429PCI-T8 :	8 Tx module. ARINC-429/575 compatible
Sy422PCI-RT44 :	4Tx, 4Rx module. RS-422 compatible
Sy561PCI-RT22 :	2Tx, 2Rx module. Six-wire ARINC-561, 568, 571 and 582 compatible

Contact Details:

Sycos AES
Hambledon Manor
Iwerne Minster
Blandford Forum
Dorset. DT11 8QS
UK
e-mail: sales@sycos.co.uk

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP