



Real-time Telemetry Data Processor Model 2900AP

Features:

- 1 to 16 PCM Stream Processor
- Real-time, OS Independent Telemetry Processing
- Card Level, Micro-coded Software Decommuration
- Powerful real-time SHARC® DSP EU & Derived Processor
- Network Extendable via Integrated Remote Services
- IRIG 106 Standards - Ch 4 Class 1 & 2, Ch 8, CH10, CH9 TMATS, CVSD, CCSDS TMOIP
- COTS Interfaces - include IADS, ILIAD, DEWESoft, LabViews and MatLab
- Advanced Real-time Raw and Processed Mission Data Recording
- *NEW* 1M Fixed/64K Dynamic Word 40+ Mbps Programmable PCM Simulator/Encoder
- *NEW* to 50% faster PCM Decom Processing Rates
- *NEW* to 3x faster Low Latency EU and Derived Processing and Data Distribution Rates
- *NEW* Real-time Card Embedded Low Latency CVSD Cockpit Audio Processing
- *NEW* Multi-Band PCI RF Receiver, TMOIP, Discrettes, 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 decommuration, 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 decommuration, 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 PCI 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 range output functions with deterministic reliability and accuracy.



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 cards of all types
- Configured to operate under Windows 10 DOD approved 64-bit operating system (SHB & TPM certified)
- Meets requirements ranging from single stream instrumentation lab to multi stream range control room and mission data center telemetry server configurations.
- Scalable to accommodate 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 the Mission Console menu, or Control individual TDP functions through specific GUI tools.

PCI Chassis

The standard Model 2900AP is based on a purpose-designed, rugged industrial 4U RETMA rack-mounted 12-slot PCI chassis configured to specifically meet the demands of rigorous T&E TM groundstation & 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 500W 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.

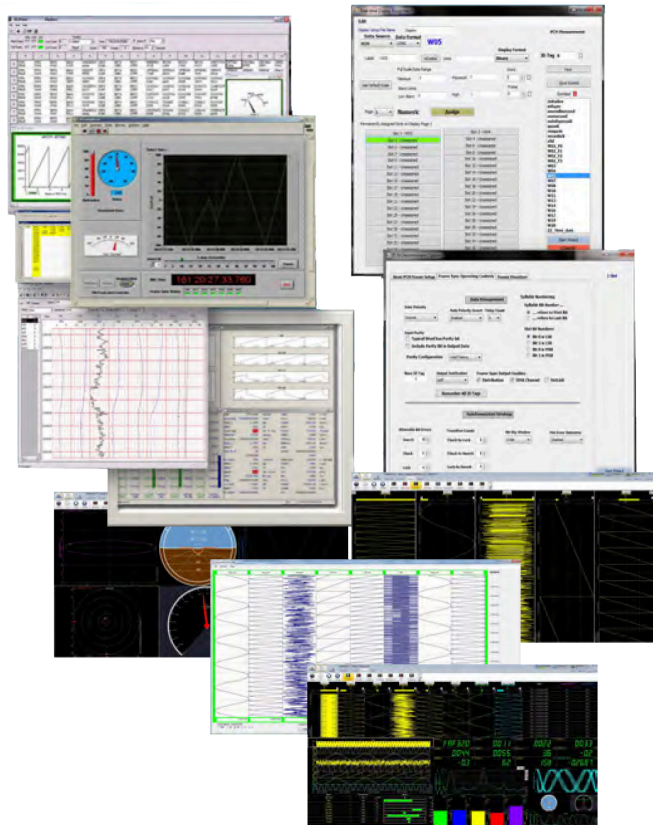
Standard Model 2900AP chassis provides:

- 12 PCI card slots
- 4 front panel removable hard drive/SSD Carriers
- CD/DVD/Bu-Ray R/W drive
- Alternatives for applications requiring just one or two slots:
- Compact (1u & 2u) Multi-Stream Telemetry Data Processor MD2500AP chassis options

See product data sheets for more information.

Chassis CPU

Standard Model 2900AP chassis are configured with an industrial grade Intel Quad-Core I7 processor based host SBC configured with up to 20GB of RAM and operating under Windows 10 64-bit OS. Custom host processor options include advanced server supporting TPM device encryption support, multi hi-res monitor and dual-head display, USB-2 &-3, and multi NIC server support. 2900AP host processor and interface options are routinely updated to include the latest INTEL processor, networked communications, display and memory capabilities, System configurations are easily adapted to meet specific customer signal I/O, processing and data requirements. Chassis is purpose designed of aircraft grade aluminum fabricated by Acroamatics in Goleta California, using select and carefully screened industrial computing components.



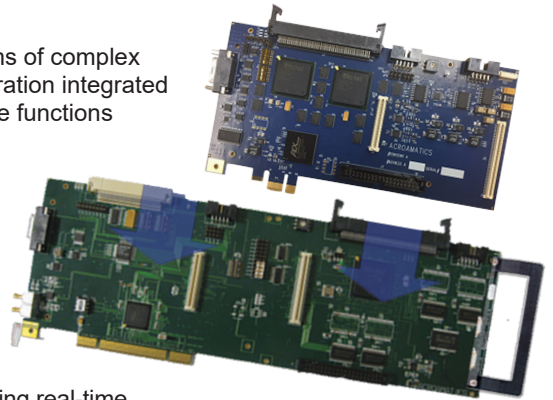
PCI Telemetry Cards

Acroamatics cards can process anything from a single PCM stream to eight streams of complex telemetry data simultaneously in a single TDP chassis, and now include 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.*

NEW Model 1612AP PCI and 1632AP-2 PCIe PCM Decom

The New 3rd generation Model 1612P PCI and dual stream 1632AP-2 PCIe multi-function PCM decom processing cards serve as the backbone of the Model 2900AP. Both are “drop-in” replacements for earlier generation cards that include important new functional capabilities and processing power improvements. The 1612AP and 1632AP-2 are powerful, self-contained, stored program “programmable software decom card level PCM frame synchronizer and data decommutator, delivering real-time decommutation and processing power in a true, Windows free real-time processing environment. It handles the most complex conditional, format switched, stream embedded capable, high rate stream decom and output processing requirements. It utilizes user defined micro-coded “soft-decom” processing techniques run within card resident real-time processors to provide six sub-frame decommutators, each with dual buffered memories for execution of instructions and data processing algorithms with absolute determinism and timing correlations. The data rate has increased to well over 40 Mbps, with a powerful onboard programmable simulator, 8 channel DAC, and other new capabilities added. In the case of the 1632AP-2, two complete PCM processing and sim processors have been combined on a single compact PCIe module.



NEW Model 1615AP PCI & 1635AP PCIe Programmable Data Stream Processor and Data Distributor

Another recently upgraded component of Acroamatics' low-latency telemetry processing architecture are the 1615AP. & new 1635AP cards. These new cards allow merging and processing of data from up to eight Model 1612AP or new Dual 1632AP decom modules, including IRIG time, network fed, HOTLink, PCI, and networked external inputs. They support low-latency complex data merging and distribution, outputs multiple data products via dedicated card resident network interfaces, and provides low latency / real-time processing of data using its on-board SHARC® DSP embedded processor. A library of over 300 telemetry algorithms is provided, sequential algorithm chaining and derived “if-then-else” processing is supported, as is processing of user-defined expressions. NEW use of dual 1615AP modules is now supported. See NEW Model 1635AP PCIe product data sheet or request supporting technical literature for more details.

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NEW Model 1611P PCI 40 MHz Advanced Digital Bit Synchronizer

This state-of-the-art Advanced Digital Bit Synchronizer features tunable data rates from 8 Hz to 40 MHz for all codes, supports all IRIG standard and randomized codes, and provides “best-in-class” bit error, jitter, and sync retention performance. Error performance is well below 1 dB of theoretical - typically in the 0.5 to 0.25 db range. Optional features include: Viterbi encoding/decoding, full featured Bit Error Rate Tester and PCM Format Verifier.

See 1611P data sheet for details.

NEW Model 470M Time Code Generator/Translator Mezzanine

The Model 470M is a mezzanine card that converts amplitude modulated IRIG time code signals to a digital representation for downstream analysis. It combines time code translation, generation and format simulation on a single plug-on mezzanine module. The card also generates an amplitude modulated serial IRIG A, B, or G output for use by external equipment, and a slow code output for annotating strip charts. The Model 470M mezzanine can be attached to the 1612AP card.

See the product data sheet for more information.

NEW Model 474DM and 674DM Dual 44 Mbps Bit Synchronizer Mezzanine

The 474DM and new 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 cards and the best range chassis based units, using Acroamatics Advanced Digital elements similar to the high performance Model 1611P, but sized to attach to the new Model 1612AP, 1622P, and 1632P decom single slot TM stream processing solutions.

Model 482M D to A Converter Mezzanine (Companion to Model 1615AP PDSP)

Model 482M is a mezzanine daughter card to the Model 1615P PCI PDSP card. Two configurations are available. Model 482M-8 provides a total of 8 channels of 12-bit D-to-A output. Model 482M-32 provides a total of 32 channels of 12-bit D to A output plus 32 discrete outputs and 16 channels of 12-bit A-to-D input with a 400 KHz aggregate sample rate.

See the product data sheet for more information.

NEW Model RDM-207 LL/UL/S/C & IF Band receiver/Demodulator/Bit Sync Module

Now available within the Model 2900 TDP family product line is a new, affordable, off-the-shelf PCI card based line of integrated RF Receiver/Demod cards. Evolved from our GDP Space sister division's over two decades of experience in the satellite receiver marketplace, the RDM207 supports IRIG Tier 0/I/II, FM/FM, PCM/FM, & other IRIG approved modulation codes - delivering best-in-class performance available today in a modular, single card PCI format solution.



Model 2900AP TDP systems easily accommodate requirements that range from one to many (to 8) Chapter 4 Type I & II PCM decommutation. Each stream supports unique stream attributes, such as rate and format definition, 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 Windows OS independent card level embedded “soft-decom” processing methods. IRIG Chapter 4 (Type I & II), 5, 8, 10 and NASA CCSDS format standards compliant.

Model 2900AP Specifications

Physical	4U all-aluminum Rack Mount PCI Chassis (22.5" depth), 34 lbs Avg Weight (Less Cards)
Backplane	12-Slot Passive Backplane (12 PCI or PCIe), Typical - others supported.
Host CPU	Intel Gen 5 i7tm, hosted by Windows 10™, DOD SHB compatible 64-bit OS, w TPM.
Networking	Dual Ethernet 10/100/1000
USB	6 USB 2.0 (2 front panel & 2 rear panel mounted)
Memory	16.0GB (min)
Storage	Quad 1TB (two populated) SSD SATA 3.5" Front Panel Removable Drive System- options include RAID or user specified storage configurations
Video	SBC embedded hi-res dual monitor (HDMI/DVI) or optional accelerated graphic card
Power	Dual Redundant 650W PS/2 Power Supplies
DVD	Pioneer DVR-K06 Slot Loading Slim DVD-RW or similar
Indicators	LED Status for installed telemetry components Bi-color Power Supply Alarm/Reset status
Signal I/O	80 ea. Rear Panel Flushmount BNC / Twinax / N Type, to customer specifications
Front Panel	Standard configuration includes audio, LED Status Display, HDD Carriers, Power, and CD/DVD/Blu-ray drive. Options include SATA 3, CVSD audio, SD/PCMCIA card reader 8" high intensity LCD Touchscreen operator interface. Additional customer specified front rear panel options and layouts quoted on request.
Mounting	20" Ball bearing Rack Slides
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 operating environment is provided installed in each TDP system as the integrated operations hub of your new TDP system. ATSS consists of a closely integrated pre-mission TDP system set-up program (TDPSet), TDP Mission Operator Console (MOC) set-up and desktop operations “environment”, and various real-time system editing (e.g. bit sync & decom “tweaking”), control tools (recorder & networking control panel), and various console display editing and system management utilities.

CUSTOM CONFIGURATIONS AND SPECIAL DESIGNS

Acroamatics has the hardware and software expertise necessary to solve even the most complex problems. Our system and card level product capabilities allow us to quickly and effectively design new or modify existing card level modules in response to individual requirements and evolving range and aircraft testing standards. Third party aircraft data bus, receivers, graphics, modules and a wide variety of software application tools are accepted by the Model 2900AP with no special modifications. 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.

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 thirty 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 your needs.