

QrNexus Recorder Product Family

There is a growing need for a small form factor, rapidly installable, all-in-one instrumentation recorder for flight test and other airborne applications. For this need, Curtiss-Wright developed the QrNexus product family. This recording system leverages our legacy breadth of products to produce a best-in-class solution that allows users to capture, record, and output data based on their unique requirements. The QrNexus product family consists of a range of advanced data server and recorder (ADSR) products. These are ideal for many uses, including a mission data recorder, mission file server, digital video recorder, or instrumentation network recorder.

Baseline Features

Every QrNexus is a network recorder that can interface with CH10 UTH published data, DARv3 data (e.g., from Curtiss-Wright high-speed cameras and data acquisition units), TmNS Data, and any other generic Ethernet data. They have four I/O data acquisition card slots to add extra I/O and functionality to meet your application needs.

Base unit features:

- + Two 1000 BASE-T Ethernet ports for data acquisition, recording, and programming
- + Slots for up to three solid-state memory modules
 - › These are useable independently for different data sources or as a single combined storage space
- + Supports common industry timing standards such as IEEE-1588 v1/v2 and IRIG-B DC
- + Two-channel mono or one channel stereo audio input (e.g., for capturing pilot and co-pilot microphones)
- + Operates from the aircraft power, 28VDC +/- 4VDC
- + Optional MIL-STD-704 50 ms power hold for brown-out protection



Figure 1: ADSR-4003F-2

QrNexus Architecture

The QrNexus architecture uses a PCIe backplane with slots for 4 I/O cards for extra functionality. Several cards are available off-the-shelf (see Table 1), and custom cards can be developed (contact the factory for more information). With the insertion of I/O cards, the unit can perform additional capabilities with the incoming data on the I/O cards, such as bulk recording, data/message selection (cherry-picking), and data publishing.

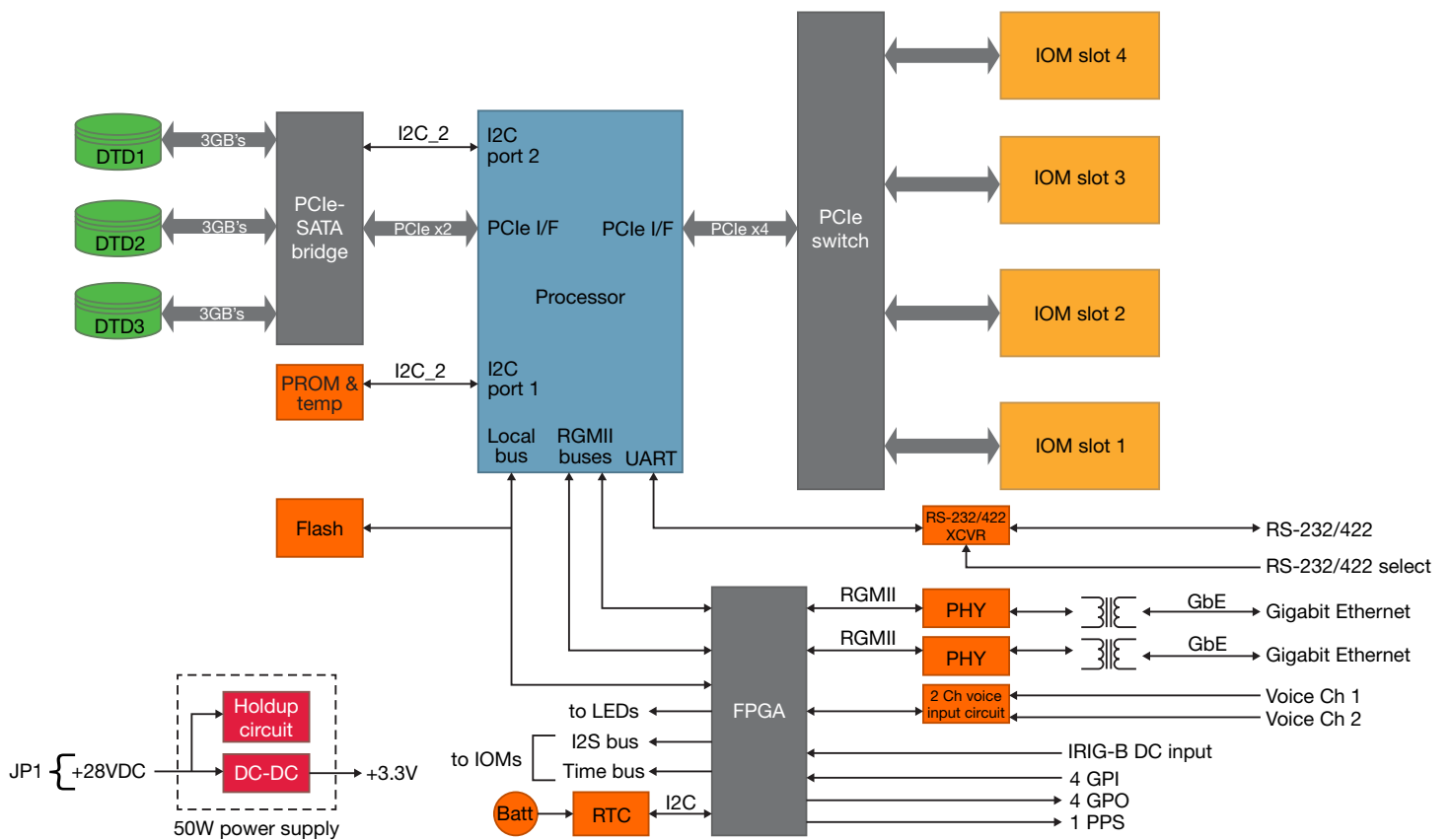


Figure 1: ADRS Base Architecture

List of currently supported I/O cards

Input Card Type/ Chassis	Description	# of Inputs	ADSR model	Recording Type	File System	PCAP	DARv3	Ch 10/11 UTH 2	TmNS	AVI MPEG-2	RS-170	Native Ch 10 Data Type
GbE	ADSR Base, GbE + Ch. 10/11 (from AIM) + Darv3 + iNET (PCAP) Data + Other ETH Data	2	All	Bulk	+EXT4 Linux Local Files +NFS Export Files +STANAG 4575	✓	✓	✓	✓			
GPS-401-1	+ One (1) Gps input + 3x Identical PCM outputs	N/A	4003F-6 and above	N/A		✓	✓	✓				
FCH-402A-1	2-Ch Optical FCH with GFE Chips	2	4003F-6	Select only		✓	✓	✓				Message Type
FCH-402B-1	2-Ch Optical FCH with FPGA IP	2	4003F-6P	Select only		✓	✓	✓				Message Type
BIM-394A-1	F-35 2-Ch IEEE-1394 (4 Ch)	4	4003F-6 4003F-6P	Bulk, Select		✓	✓	✓				1394 Type
FOR-402L-1	F-22 2-Ch FOR with GFE MCM	2	4003F-7	Bulk		✓	✓	✓				Message Type
FOR-402L-2	F-22 2-Ch FOR with FPGA IP (Future)	2	4003F-7P (Future)	Bulk, Select		✓	✓	✓				Message Type
RMB-553F-1	4-Channel Mil-Std-1553 Card	4	4003F-7 ADSR-4003F-10	Blacklist filter & Bulk		✓	✓	✓				1553 Type
ETG-402A-1	F-35 (TR-3) 2-Ch 10GBASE-SR	2	4003F-28	Select only		✓	✓	✓				
VID-401S-1	1-Ch SDI, H.264 (Total 4 Ch)	4	4003F-2	Bulk		✓	✓	✓		✓	✓	
VID-401D-1	1-Ch DVI/HDMI, H.264 (4 Ch)	4	4003F-3	Bulk		✓	✓	✓		✓	✓	
ETN-412G-1	2-Ch 100/1000 BASE-T	2	4003F-5	Bulk		✓	✓	✓				

Recorder Applications

- + Mission data recorder
 - › Supports network file sharing (NFS)
- + Mission file server
 - › Supports NFS
- + Digital video recorder
 - › Capable of recording four channels of audio and video data for synchronized playback
- + Instrumentation network recorder
 - › Provides recording from two or more Gigabit Ethernet interfaces to 2 or 3 memory cartridges simultaneously
 - › Supports DARv3, CH10 UTH, PCAP, EXT4, and AVI file formats

Environmental Qualification

The ADSR product range has been qualified to MIL-STD-810, MIL-STD-461.

Typical categories include

- + Mission data recorder
- + Temperature
- + Altitude
- + Vibration
- + Shock
- + Humidity
- + RF emissions
- + RF susceptibility

Available Media Options

The unit can support up to three solid-state drives in one chassis. The collected data can be routed to any of the three drives to provide the flexibility of bandwidth distribution amongst the drives.

The currently supported capacities are

Part #	Model	Capacity []	Temperature	Secure Erase
750002600-001	DTD-0256SE-1	256 GB	-40 to 85°C	✓
750002600-002	DTD-0512SE-1	512 GB	-40 to 85°C	✓
750002600-002	DTD-1000SE-1	1 TB	-40 to 85°C	✓

Ordering Options

To find the most up-to-date list of I/O modules, please visit curtisswrightds.com/QrNexus.

Any combination of the available I/O cards can be used to configure a variant in the factory to fit specific needs. The below list of QrNexus configurations can be ordered today and include all the base-line features.

Model	I/O
ADSR-4003F-1	No I/O cards (base line configuration)
ADSR-4003F-2	4 x VID-401S-1 (1-channel SDI, H.264 video card)
ADSR-4003F-3	4 x VID-401D-1 (1-channel DVI/HDMI, H.264 video card)
ADSR-4003F-5	1 x ETN-412G-1 (2-channel 1000 Base-T acquisition card)
*ADSR-4003F-6	2 x BIM-394A-1 (2-channel IEEE 1394 acquisition card) 1 x FCH-402A-1 (2-channel Fibre channel acquisition card) 1 x GPS-401-1 (1-channel GPS input card, and selected PCM output card)
*ADSR-4003F-7	2 x FOR-402L-1 (2-channel fibre optical acquisition card) 2 x RMB-553F-1 (4-channel 1588 acquisition card) 1 x GPS-401-1 (1 channel GPS input card, and selected PCM output card)
*ADSR-4003F-8	2 x FOR-402L-1 (2-channel Fibre optical acquisition card) 1 x ETG-402A (2 channel 10GbE acquisition card) 1 x GPS-401-1 (1 channel GPS input card, and selected PCM output card)
ADSR-4003F-10	3 x RMB-553F-1 (4-channel 1588 acquisition card) 1 x GPS-401-1 (1 channel GPS input card, and selected PCM output card)