Model 2900AP
REAL-TIME TELEMETRY DATA PROCESSOR

DELTA TELEMETRY SYSTEMS

ACROAMATICS
TELEMETRY SYSTEMS

KEY FEATURES

- 1 to 16 PCM Stream Processor
- Real-time, OS Independent Telemetry Processing
- Industry leading ADAT widget based Display, Analysis, and user system dashboard
- Card Level, Micro-coded Software Decommutation
- Powerful real-time SHARC® DSPEU & Derived Processor
- Network Extendable via Integrated Remote Services
- IRIG 106 Standards - Ch 4 Class1 & 2, Ch 7, 8, 10/11, TMATS, CVSD, CCSDS, 218-20 TMoIP
- Advanced Real-time Raw and Processed Mission Data Recording
- *NEW* 1M Fixed/64K Dynamic Word 40+ Mbps Programmable PCM Simulator/ Encoder
- *NEW* 50% faster PCM Decom Processing Rates
- *NEW* 3x faster Low Latency EU and Derived Processing and Data Distribution Rates
- Real-time Card Embedded Low Latency CVSD Cockpit Audio Processing
- Multi-Band PCI RF Receiver, TMoIP, Discretes, GPS and more

GENERAL DESCRIPTION

Model 2900AP TDP systems easily accommodate requirements that range from one to eight (8) IRIG 106 Chapter 4 Type 1 & 2 PCM stream decommutation, real-time EU processing, and analysis. Each individual telemetry input stream is definable as to its unique stream attributes, such as rate and format definition, lossless PCM format switching, conditional async embedded frame decommutation, packet protocol PCM processing (CCSDS) and merged low-latency EU and derived processing. COTS 2900AP hardware and system desktop management software deliver a uniquely powerful and flexible Windows application independent end-to-end low latency telemetry processing solution.

A variety of State-of-the-Art Acroamatics PCIe form factor TM acquisition, formatting, and processing modules provide a scalable, integrated low latency card embedded processor framework from which to create the optimum range and engineering lab telemetry processing and data delivery tool. User friendly Acroamatics Telemetry Software Suite desktop tools enable users to set-up TDP processing modules to handle even the most complex PCM formats in real-time with ease, delivering thousands of complex derived polynomial (to 7th order) values and supporting critical safety of
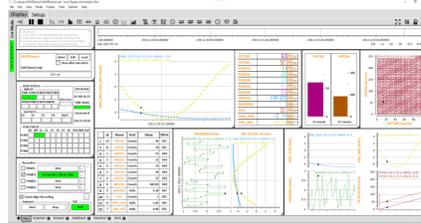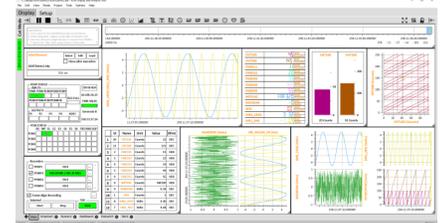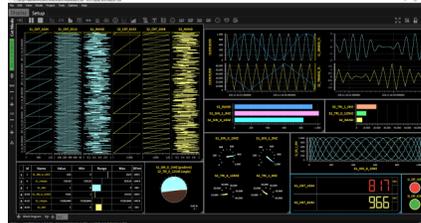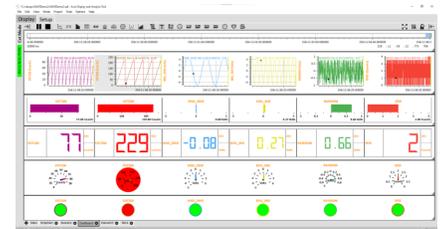
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OVERVIEW

The Acroamatics 2900AP Telemetry Data Processor (TDP) provides ample processing power to meet current and future system real-time mission data display, recording, and networked data services.

Each 2900AP TDP is:

- Built to comply with PCI bus standards - accepts standard PCI & PCIe cards of all types
- Configured to operate under Windows 11 DOD approved 64-bit operating system (SHB & TPM certified) or Redhat Linux.
- Meets requirements ranging from single stream instrumentation lab to multi stream range control room and mission data center telemetry server configurations.
- Scalable to support very simple to extremely complex low latency PCM decommutation, processing, recording, and networked data services
- By combining high-performance Acroamatics telemetry interface and processing cards with select 3rd party PCI modules we have enabled the Model 2900AP TDP to support a wide variety of "turn-key" range and lab telemetry configurations.

ACROAMATICS TELEMETRY SYSTEM SUITE (ATSS)

- Includes GUI applications to set up and operate the range of system hardware configurations.
- Instantly configure the system using project setup libraries managed by ATSS, or use Excel or TDP script files to define their own mission TDP configuration management scheme.
- Configure and initiate mission support operations from your own unique ADAT dashboard layout or use our API to create your own unique application interface.

PCIE CHASSIS

The standard Model 2900AP is based on a purpose-designed, rugged industrial style 4U RETMA rack-mounted 12-slot PCIe chassis configured to specifically meet the demands of rigorous T&E TM ground station & portable control room applications.

- Lightweight
- Shock resistant
- Features lightweight and corrosion resistant all aluminum construction
  - Standard features include
    - Built-in LED PCM status display panel
    - Rear panel bulkhead mount BNC I/O
    - Dual hot-swappable 800W Power Supplies
    - Rugged internal card cage
    - Enhanced thermal management.
  - Standard system options include·
    - Wide variety of disk storage configurations
    - High visibility 8" touchscreen LCD front panel display/operator interface.
  - Standard Model 2900AP chassis provides:
    - 12 PCI card slots
    - 4 front panel removable hard drive/SSD Carriers
    - CD\DVD/Bu-Ray R/W drive
    - Compact 1u, 2u, and lunchbox alternatives

See product data sheets for more information.

CHASSIS CPU

Standard Model 2900AP chassis are configured with an industrial grade Intel Core I7 processor based host SBC configured with 32GB of RAM, TPM2, and operating under Windows 10 64-bit OS (Pro or LTSC) or Linux RHL7.x OS. Chassis system features include advanced server support for TPM device encryption support, dual-head HDMI display ports, 6-8 each USB-3, and dual 10/100/1000/10000 NIC server support. 2900AP host processor and interface configurations are routinely updated to include the latest INTEL processor, networked communications, display and memory features. System configurations are easily adapted to meet specific customer signal I/O, processing, display, and data product development and distribution requirements. The Model 2900AP has is a purpose designed, industrial grade PCI/PCIe host fabricated of aircraft grade aluminum by Acroamatics in Goleta California, using select in-house designed and certified industrial computing components and assemblies configured specifically to assure trouble-free operations in rigorous test and measurement environments over the long-term.

ADAT DISPLAY, ANALYSIS, & OPERATIONS SOFTWARE

ADAT is a virtual TM processing platform console program that allows users to create customized control, status, and data display layout pages using widget based set-up tools. Simple to master and powerful to use, ADAT serves as a superior display and analysis environment and an effective TM front-end operations console.

ADAT supports Acroamatics' TM card direct mission recording, playback, and analysis of measurement data with an assortment of user control, status, and configurable display types. ADAT setup and display development can be done without hardware on any computer platform, as can playback and analysis of recorded mission data files. Most importantly, ADAT is fully integrated with all Acroamatics hardware telemetry processing products. ADAT supports operation in both Windows 10 and Linux RHL7 environments and is the ideal complement to our data processing card and system products hosted by either of those common operating systems.
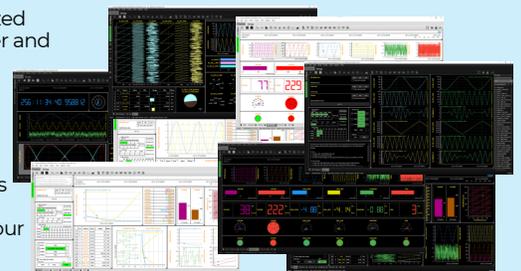
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PCIE TELEMETRY CARDS

Acroamatics cards can process anything from a single PCM stream to sixteen streams of complex telemetry data simultaneously in a single chassis, and now include the option of a new generation integrated high performance RF receiver/demod PCI module. The following descriptions of the functions supported by the individual cards is summary in nature only.

Refer to specific module data sheets for complete capabilities descriptions. Assistance prior to ordering is recommended to ensure proper configuration.

1632AP-2 PCIE PCM DECOM

The dual stream 1632AP-2 PCIe multi-function PCM co-processor card serves as the multi-channel decommutator "backbone" of Acroamatics multi-channel and card level telemetry product lines. The 1632AP-2 is a powerful 4th generation processing card that features several new functional capabilities, dynamic program driven embedded processing, and enhanced processor speed which is unmatched in the industry. The 1632AP is a multi-function program driven processor card that operates both as a stand alone dual stream decom/simulator/time/bit sync and output data formatter & distribution device and as a an integrated element in a high channel count telemetry processing and data server system. The 1632AP card serves as a dynamic PCM frame synchronizer and data decommutator, delivering high rate signal processing performance in a Windows application free real-time processing environment. It handles the most complex conditional, format switched, stream embedded capable high rate decom and output processing requirements. It utilizes user defined micro-coded "soft-decom" processing techniques that runs within its card resident telemetry co-processors with absolute determinism, producing precisely correlated and repeatable data/time output data products. Model 1632AP processing and input data rates have increased to well over 40 Mbps, with a powerful integrated programmable simulator for each stream to match.

1635AP PCIE PROGRAMMABLE DATA STREAM PROCESSOR AND DATA DISTRIBUTOR

Another recently upgraded component of Acroamatics' low-latency telemetry processing architecture is the recently re-designed Model 1635AP card. Installed in a system in a single or dual card EU and data distribution arrangement, these new cards allow merging and processing of data from up to eight Dual 1632AP decom modules (16 independent streams) supporting deterministic IRIG time tagging, multi-format CVT and RMA driven data recording and networked data distribution, with multiple on-the-fly data reformatting and select data output options. The 1635AP supports low-latency complex data merging and distribution, outputs multiple data products via dedicated card resident network interfaces, and effortlessly produces low latency / real-time processed data output products using its unique on-board SHARC® DSP embedded processor and 300 telemetry algorithm library. Sequential algorithm chaining and derived "if-then-else" processing is supported, as is the generation of unique user-defined logical data expressions. See the Model 1635AP PCIe product data sheet or request supporting technical literature for more details.

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674DM DUAL 40 MBPS BIT SYNCHRONIZER MEZZANINE

The 674DM PCM Bit Synchronizers include state-of-the-art features, including tunable data rates from 8 Hz to 40 MHz in ALL codes, integral randomization, encoders, BERT, multiple selectable input sources, AGC and DC restoration circuitry, and programmable digital filtering for optimum data recovery. Sophisticated PLL (phase-locked loop) circuitry synchronizes a clock to the incoming signal to extract digital data from input PCM stream data. They provide bit sync performance and noise specifications comparable to full size PCI and PCIe card devices and top ranked chassis based instruments.

MODEL 682M D TO A CONVERTER MEZZANINE (COMPANION TO MODEL 1635AP PDSP)

The Model 682M is a mezzanine daughter card designed to mate to and work in conjunction with the Model 1635AP PCI PDSP card. Two configurations are available. Model 682M-16 provides a total of 16 channels of 12-bit D-to-A output and the model 682M-32 provides a total of 32 channels of 12-bit D to A output, plus 16 discrete outputs and 16 channels of deterministic 12-bit A-to-D input to accommodate the merging of local analog measurement data with real-time telemetry stream inputted data results.

See the product data sheet for more information.

MODEL RDM-207 LL/UL/S/C & IF BAND RECEIVER/DEMODULATOR/BIT SYNC MODULE

Now available within most TDP family products is a new, affordable, off-the-shelf PCI card based line of integrated RF Receiver/Demod from our GDP Space sister division. Based on over two decades of experience in the satellite receiver marketplace, the RDM207 supports L/S/C band acquisition and IRIG Tier 0/I/II, FM/FM, PCM/FM, & most IRIG approved code demodulation and bit synchronization- delivering best-in-class performance available today in a modular, single card PCI format solution. The RDM207 is unique in that it simultaneously supports IF and video analog outputs as well as bit sync'd clk/data PCM and TMoIP (218-20) or Chpt 10 UDP networked data outputs.

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Model 2900AP TDP systems easily accommodate requirements that range from one to many (to 16) Chapter 4 Type I & II PCM decommutation. Each stream supports unique stream attributes, native IP TMoIP / CH10/11 input support at full rate and channel capacity, lossless PCM format switching, embedded frame decom, and low-latency derived and concatenated processing using COTS 2900AP hardware and system operator software. Choose from a variety of Acroamatics and 3rd party vendor PCI form factor modules to add receivers, data bus and custom data interface modules.

User friendly Acroamatics Telemetry Software Suite tools enable users to set-up TDP processing modules to process extremely complex PCM formats in real-time via our OS application independent card level embedded "soft-decom" processing methods. IRIG Chapter 4 (Type I & II), 5, 7, 8, 10 and NASA CCSDS format standards compliant.

MODEL 2900AP SPECIFICATIONS

Physical	4U aircraft quality aluminum Rack Mount PCI Chassis (22.5" depth), 38 lbs Avg Weight 12-
Backplane	Slot Passive Backplane (PCIe or mixed PCIe/PCI on request) supported
Host CPU	Intel Gen 9+ i7tm w TPM2, hosted by Windows 11M 64-bit OS or LINUX RHL7/8
Networking	Dual Ethernet 10/100/1000/2500
USB	6 USB 3.0 (2 front panel & 4 rear panel mounted),
Memory	Minimum64 GB (min)
Storage	Quad 1TB (two populated) SSD SATA-III 2.5" Front Panel Removable Drive System-options include RAID or user specified storage configurations
Video	SBC embedded hi-res dual HDMI monitor or optional accelerated graphic card
Power	Dual Hot Swappable 800W PS/2 Power Supplies
DVD	Slim CD/DVD/Blu-ray R/W drive
Indicators	LED Status for installed telemetry components, with Bi-color Power Supply Alarm/Reset status
Front Panel	77 ea. Rear Panel Flush-mount BNC / Twinax Type, to customer specifications Standard configuration to include audio, LED System Telemetry Status Display, HDD Carriers, Power Switch, and CD/DVD/Blu-ray drive. Options include SATA 3, CVSD audio, SD/PCMCIA card reader 8" high intensity, and LCD Touchscreen operator interface. Additional customer specified front and rear panel options and layouts quoted on request.
Mounting	20" Ball bearing Rack Slides, included
Cooling	Active cooling, dual 5" fans (CPM 51 spec.)
Environmental	Shock 6G, Non-operating 50G
Vibration	Operating 0.5G, 5 to 2000 Hz, Non-operating 1.2G, 5 to 500 Hz
Temperature	Operating 0 to +40° C, Non-Operating -40 to +86° C.

SOFTWARE INCLUDED

Acroamatics Telemetry Software Suite (ATSS) software set-up and ADAT (Acroamatics Display and Analysis Tool) Data Display, Analysis, System Dashboard Operations system software are provided installed in each TDP as the integrated operations hub of your new telemetry acquisition and processing solution. ATSS consists of a closely integrated pre-mission TDP system set-up program (TDPSet), and Acro Display and Analysis Tool (ADAT) user configurable desktop data and operations dashboard programs combine with a variety of real-time and post mission output data tools, which include recorder, networking, ADAT integrated system diagnostic, analysis, and customer data publishing tools & widgets. Supported Operating Systems include Windows 11 Pro 64-bit, Win 10 Enterprise LTSC, and RHEL 8.x, off the shelf.

CUSTOM CONFIGURATIONS AND SPECIAL DESIGNS

Acroamatics has the hardware and software expertise necessary to meet the most complex processing challenges. Our system and card level product capabilities allow us to quickly and effectively configure, enhance, and field solutions in response to individual requirements and evolving range and aircraft testing standards. Aircraft data buss, receiver, communications modules and a wide variety of software application tools are supported by the Model 2900AP with no special modification. Acroamatics is an experienced integrator of large multi-vendor systems, with facilities and expertise to assemble, test, and deliver solutions specifically tailored to your needs, from individual portable to large integrated rack based solutions.

CUSTOMER SERVICE

When you call Acroamatics for support you won't have to work your way through an automated system or an anonymous help desk. You'll be connected directly to the engineers and programmers who designed your system to quickly resolve problems.

WHY ACROAMATICS

Over fifty years of experience, far-ranging expertise, excellent products, and outstanding support make Acroamatics not just a telemetry system supplier, but a partner you can rely on to meet both present and future needs as they arise.

Inquire today to learn more