Common Architecture Recorder

AMPEX
Excellence at the Edge

Integrated, Low-cost Recording, NAS, and Data Acquisition

With its low cost, the "Common Architecture Recorder" (CAR) helps customers shift data acquisition and recording systems from a capital expense to an operating cost. It is scalable with the flexibility to add most everything you might want, but not stuffed with the costly things you don't need. The low-cost of the CAR is only rivaled by its small size, making it perfect for ground vehicles and "attritable" aerospace systems. With its compact size, light weight, low power dissipation, and mounting options, it can be installed anywhere. This SWAP-C rugged recorder still affords the customer everything Ampex customers have become accustom to over the years.

Features[1]

- Software Defined Recording with ACCE (Ampex Common Compute Environment)
- Modular, Extensible, Linux-Based Open Architecture
- Network File Server w/ NAS capabilities
- Integrated Information Assurance
- USB "Type C" Connectivity
- Standard: 2x 1000BaseT Ethernet
- GNSS/GPS Receiver (with "Disable" feature)
- Power through wide-range DC, Power-Over-Ethernet or USB-C. Optional MIL-STD-704.
- 'All-in-One' Processor & Storage Module
  - Removable Storage Media Variant[2]
- Fixed storage media available in capacities to 2TB
- Optional Selectable Data Types[2], including:
  - Video Acquisition and Compression
    - HD-SDI with KLV metadata
    - DVI/HDMI
    - Multichannel SD (RS-170)
  - Mil-Std-1553B, with one or two dual-redundant busses, plus IRIG-B
  - Gigabit Ethernet (Fiber and dual copper)
  - High Speed Serial
  - Others upon request

The CAR employs a USB Type C interface to provide a direct download interface to the embedded storage. This rugged, durable, reversible connection carries a 5Gb/s USB 3.1 with Power Delivery 3.0 (USB-PD). The port is used for the detachable storage module (Removable Storage Media Variant), and for convenient transfer of files saved in the embedded storage. It may also be used for connecting other peripherals, e.g. a 2.5GBase-T network interface for high-speed off-load of data. The "role-switching" features of USB-PD allows the CAR to detect when it is attached to a computer, shutting down its own processor to appear as straightforward USB storage; when attached to a storage or network peripheral, USB-PD switches roles so the CAR acts as the host computer.

Specifications[1]

System

CPU Subsystem:	Intel Atom E3805, Dual Core, 1MB Cache, 1.33GHz, 2GB DDR3L-1066 Memory
External Interfaces:	1000Base-T Gigabit Ethernet, USB 3.0
Additional Interfaces:	Audio, 100Base-T (Optionally exposed on external connectors)
GNSS Input:	GPS, Galileo, GLONASS, BeiDou (all selectable) or Disabled
Internal Storage Capacity:	250GB, 500GB, 1000GB, 2000GB
Storage Module Grades:	Commercial, Standard Temperature Rugged, Extended Temp. Rugged. All US manufacturers
Firmware Storage:	Read-Only Firmware/OS Device (16GB)
Removable Storage:	Factory Option: Same Capacities and Grades as Internal Storage
Network Protocols:	NFSv4, NFSv3, CIFS/SMB, FTP, TCP/IP, UDP/IP, PCAP, Others
Operating System:	Centos Linux 7
Encryption:	Optional Advanced Encryption Standard (AES), 256 bit keys, FIPS 197

Performance

Internal Data Rate:	250 Mbytes/sec (sustained)
NFS Data Rate:	160Mbyte/sec aggregate from 80MByte/sec per channel (sustained)

Power

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Power:	Wide Range DC 9V – 36V or Power-Over-Ethernet (IEEE 802.3-2012) or USB PD 3.0. Optional MIL-STD-704 Subsystem
Dissipation:	4W Idle, 9W Full Load

Mechanical

Dimensions:	1.75" H x 4.8" W x 8.0" D, 68 cubic inches (45mm x 122mm x 203mm, 1.1L), excluding mounting rails
Mounting:	Base mount
Weight:	2lbs (0.9Kg)
Connectors:	MIL-DTL-38999 Series III (Ethernet, Power), SMA (GPS)

Environmental

Temperature:	Operating:	-40ºC to +71ºC (With Extended Temperature storage grade)
	Non-operating:	-45ºC to +85ºC
Humidity:	Designed to 0% to 95% RH (MIL-STD-810F, Procedure III)	
Vibration:	Designed to 4grms MIL-STD-810F	
Shock:	Designed to 20g (half sine, 11ms), MIL STD-810F	
EMI Compatibility:	Designed to MIL-STD-461F	

Options[2] – miniPCIe Cards. (Maximum two per system)

HD-SDI Video:	1 Channel with KLV Metadata SMPTE ST 292, 291, 296, 274 H.264/AVC Encoder, MPEG TS
DVI-D/HDMI Video:	1 Channel to 1080p30 H.264/AVC Encoder, MPEG TS
VGA/STANAG 3350 Video:	1 Channel to 1080p30 H.264/AVC Encoder, MPEG TS
Standard Definition Video:	4 Channels NTSC/PAL/RS170A H.264/AVC Encoder, MPEG TS
MIL-STD-1553:	1 or 2 Dual Redundant Channels IRIG-B Input
Ethernet:	1 or 2 channels 1000Base-T
Optical Ethernet:	1 Channel 1000Base-SX
Serial + GPIO:	4x RS-232 / RS-422 / RS-485 (to 400KBaud) & 12 GPIO
Analog + GPIO:	8 single-ended / 4 differential, 100Ksps, 12/16 bit & 3 GPIO
High-Speed Serial:	Clock & Data to 20MBaud
Others:	Contact Ampex
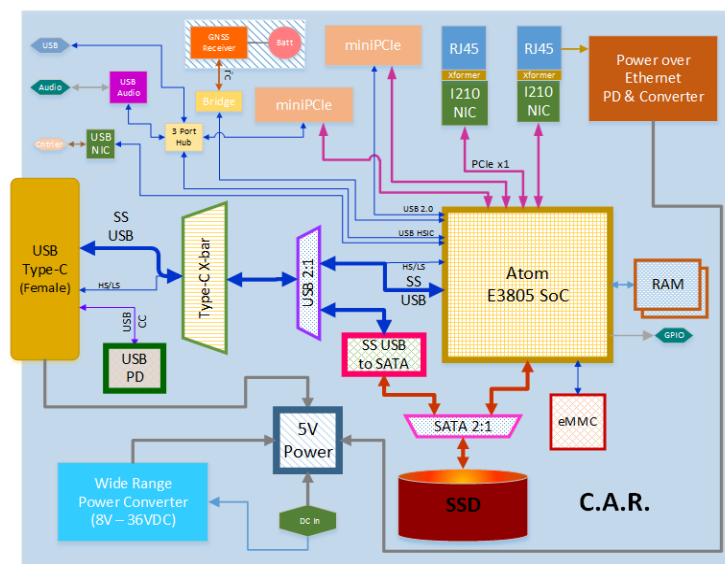
[1] Specifications subject to change without notice
[2] Contact Ampex for availability of options