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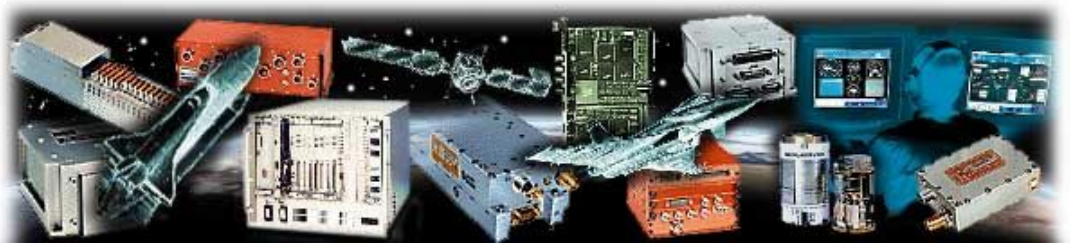
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AYDIN TELEMETRY

Rugged Airborne Avionics and Ground Station Telemetry Products from the AYDIN Corporation



Ground Station Telemetry Products and Systems

- Range Telemetry
- Satellite Telemetry Tracking & Control
- Space Data Systems
- Signal Intelligence Systems

Detailed Information

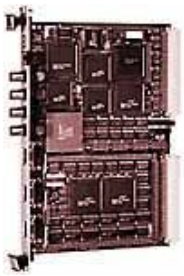
Satellite Telemetry Tracking and Control

VME Components

PC-Compatible Cards | Rack-Mount Units

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VME Components



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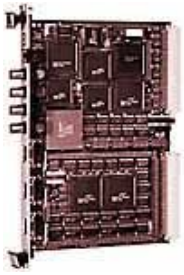
6100 System

The Aydin Model 6100 is a flexible VME module subsystem which houses, monitors and controls VME modules. The unit can accomodate up to twenty-one (21) VME cards in a single chassis and more through use of expansion frames. The system uses an integrated VME bus which performs the administrative functions of setup, control, monitoring and data transfer for Aydin and 3rd-party VME modules.

ADDITIONAL INFORMATION ABOUT THIS PRODUCT

Product Literature | Sales and Support Contacts | Email

VME Modules for the Model 6100 and other VME Subsystems



Aydin's growing line of high performance VME cards include bit synchronizers, frame synchronizers, demodulators and decoders. Select from a wide variety of VME hardware modules manufactured by Aydin.

[Coming Soon]

BPSK/QPSK Subcarrier Demodulator, Model AVME321

The AVME321 Subcarrier Demodulator VME module performs BPSK/QPSK demodulation of satellite telemetry subcarriers. The single slot 6U VME module is designed to maintain superior performance in the presence of a multiplex of signals and noise. The AVME321 accepts input in the range of 1kHz to 5 MHz (10 MHz optional). The data rate is 100 bps to 2 Mbps (5 Mbps optional). The module performs coherent demodulation to seperate the baseband signal from the selected channel. No limiting occurs so the true baseband spectral components are preserved. The demodulator uses a modified Costas Loop to reconstruct the subcarrier. Conditioning of the input signal is achieved by use of an AGC amplifier to normalize the input and a lowpass filter is used to remove undesired harmonics. The output is sent to a bit synchronizer such as the industry leading AVME335 to recover data and clock.

ADDITIONAL INFORMATION ABOUT THIS PRODUCT

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BPSK Subcarrier Demodulator, Model AVME329

The AVME 329 Subcarrier Demodulator performs demodulation of satellite telemetry subcarriers. The AVME 329 accepts input from one of four sources in the range of 1 kHz to 5 MHz (10 MHz optional). The data rate is 100 bps to 2 Mbps (5 Mbps with 10 MHz option). The single slot 6U VME module is designed to maintain superior performance in the presence of a multiplex of signals and noise. The AVME 329 performs coherent demodulation to separate the baseband signal from the selected channel. No limiting occurs, so the true baseband spectral components are preserved. The demodulator uses a modified Costas Loop to reconstruct the subcarrier. Conditioning of the input signal is achieved by the use of an AGC amplifier to normalize the input and a 4-pole Bessel filter is used to remove undesired harmonics. Performance of the AVME 329 is within 0.5 dB of theory. The AVME 329 operates under software control via the VME bus. Driver software computes all the control parameters from basic information such as input source, input impedance, subcarrier frequency, data bandwidth, and loop

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bandwidth.

- 1 kHz to 5 MHz Input Subcarrier (optional 10 MHz)
- Accepts 0.1 to 10 volts p-p input signals
- Data Bandwidth 100 Hz to 5 MHz (3 dB double-sided) (optional 10 MHz)
- Loop Bandwidth 1 Hz to 25 kHz, tunable
- Up to 10 Vp-p DC input offsets
- Provides lock status and input signal loss and overload indicators
- Loop Deviation available through VME read operation
- Front Panel and P2 backplane inputs and outputs

(PDF format, 200KB)

ADDITIONAL INFORMATION ABOUT THIS PRODUCT
Product Literature Sales and Support Contacts Email

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10 Mbps Bit Synchronizer, Model AVME335

The Aydin AVME 335 is a full function 10 Mbps tunable Bit Synchronizer. It is ideally suited for reconstructing a noisy input PCM data stream and providing a clean PCM signal with a coherent clock. This single width 6U VME compatible card offers performance which exceeds many box level Bit Synchronizer.

- Bit Rates to 10 Mbps NRZ codes, 5 Mbps all other codes
- Performance within 1 dB of theory
- Loop bandwidth adjustable from 0.01% to 1.6%
- Accepts NRZ-L/M/S, BiØ-L/M/S, DBiØ-M/S, DM-M/S, MDM-M/S codes
- Front Panel & P2 backplane inputs from one of two sources
- Selectable PCM & Dedicated NRZ-L outputs at TTL & RS422 levels with 0° & 180° clocks. Available on front panel & P2 backplane
- Sync and input signal fault indicators
- PN Randomizer/Derandomizer per IRIG STD 106-96
- Selectable Input Impedance
- Optional Viterbi Decoder

ADDITIONAL INFORMATION ABOUT THIS PRODUCT
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20 Mbps Bit Synchronizer, Model AVME3335

The AVME 3335 is a full function 20 Mbps tunable Bit Synchronizer. It is ideally suited for reconstructing a noisy input PCM data stream and providing a clean PCM signal with a coherent clock. This dual-width 6U VME compatible card offers performance which exceeds many box level Bit Synchronizers. The AVME 3335 is tunable over the bit rate range of 10 bps to 20 Mbps for NRZ codes and 10 Mbps for all other codes. The standard NRZ-L/M/S, BiØ-L/M/S, DBiØ-M/S, DM-M/S, MDM-M/S codes are accepted from one of four input sources. The AVME 3335 produces an output data stream with a bit error rate within 1 dB of theory. The AVME 3335 not only excels in BER performance, it offers enhanced sync maintenance and acquisition capabilities. It maintains effective synchronization down to an Eb/No of -3 dB and acquisition time is less then 20 transitions in noise. The loop bandwidth can be set anywhere in the range from 0.01% to 1.60% without losing phase lock. The AVME 3335 includes a randomizer/derandomizer for generation of a randomized serial data output and the derandomizing of the data on playback from an external tape recorder.

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- Bit Rates to 20 Mbps NRZ codes, 10 Mbps all other codes
- Performance within 1 dB of theory
- Loop bandwidth adjustable from 0.01% to 1.6%
- Accepts NRZ-L/M/S, BiØ-L/M/S, DBiØ-M/S, DM-M/S, MDM-M/S codes
- Selectable PCM & Dedicated NRZ-L outputs
- Dedicated 0° and 90° clocks
- Two selectable output clocks (0°, 90°, 180°, and 270°)
- PN Randomizer/Derandomizer per IRIG STD 106-86
- 3-bit soft decision outputs
- TTL, RS-422 and Bipolar outputs are standard

ADDITIONAL INFORMATION ABOUT THIS PRODUCT
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SGLS Demodulator, Model AVME3714D

The AVME3714D SGLS Demodulator VME module performs demodulation of SGLS standard signals. The dual slot 6U VME module is designed to maintain superior performance in the presence of a multiplex of signals and noise. The SGLS input is a composite signal with a frequency shift keyed (FSK), amplitude modulated (AM) SGLS component and/or a PRN ranging signal. The AVME3714D takes the SGLS component and extracts the transmitted message from the frequency modulation and extracts the timing information from the amplitude modulation. The unit can operate at data rates of 1 or 2 kHz by automatically determining which rate is present. The Demodulator goes into squelch when the input signal degrades to the point where data cannot be extracted from the tones. Squelch includes shutdown of the sync output. A buffered version of the input signal is provided for range processing.

ADDITIONAL INFORMATION ABOUT THIS PRODUCT
Product Literature Sales and Support Contacts Email

SGLS Modulator, Model AVME3714M

The AVME3714M SGLS Modulator VME module performs modulation of SGLS standard signals. The dual slot 6U VME module accepts digital SGLS command data and a digital serial PRN ranging signal. AVME3714M unit generates a composite analog baseband SGLS signal for external phase modulation. The SGLS Modulator generates a frequency shift keyed (FSK), amplitude modulated (AM) signal for command uplink purposes. The unit uses a digital synthesizer to produce the three required tones. The external PRN ranging signal at 1 Mbps is summed with the FSK/AM SGLS signal. The composite output signal is then made available at the output.

ADDITIONAL INFORMATION ABOUT THIS PRODUCT
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Frame Synchronizer, Model AVME440

The AVME 440 Format Synchronizer and Decommutator module provides synchronization to a serial PCM data stream at rates from 1 bps to 20 Mbps. The synchronization pattern is from 3 to 64 bits in length and is fully maskable and supported by software-selectable optimum synchronization strategy. Subframe synchronization is achieved on an incrementing or decrementing ID field in the data stream, the CFS frame sync pattern, or a Unique Recycle Code (URC) that occurs once each subframe. Data decommutation includes serial-to-parallel conversion with word size and orientation, parity check and strip control. Data, status and time (from an external time code

translator) are output to the VMEbus. Parallel data and strobes are also available for external interface on a 40-pin connector mounted in the front edge panel of the module. The memory can be configured as a time history buffer or a current value table. At the end-of-block, an interrupt is asserted. As an option, an on-board simulator can be provided to generate test formats. Up to 2k data values may be inserted into the data stream. Data rates of 10 Mbps, 5 Mbps, 2.5 Mbps and 1.25 Mbps are selectable. An external clock source may also be used.

- 1 bps to 20 Mbps
- 16 to 1048576 bits-per-frame
- 2 to 4095 frames-per-subframe
- 1 to 32 bits-per-word
- Full support for IRIG Class I formats
- Time tags each minor frame
- Dual-port memory
- On-board simulator (option)

ADDITIONAL INFORMATION ABOUT THIS PRODUCT
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PSK Encoder/Modulator, Model AVME807

The Model AVME 807 PSK Modulator provides BPSK, QPSK, or SQPSK modulation operating at subcarrier rates between 1 kHz and 5 MHz. The single width 6U compatible card supports input data rates from 100 bps to 5 Mbps in QPSK and SQPSK modes and 100 bps to 2.5 Mbps in BPSK mode. The Model AVME 807 accepts input from one of two input sources from the front panel or P2 backplane. In QPSK modes, the inputs can support dual serial (parallel) input data streams. In the dual serial mode, a common clock or a separate clock can be selected. The separate clock allows for two data streams of unequal rates to be QPSK modulated. The AVME 807 receives NRZ-L data and 0 degree clock at either TTL compatible levels or RS-422 compatible levels. A selectable differential encoder is included. A programmable tap randomizer allows for CCITT V.36, Intelsat, and user specified configurations. A convolutional encoder is provided which supports industry standard constraint length k=7, rate R=1/2, with generating polynomials G0=1718 , G1=1338. Alternate Symbol Inversion (ASI) and codeword bit ordering (CD/DC) are selectable. Differential encoding, randomization, and convolutional encoding are independently controlled and can be bypassed or enabled depending on the system requirements. A code converter can be used to convert the input data stream to NRZ-L/M/S or BiØ-L/M/S prior to the modulation process. The output level of the modulator is programmable from -30 dBm to +10 dBm (0.02V to 2Vp-p). A test mode provides the capability to disable the modulation process and/or disable the output subcarrier signal.

- Provides BPSK, QPSK & SQPSK Modulation
- Tunable subcarrier ranging from 1 kHz to 5 MHz
- Operation to 5 Mbps in QPSK and 2.5 Mbps in BPSK
- Capable of modulating two independent input data streams of unequal rates
- Randomizer: CCITT V.36, Intelsat, and Programmable
- QPSK Permutation Selector, 1 of 24
- Code Converter converts input data to BiØ prior to modulation

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PCM Simulator, Model AVME825

The Aydin AVME 825 module is a full function PCM simulator module. The use of the high performance

ADSP2106X processor allows this module to be extremely flexible and capable of handling all formats. The AVME 825 generates a serial data stream of variable length words, at a rate of 1 bps to 30 Mbps. The module outputs all the standard IRIG PCM output codes, supporting all the different telemetry formats. The module provides the PCM data through two ports: the front panel and the P2 backplane connector. The module also provides sockets for two 72-pin modules for those applications that require memory expansion. Each socket accepts a SIMM module which is capable of holding up to 1 Meg x 32-bits wide. With the internal 4-megabit RAM contained in the SHARC, the board can ultimately contain a maximum of 66 megabits of total storage.

- Output Bit Rates programmable from 1bps to 30 Mbps
- Provides the following PCM codes: NRZ-L, M,S BIØ-L,M,S DM-M, DM-S, MDM-M, MDM-S
- Controlled using the ADSP2106X SHARC processor
- Front Panel & P2 backplane output paths
- Variable length words 1 bit - 32 bits wide
- Embedded Parity - odd, even, first, last, none
- LED indicators - used to identify operational status including power-up self test
- RS-422 - Differential Outputs
- External Clock input to determine the output data rate

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CCSDS Data Unit Decoder, Model DEC012

The DEC012 CCSDS Data Unit Decoder provides the interface between the spacecraft downlink subsystem and the ground data processing system. PCM data is applied to the DEC012 as NRZ-L data and zero degree clock. Information contained in the data stream is formatted in a CCSDS Transfer Frame. The DEC012 removes the CCSDS AOS specified channel coding exposing the embedded data packets for processing. Extracting information from the CCSDS Transfer Frame includes: Viterbi decoding, frame sync, derandomization, Reed-Solomon decoding, and CRC checksum calculation and verification. Each of these functions is individually programmed into the process so as to accommodate wide variations in the encoding format. Data and status are output from the DEC012 by way of a DR11W-compatible interface port(other interfaces are available). Visual indicators are provided on the card-edge panel which signify the status of each synchronizer and error detector. Programming the DEC012 is either by VME bus commands or from a default configuration stored on-board in a PROM. For data link testing, Aydin offers the Model ENC004 CCSDS Data Unit Encoder which performs the complimentary functions of the DEC012.

- Coded Symbol Rate to 20 Msps
- Convolutional Decoding K=7, R=1/2
- Reed-Solomon Decoding
- Resolves Alternate Symbol Inversion
- CCSDS DeRandomizer
- Deinterleaves R-S (I=1 to I=8)
- CRC Checksum Calculation & Verification
- VME 6U Card Outline
- AIAA Award Winning Design

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CCSDS Data Unit Encoder, Model AVME 554

The AVME 554 CCSDS Data Unit Encoder performs the complementary functions to those performed by the Aydin Model DEC012 CCSDS Packet Decoder. The AVME 554 CCSDS Data Unit Encoder accepts unencoded PCM data as NRZ-L data and zero-degree clock formatted as a CCSDS Virtual Channel Data Unit (or Transfer Frame) and provides Reed-Solomon interleaving and encoding and/or convolutional encoding, as well as randomization. CRC-CCITT checksum calculation is available if Reed-Solomon encoding is not used.

- PCM Input Bit Rate from 10 kbps to 10 Mbps
- Reed-Solomon Encoding, w/Selectable (I=1 to 8) Interleaving
- CCSDS Randomizer
- Serial Input/Output
- Convolutional Encoding R=1/2, k=7, w/Alternate Symbol Inversion (ASI)
- VME 6U High, Single-Width Card Outline
- Optional CRC-CCITT Checksum Calculation

(PDF format, 160KB)

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Further Information

For additional specifications, information on pricing and delivery schedules of product(s), contact AYDIN Telemetry sales or email telemetry@aydin.com with your specific requirements.

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