

AVALON SYSTEM CHASSIS

AVALON-R



Add modules and chassis for flexibility and expandability.



Modular rear panel provides easy access for up to 18 I/O connections.

KEY FEATURES

- Distributed data-driven architecture guarantees completely deterministic data merging and processing
- Wide array of input/output processing modules, interfaces, and controllers — “mix and match” module quantities to meet changing application requirements
- Expandable design — add chassis as requirements expand (total of eight chassis form a single MUXbus)
- Real-time data storage to 34 MB/sec
- Parallel processing architecture — add processors to linearly increase performance
- Compact design for rack-mounting and transportation ease
- VMEbus module compliant to integrate commercial-off-the-shelf modules
- Supported by platform-independent Java-based or UNIX-based L-3 applications software

OVERVIEW

The Avalon System Chassis (AVALON-R) is the nucleus of the Avalon™ System designed for mid-range applications involving real-time data acquisition, processing, storage, and distribution. This space-saving 7^{1/2}-high (4U) rack-mountable chassis includes a System Controller, a VME Mezzanine Carrier/Arbiter with 4 PMC slots, and a 350-Watt power supply. Its modular rear panel provides bulkhead connectors for up to 18 independent input/output functions.

PERFORMANCE

System responsiveness is guaranteed by Wind River Systems VxWorks, an embedded real-time operating system that functions transparently within the System Controller without user interaction.

APPLICATIONS

The AVALON-R houses up to 20 application-specific PMC modules to accomplish such real-time tasks as telemetry signal conditioning (bit synchronizing) and word decommutation, analog-to-digital conversion, MIL-STD-1553 bus monitoring and simulation, data processing, storage to disks and arrays for archiving and playback, and data distribution via local area networks.

TECHNOLOGY

The AVALON-R contains 6 VME slots, all 9U in size. The P1 and P2 connectors of the standard VMEbus backplane provide for module control and low-rate data passage, while P3 - the MUXbus II - merges very high-rate data to 16 Mwords per second, and distributes broadcast data simultaneously in real time to all MUXbus modules.

Excellence You Can Measure



AVALON SYSTEM CHASSIS

AVALON-R SPECIFICATIONS

Input

Telemetry Receiver/Combiner
PCM Bit Sync
PCM Frame Sync
PCM Decom
MIL-STD-1553
Analog
Digital
Serial
IRIG Time
ARINC 429
Voice
NTDS
Video

Output/Simulation

PCM Simulator
PCM Encoder
MIL-STD-1553
Analog
Digital
Serial
Voice

Mass Storage

SCSI
Fiber Channel

Network

Ethernet
SCRAMNet
Fiber Channel

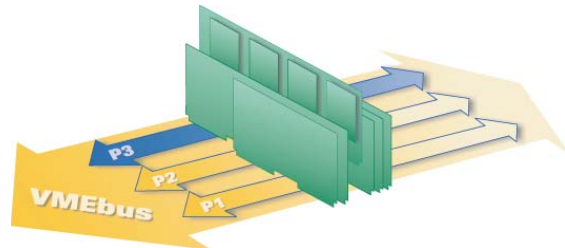
Hardware Processing

Power PC (FPP)
Network Workstations

Software Processing

CCSDS
IRIG-106 Chapter 8
IRIG-106 Chapter 10
Standard Algorithms (150+)
Custom Algorithms
Application Programming
Interfaces

The MUXbus (on P3 of the VMEbus) is the Avalon's real-time data highway, running at a sustained 16M words per second (96 MB/sec).



The VMEbus' P1 and P2 channels form the Avalon's administrative and I/O bus to support integration of numerous commercial third-party VME cards, and easily transfer large data blocks between front-end modules.

Internal Architecture

MUXbus II

Function: High-performance real-time data transfer between modules

Type	Data flow, synchronous
Bus Mode	Broadcast
Transfer Rate	.16 MHz, 96 MB/sec (62.5 ns cycle time)
Size	.20-bit tag* (address); 32-bit data
Tag Range	.1M*
Arbitration	Rotating priority
Number of Chassis	
Supported	.1 to 8 chassis, using PMC Gateway Module Set (GWZ533-SET)

VMEbus

Function: Setup and control for all modules; data transfer for selected modules

Type	Multi-master, asynchronous
Bus Mode	Master/slave
Transfer Rate (VME64)	.10 MHz, 80 MB/sec (theoretical), 55 MB/sec typical
Size	.32-bit address (A32); 32-bit data (D32)
VME64	.32-bit address (A32); 64-bit data (MBLT)
Arbitration	Level priority

System Controller

Function: Performs network and module setup and control

CPU	.See System Controller 5 (SCM595) data sheet
Operating System	.Wind River VxWorks

*Not available on all modules and software. Contact factory for details.

Chassis Configuration

Chassis Dimensions	.7" H (4U) x 19" W x 20" D (22.5" D with rack slides)
Rear Panel I/O Slots	.18 available
Rear I/O Connector Panel	.27 application-unique units, 4.8" x 0.6"
Rack Mounting	.Standard rack-mount kit
Weight (full modules)	.45 lbs.
Power Consumption	.350 W (maximum configuration); 160 W typical

Operating Environment:

Temperature	.50°F to 113°F (10°C to 45°C)
Relative Humidity (non-condensing)	.10% to 90%
Altitude (unpressurized)	.0 to 10,000 ft. (0 to 3,048 m)

Non-Operating Environment:

Temperature	.-40°F to 140°F (-40°C to 60°C)
Relative Humidity (non-condensing)	.0% to 95%
Altitude	.0 to 30,000 ft. (0 to 9,144 m)
Input Voltage Range	.85 VAC - 264 VAC
Input Frequency Range	.47 Hz - 63 Hz

Application Module Size

MUXbus (9U)	.6.80" (160 mm) H x 14.4" (366 mm) W
VMEbus (6U)	.6.80" (160 mm) H x 9.187" (233 mm) W

Compatibility

SWA500 Applications Software
VISTA Software
WIndows, Linux, Solaris, SGI IRIX, DEC Alpha UNIX workstations

Ordering Information

AVALON-R	.Avalon System Chassis, Rackmount, 6 VME Slots (includes System Controller and VME Mezzanine Carrier with Arbiter)
SCM595	.System Controller 5 Module (Spare)
PS-AVA	.Power Supply for Avalon System Chassis
RMK599	.Rack Mount Kit for Avalon System Chassis

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