GDP SPACE SYSTEMS

ACROAMATICS
TELEMETRY SYSTEMS

PCI Real-Time Data Distribution and Programmable Data Stream Processor (PDSP) Model 1615AP

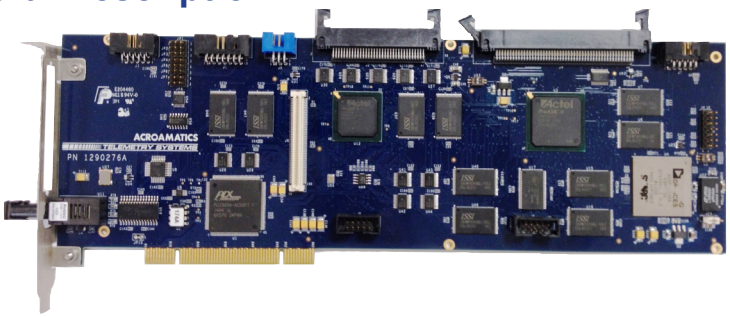
Features:

- Model 2900P Low Latency System EU Data Processor
- Deterministic Windows OS Independent Multi-Stream Data Server Support
- Companion processor to up to Eight (8) Model 1612 Multi-Function Decom Modules
- Serves as both Programmable Derived EU Processor and Output Data Formatter
- If / Then / Else Deriveds, and to 7th Order Polynomial Processing at 6+MS/sec
- *NEW* Dual 1615AP Option
- Optional Real-Time DAC
- Library of over 400 Processing Algorithms
- High Performance Program Driven Motorola SHARC® DSP Processor
- Low Latency 8 and 32 ch DAC, Discrete, and A-to-D Mezzanine
- Real-time Output data Serialize/ Encode, Multi-Stream

Related Products:

Model 2900AP
Model 3022AP
Model 2500AP
ATSS System Software Manual
Model 482 D to A
Model 1612P PCM Decom
Model 2425 DAC MUX

General Description



The Model 1615AP is a powerful low latency DSP based multi-stream telemetry Programmable Data Stream Telemetry Processor (PDSP). An improved version of Acroamatics 1605P PDSP card, the new 1615AP PSDP is a 3rd generation design which serves as the hub of Acroamatics industry leading card embedded processor based real-time range Telemetry Data Processing (TDP) product line. The new 1615AP supports EU and complex nested deriveds and up to 7th level polynomial data processing at nearly three times the rate of its predecessor. With no reliance on Windows OS application based processing, the Model 1615AP boasts a dedicated high speed 64-bit bus connection for the deterministic transfer of data from up to eight (8) Acroamatics companion 1612P PCM Decom modules.

In addition to high performance complex telemetry EU and derived processing, the Model 1615AP provides real-time output data product formatting in support of IRIG compliant real-time raw and processed PCM recording and seamless networked client data services to industry standard engineering third party display and analysis applications such as IADS and DEWESoft. Data processing set-up instruction importation for loading and set-up is integrated with Acroamatics TDP system set-up and operations software wuite (ATSS), which supports TMATS import/export and operator direct set-up editing via standard Acoramatics wizard based GUI software, EXCEL spreadsheet, and ACCESS based editors.

The Model 1615AP supports direct low latency DAC and Analog Discrete output and analog data input via optional companion 32 channel 482M mezzanine card or fibre output to the Model 2425 DAC Mux (to 1024 channels).

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Input Bus
The 1615P interfaces data from up to eight independent Model 1612AP PCM Decom cards, IRIG time, Ethernet, Acroamatics approved PCI bus resident 3rd party data input cards, HOTLink® fibre port, and optional Model 482P DAC & Discrete Output mezzanine card. Each datum is distributed as two 32-bit words. The first word is the identifier - containing time, status, and an ID tag, and the second word is the data. Up to 131,072 unique ID tags are supported.

Distribution
The 1615AP uses the ID tag value accompanying a datum to address a table in onboard memory that defines the processing, routing, and post-processing destination of each input datum.

Device Bus
Provides an interface to such devices as digital-to-analog outputs, digital discrete outputs, a local feedback to the Input Bus, serial HOTLink® output, and dual PCI bus host DMA channels.

Host Interface
Provides controls for running the 1615AP as well as outputting and receiving data from the Device Bus.
PCI bus host DMA channels provide a data path to and from host memory and devices.

Processor
The 1615AP utilizes a dedicated Analog Devices SHARC® DSP processing engine operating at a 400 MHz clock rate to perform simultaneous multiplier and ALU operations in a single clock. The DSP is user-programmable with ADI software, which includes a “user defined” C program compiler capability.

Input Data
Six 16-bit input types are supported: 2’s Complement, 1’s Complement, sign magnitude, offset binary, unsigned magnitude, and binary-coded-decimal. Three 32-bit types are supported: signed integers, IEEE, & MIL-STD floating point.

Output Data
Five 16-bit output types are supported: 2’s Complement, 1’s Complement, sign magnitude, offset binary, and unsigned magnitude. Four 32-bit types are supported: signed & unsigned integers, IEEE & MIL-STD floating point. Concatenated 64-Bit double precision processing is supported.

Algorithms
Over 400 telemetry algorithms are provided, plus sequential algorithm chaining and user-defined expression processing. Algorithms include integer-to-floating point and floating point-to-integer conversion, limit and bit testing, data packing, linear data scaling, 7th order conversion, table lookup conversion, ”if / then / else“ derived parameter calculation, and customized and IRIG recording and network data output data formatting.

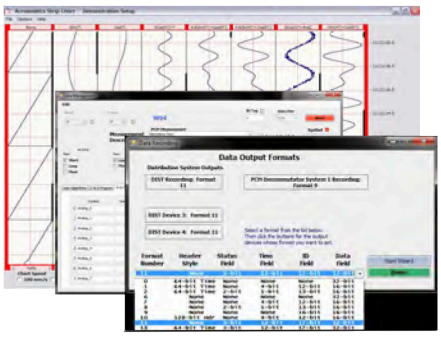
Throughput
Algorithm execution times range from one hundred nano-seconds to a few microseconds, with a maximum throughput for processed data of in excess of 5 MSamples/sec, based on industry accepted data algorithm and EU conversion project benchmark standards.

Reconstructor/Playback
Operating as a streaming data reconstructor or data simulator, the 1615AP accepts digital data from select recorded files, reconstructs the original data stream, and outputs the “playback” PCM data stream at a continuous user specified streaming data rate and PCM output code (NRZL type).

Serializer/Encoder “strip-n-ship”
Accepts data from the PCI bus via DMA or selected data from any Model 1612P Decom low latency I-Bus interfaced decom module PCM Input and performs “real-time” serialization and output at operator defined bit rate and frame format..This capability supports low latency PCM retransmission, recording, or local processing of select merged PCM input stream(s) or select subsets of input data stream(s) data in a precisely controlled and accurate streaming, PCM formatted NRZ-L encoded output. Latency of serialized data stream processing and output is relative to source input stream rates and select data sample, rates and conversions (EU processing to create derived output word content) requirements.

Physical

Format	Standard PCI: full length single slot
Cooling Requirements	30 Linear FPM
Power Requirements	+5VDC at 1 Amps (excluding optional 482M)
Dimensions	4.20” (10.67cm) H x 12.5” (31.75cm) W x .55” (1.4cm) D
Temperature	Operating: 0º to +40º C, Non-Operating: -40º to +86º C
Relative Humidity	Up to 90% non-condensing
Shock Operating	Operating: 6G, Non-Operating: 50G
Vibration	Operating: 0.5G, 5 to 2000Hz, Non-Operating: 1.2G, 5 to 500Hz



Specifications subject to change without notice.

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