The Avionics Communications Specialists

www.icsaero.com

ICS

Innovative Control Systems, Inc.

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Innovative High Tech Solutions for Leading Edge Aerospace Companies

Who and What is ICS?

It's a common question. ICS is an Aerospace Equipment Manufacturer that started building custom engineering test equipment in 1990. Our early days were spent mainly for one company. That company was Sperry Aerospace in Phoenix AZ which later became Honeywell International. Since that time our company has grown to also design and produce Flight Test Data Acquisition Systems, Avionics Production Test Equipment, Ground Maintenance & Support Equipment, Simulation Equipment, and most recently flight worthy avionics. Our first flight worthy product produced at ICS was in 2010 and is used on board the Gulfstream G650.

At ICS, we have a lot more capability and professionalism than many would expect to find in a smaller organization. Our engineering team has experience in many disciplines with particular emphasis in areas of Aviation Communication Protocols. We lead the world in knowledge and equipment for the Honeywell ASCB-D Bus and were the first company worldwide to have ARINC-825 data bus test and simulation equipment. We are one of three founding members of the CAN Aviation Alliance. Our hardware and embedded firmware was used to validate the ARINC 825 standard by ARINC.

CAN AVIATION ALLIANCE

- **Founded 1990 in Phoenix Arizona.**
- **Privately Held Arizona Corporation**
- **ISO 9001:2008 with SAE AS9100b Certification**
- **I.A.Q.G OASIS Identification Number OIN: 6130188126**
- **Commercial and government entity (CAGE) code: 1YGW8**
- **North American Industry Classification System (NAICS 2007)**

–334511 Aeronautical systems and instruments manufacturing
–334511 Flight recorders (i.e., black boxes) manufacturing
–336413 Other Aircraft Parts and Auxiliary Equipment Manufacturing
–334111 Microcomputers manufacturing
–541330 Electrical Engineering services
–541512 Computer Systems Design Services

- **DNB Duns Number: 80-130-8354**
- **ICS Federal ID: 86-0755506**
- **Supplier classification: "Small Business"**
- **Honeywell supplier since 1995.**
- **Supplier of Production Parts to General Electric Aviation Systems**

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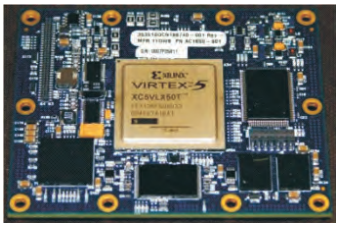
A Few Product Examples



HW / SW Design to DO254, DO178

Custom Flight Test Acquisition

Design and FAB of Engineering Development Tools

Industrial Computing Platforms

Design and Production of Avionics

Production Test Fixtures

Data Bus Interfaces

Ground Test and Maintenance Products

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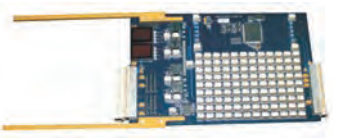
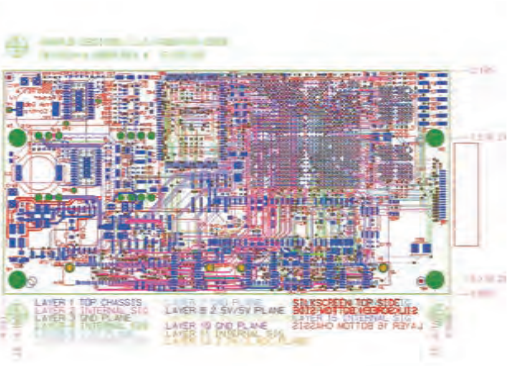
Integration & Fabrication Services

- Custom Built to Order Test Equipment Racks and Benches
- Custom Built Industrial Controllers in Rack Mount, ATR, and Embedded configurations.
- Installation and Setup of Customer Supplied Software
- Turn-Key systems built, loaded with customer software, and tested.
- One Stop Shopping Location. Pair down your supplier base. Let us deal with the headaches of hundreds of vendors.
- Custom Production Test Hardware and Software Engineering
- Build to Print of Customer Designed Equipment.
- Fabrication of custom system components not available off -the-shelf.



Hardware Design, Documentation, Implementation

- Custom Avionics Hardware Designs
- Custom Communications ARINC-825, ASCB Version D, ASCB Version A/B/C, AS5643, IEEE 1394, CAN, AFDX, ARINC-664, HDLC, SDLC, PCM, ARINC 429, Parallel, SCSI, Etc.
- PCI, cPCI, PCI-Express, PCI-X, PC104, PC104+, VXI, PMC, M Module, VME, Embedded EBX.
- FPGA/CPLD Designs in Verilog, VHDL, and schematic based.
- DO-254 Documentation and Verification
- High Speed Synchronous Designs Ghz plus
- High Speed Impedance Controlled Board Layout & Design.
- Surface Mount & Through Hole Designs.
- Test Fixture Design & Fabrication.
- Portable Test Equipment.
- Solid State Power Control.
- Embedded CPU & I/O Boards
- Custom PC Fabrication
- System Specification and Build to Spec of Desktop PCs, Industrial PCs, Data Acquisition Systems, Test Platforms, and Test Equipment.
- Commercial Off The Shelf (COTS) equipment customization for specialized application



Software Design, Coding, Documentation and Testing

- Windows XP and Windows Vista Application Development.
- Linux, Embedded Linux, Application Development Including Real -Time.
- Linux Device Driver Development.
- Embedded Operating Systems, Embedded Linux, Embedded PCs.
- Hardware Control Applications.
- User Interface Software.
- Documentation and testing to RTCA DO-178C
- Development in C, C++, Borland C++ Builder, Pascal, Borland Delphi, FORTH, Assembly Language, BASIC, Fortran.
- Assembly, C, C++ OOD Experience with Legacy 8085, 8051, 8096, 80196, X86, Pentium, 68K, 68332, TMS320 DSP, Z8002, Z80, 6502, 6809, and Power -PC processors.
- TCP/IP Embedded & Non-Embedded Network Programming.
- National Instruments Labview
- Flight Simulation and Data Visualization through our Partner Companies.

Avionics Related Services & Support

- Flight Test Engineering
- Avionics Systems Engineering.
- Flight Test Instrumentation Engineering.
- Flight Test Ground Station Data Engineering
- Avionics Software Engineering to DO178C
- Avionics Hardware Engineering DO254
- Electrical compliance and testing DO160
- Production Test Hardware and Software Engineering
- Mechanical Design
- Test Fixture Design & Assembly.

CAN AVIATION ALLIANCE

ARINC-825 CANAerospace

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MICHAEL STOCK FLIGHT SYSTEMS

WETZEL TECHNOLOGY

Munich, 31 Dec 2009 - Innovative Control Systems of Phoenix, Arizona together with Stock Flight Systems and Wetzel Technology of Germany have announced the immediate availability of the companies PMC825 reference system for ARINC 825 (CAN) and CANaerospace networks.

The transatlantic consortium of three companies, (two of them members of the ARINC CAN Technical Working Group) has turned the original hardware/software system which was used to ensure the consistency and integrity of the ARINC specification 825 during the standardization process, into a set of products suitable for ARINC 825 system designers, equipment vendors, aircraft OEMs and airlines. The original equipment was developed in 2007 to support the ARINC 825 specification development activities and the reference systems have been shipping to customers since November 2009.

The PMC825 system includes a PMC format module supporting 4 fully independent, optically-isolated ARINC 825 channels or 8 fully independent non-isolated ARINC 825 channels. Each module also contains a 10/100/1000 BaseT Ethernet interface and a Bus Mastering PCI interface operating at up to 64 bits and 66 MHz for data exchange to the host platform.

The PMC825 modules can work as either standalone systems linked to host computers via Ethernet/UPD/IP or as a plug-in board for computer hosts offering PMC, PCI, Compact-PCI, PCI-X, PCI-Express or VME interfaces. The PMC825 PCI interface fully supports 3.3V or 5V signaling up to 66 MHz. The PMC825 is supplied with an Application Programming Interface (API) for Ethernet/UDP/IP, and VxWorks, Linux and Windows XP/7 Drivers. Additionally, it is fully integrated into the TechSAT ADS2 System Integration Bench (SIB) and ADS3 New Generation Test System (NGTS). TechSAT is a leading supplier of Test & Integration Systems for the aerospace industry and a strategic partner of the PMC825 consortium.

The PMC825 hardware uses a Xilinx Virtex-4 FPGA with dual embedded PowerPC 405 processors running at nearly 200 MHz each. The CAN 2.0B interfaces are implemented with licensed Bosch CAN controller IP cores to ensure compatibility with the CAN standard and to allow precise hardware timing and control over the transmission and reception of ARINC 825 messages. The Xilinx FPGAs provide local buffering and 30ns time stamp resolution for all CAN messages. The PMC825 also supports listen only and loopback modes. An onboard MicroSD interface is included on each module for data acquisition storage and for module configuration information.

A standalone enclosure is optionally available for the PMC825 module. The PMC825 module is integrated into a rugged aluminum box that can be powered from 9-36 VDC allowing it to run from standard 14V or 28V DC aircraft power buses and may be used for flight test applications. The PMC825 is delivered together with the eXtended CAN Tool (XCT) software, a powerful window-oriented ARINC 825 network toolbox for Linux and Windows XP/7. Among other features, XCT contains an ARINC 825 Communication Profile reader and editor, graphical data representation, network traffic/error statistics and an interface for ARINC 825 Periodic Health Status Messages and Node Services. XCT is compliant with the original ARINC specification 825 as well as supplement 1 which will be released January, 2010. In addition, it provides full support for the CANaerospace protocol and the ARINC specifications 812 and 826 which are both based on ARINC 825.

According to Michael Stock, principal of Stock Flight Systems, "the PMC825 is the ultimate product to implement, test and verify ARINC 825 designs and to ensure that products or entire ARINC 825 networks are compliant with the ARINC specification 825. The reason for this is simple: Experience. We have spent over 4 years helping define every detail about ARINC 825 Network Layers, Communication Profiles, Node Services and the other specific features because we belong to the Technical Working Group that developed the ARINC 825 standard."

ICS Technology Partners

ICS has complementary business partnerships with several companies.

These partnerships allow our respective companies to work in unison. Our potential customers work with only one contact company, all other project management occurs behind the scenes. Our individual capabilities allow us to take on much larger jobs and to work as a very large corporation without the associated overhead.

Innovative High Tech Solutions and Support For Leading Edge Aerospace Companies

To request quotations, general information, or to place orders, please contact us at:

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ICS offers many products and services which may not be listed here. Please check our website for the latest news and updates on new products and services.

Design, Manufacture, and Production of Avionics Test and Simulation Instruments for the Aerospace Market.

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