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COMPUTER CONVERSIONS CORPORATION
(631) 261-3300 6 Dunton Court, East Northport, New York 11731

PCI-Synchro™ Series

Features

- Synchro, Resolver, & LVDT Converters
- Mix/Match 8 In. 3/Output Sets/Cards
- 100% Transformer Isolated I/O Option
- Card with Resident Force Test Ability
- Proven Standard "Whole" Converters
- Reliable Register Based "LSI" Logic
- Incremental Encoder Output Options
- True 32 Bit Long-Word Level Interfaces
- No external Supplies Required
- Software 98/NT + Driver & Demo Pack



Applications

- Antenna Monitoring
- Closed Loop Servo Controls
- Fire Control Systems
- Avionic & Naval Systems
- Conveyor Controls
- Wind Speed Indications
- Machine Controls
- Shaft Angle Encoding
- Engine Test Stands
- Material Handling Systems
- High Speed Data Acquisition

Features

- Direct Synchro/Resolver/LVDT Inputs
- Transformer Isolated I/O Options
- High Speed, Stable, Ratiometric, Tracking Converters
- High Noise Immunity
- Insensitive to Amplitude Frequency Variations
- No External Parts or Power Required
- On-Board Reference Supply Options
- 10-20 Bit Resolution & Multispeeds
- Incremental Encoder Output Options
- True 16 Bit Word Level Interface
- Force Self-Test Option (-WS Units)

Overview

The PCI-Synchro™ Series product line are full size **PCI 2.2 compliant** synchro, resolver, and LVDT I/O cards, and resolver-sensor card sets are used as absolute encoder systems.

These cards are ideally suited for both industrial and COTS military concerns, using any PCI bus compatible computer for simulation, ATE, "Absolute" position sensing and motion control, coordinates & process control, navigation, GPS, data acquisition, radar, ships speed indicators, antenna & targeting applications.

The PCI-SynchroTM Series converters provide up to 4 and **8 channels** of **Isolated Synchro/ResolverLVDT/RVDT** or **absolute encoder** interface on a single, standard full size 2 PCI printed circuit card.

Computer Conversions' full line of standard, proven "whole" Synchro/Resolver input and output type converters, **CT's and CDX's etc**...are used to populate the same standard PCI compliant CCA's.

Differing **converters may be mixed** to minimize real estate of any type. Both industrial

and COTS military grade **(extended) temperature** range versions are available.

100% Transformer **Isolation** is offered for **all** AC **I/O**, and various Isolated DC converters are available as standard product, **eliminating** concerns for **ground-loops**, ground interjected (intermittent and ghostly) **field noise**, **inductive surges**, differing potentials, and **high voltage field transients** from effecting the card itself, t**he sensitive PCI bus backplane** and **any other device** or **system sharing these signals.**

Maximum **versatility** has been employed on all PCI-Synchro™ products to assure the universal compatibility in addressing, timing, system, and specific computer **hardware, software, and backplane independence.**

All PCI-Synchro™ cards are configured with full plug and play capabilities, and are ideally suited to real-time applications because there is no PCI-Bus latency. The interface is a solidly reliable / high speed, true **32 bit "Long-Word-Level"** register access.

Status registers are provided for various levels of **fault indication, Built-in-Test** (where applicable), and configurations criteria.

A sample demonstration program written in Visual C++ is provided with source code, which may be easily modified by the user for his/her particular application.

The demonstration program (with source code) is provided for **Out-of-the-Box testing, without any user programming required.**

All cards maybe user configured **completely Bus-Powered**, with no external power supplies required. Power source jumpers are provided to select the +/-12VDC power source as "Bus-Powered" or as external inputs via the onboard terminal block.

The use of "proven whole converter" modules assures the user of guaranteed system accuracy and dynamics ability, long term conversions integrity and stability.

All wiring is made through standard or 50 pin "D" style connectors.

Isolated D-A/A-D Converters, Digital Modulators, Demodulators, AC Reference Supplies & related function converters may be used with these cards. The availability of synchro/resolver I/O on the PCI Bus, allows the user to configure his systems with resident test ability, switched manual or automatic self test, and simulation type programs.

PCI-Synchro™ Series
Input Channels.

Description

The PCI-Synchro™ cards facilitate up to 8 isolated input channels, and are 1-8 continuously tracking synchro or resolver to **IBM PC/AT™** card converters, employing type 2 ratiometric tracking converters for **high performance** applications.

They will accept any group of up to 8 individual , or 4 sets of paired multispeed; 3-wire **Synchro**, or 4-wire **Resolver** inputs, or **2-4 wire LVDT/RVDT inputs**; over a frequency range of **50Hz. to 10KHz.**, and convert them into 10-16 bit words of natural binary data.

Data is addressable in a **long word 32 bit format** over the IBM PC/AT™ backplane. Data made available to the bus is continuously updated (tracking) without interruption; output **data is accurate, monotonic, and always fresh** up to the maximum tracking rate of the converter.

When address is applied, and normal bus variables are set; the converters **data bits are**

latched simultaneously into separate buffered registers to prevent false reads.

A Forced Self-test feature is optioned "-WS" that allows on program command an internal disconnect of inputs to read a 30^{o} fixed analog test.

A continuous Built-In-Test (BIT) output representing the tracking mode, Loss of signals, Loss of Reference, **for status report are provided for each input channel.**

No external transformers, modules or signal conditioners are **required.** The synchro/resolver converters used feature **internal** solid-state or **Transformer Isolated** Scott T's that accept **direct field voltage inputs.**

Isolation
Transformer isolated units are **completely isolated from each other and the backplane** for all the reference signal lines.

This completely isolated the card and effectively the whole computer from all field wiring, and especially from any other device sharing these signals: eliminating concerns over; troublesome ground loops, ground induced noises, differing potentials, ground interjected spikes, and ghostly field noise that so frequently takes down entire systems.

Bus Powered
No external supplies required! All units are available as **completely bus powered via the PCI backplane** or as external inputs for the +/-12VDC supplies. Power required is +/-12.+3, and +5VDC, and the source is for the +/-12VDC is strap selectable for power sourcing via the ISA backplane or as external power via the I/O connector.

Options currently available include: DC velocity outputs, internal reference supplies, quadrature pulse train outputs, high reliability and mil-grade extended temperature range units. Units with on-board DC to DC converters also available.

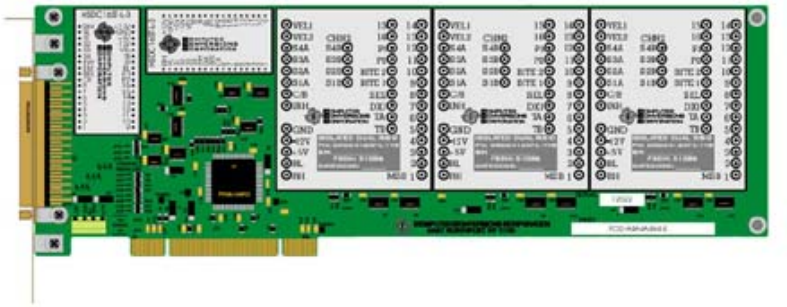
Additionally, PC/AT cards can be configured to meet particular OEM requirements. Many perspective custom applications can be configured with 100% standard product.

PCI-Synchro^{TM} Series
Output Channels

OPTIMUM THERMAL MANAGEMENT

- Digital to Synchro/Resolver
- Vector Generators (& DC Sine/Cos)
- Solid State Control Transformers
- Dual Channel Synchro Amplifiers
- Isolated D-A's, Mod's/LVDT out's
- Mix/Match w/ S-D/RD's On-Board
- Real Time, In the Loop, Active Control Differentials, CDx's
- Reference Powered D-S's
- Dynamic S/R & Vector Rotators
- Proven "Whole Std. Converters
- Optimized Thermal Management
- 100% Transformer Isolated I/O
- No External Parts or Power Required
- Reference Powered (NAVAL) Options
- 10-16 Bit Resolution Programmable
- Virtually Indestructible Outputs
- 1.2 to 4.5 VA Models
- True 16 Bit Word Level Interface
- Mix/Match Input & Output Types
- Simultaneous Fine/Coarse
- Transmit for Multispeed Outputs

VIRTUALLY INDESTRUCTIBLE OUTPUTS



Description

The PCI-Synchro™ output channels are complete **PCI to Synchro and Resolver** output converters used for self-test, simulation, and control in military and industrial applications.

The PCI card is populated by 1-3 **Industry Standard Digital to Synchro and /or Digital to Resolver Converters, CT's or CDX's** mixed as specified for the application.

32 Bit long word level double buffered inputs are provided **on each channel a**nd addressable via independent or successive address.

The **true 32 Bit architecture** allows the converters to be written to as single word writes, **without any** ear of low byte/high byte **ambiguities.**

All of these converters feature **virtually indestructible short circuit proof outputs, over voltage, and transient protection, internal solid plate heat sinks, and automatic thermal cutoff**

Complete transformer isolation is provided on all reference inputs and signal outputs to: eliminate ground loops, differing potentials, and to keep any high voltage transients from affecting the PCI backplane.

Both **low cost "DSL/DRL Series" and reference powered "DSP Series" converters** are offered to drive on board **loads up to 4.5VA** and external "booster amplifiers" are available to drive **loads up to 150VA.**

DSL/DRL TYPE CONVERTERS

The **DSL/DRL** series are **low cost models** that are powered from either +/-15VDC or optionally +/-12VDC supplies. The DC supply source may be field selected as sourced by and external input or **Bus Powered for the PC/AT backplane.** The power supplies should be verified as capable of providing the required current.

Standard +/-12VDC units drive 1.2VA loads, and standard +/-15VDC units drive 1.5VA loads. Higher drive models are available.

Frequencies of 400Hz. and higher require no external components, and two different types of output transformers are offered for 50-60Hz. units.

These units occupy one full size with a single width slot.

Absolute value, vector units "active" Differentials, Dynamic Rotators, and 2-10Hz. models are available as standards for motor control apparatus and realtime simulators.

DSP TYPE CONVERTERS

DSP series 60Hz. units do not require any external transformers, and drive all 50, 60, & 400Hz. loads.

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Standard Synchro Loads		
MIL-STD Class MIL-S-20708	**Impedance ZSO**	**Load VA**
26v 08 CT 4c	100+j490	0.2784
26v 11 CT 4d	21.0+j132	1.0414
11 CT 4e	838+j4955	1.6118
15 CT 4b, & C	1600+j9300	0.8584
15 CT 6b, & c	1170+j6780	1.1773
18 CT 4b, & c	1420+j13260	0.6074
18 CT 6b, & c	1730+j510	4.491
23 CT 4, & a	1460+j11050	0.7267
23 CT 4b, & c	1950+j14000	0.573
23 CT 6, & a	1250+j3985	1.9417
23 CT 6c, & d	1350+j4300	1.7972
Notes: 1.) 6=60 Hz., 40=400 Hz. Units 2.) 26V=26V System, 11.8VL-L Signals else; 115V Systems, 90VL-L Signals Typ.		

The **DSP series** derives the output **power from the reference (RH, RL) i**nput and **requires no +/-15 or +/-12VDC supplies.** This series features a very efficient, internal pulsating power supply that converts the reference input into a high power, angle weighted, synchro output format.

400Hz. **DSP** units **drive up to a full 4.5VA load,** and 60Hz. units drove full 1.5VA load direct requiring external output transformers.

The DSP units occupy one full size double width slot (DSP modules are.8H).

OTHER CONVERTERS

By looking at the model selection guide you will notice, PCI Series models allows, the choice of both Read and Write type converters. Units with Isolated Digital to Analog, or LVDT converters, multispeed conversion, Vector Generators, Control Transformers, and Differentials etc...can be configured by requesting “IBB Series Extended Model Selection Guide” from the factory

Request Full Data Sheets

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