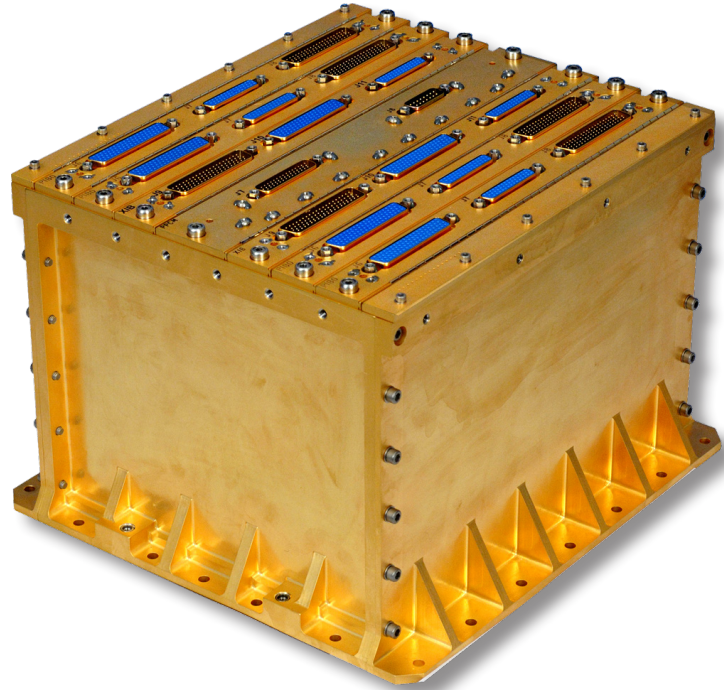


# Payload Interface Electronics

space qualified

## Features

- Interfaces for two payloads
- Lossless data compression
- CFDP protocol
- Interfaces to solid-state recorder
- Power converter module
- Wideband I/F for payload data
- High-rate, X-band interfaces
- Designed for moving large amounts of data efficiently
- Real-time payload and stored data transmission
- Interleaves ancillary data with mission data
- Generates fill frames in the absence of mission data
- CCSDS compliant
- High reliability, space qualified
- Radiation and SEU tolerant
- Mass, maximum: 27 lbs (12.25 kg)
- Dimensions, maximum:  
26.0 x 27.7 x 19.6 cm  
(10.25 x 10.9 x 7.7 inches)
- Temperature:  
-25 to +50°C (Qualification)  
-40 to +75°C (Survival)



**General Dynamics' Payload Interface Electronics (PIE) provides a solution for processing payload data.**

The PIE receives data from two payloads simultaneously over dedicated high speed LVDS Serializer/Deserializer (SERDES) interfaces. The PIE can be commanded to compress the data or bypass compression. The data is formatted to CCSDS File Delivery Protocol (CFDP) standards, and transmitted in real time while simultaneously sending data to a Solid State Recorder (SSR). The PIE provides two interfaces to record data to the SSR and two interfaces to playback data from the SSR. Payload data is CCSDS formatted before transmission to the ground. The PIE is a block-redundant design housed in a 7-slot chassis based on industry standard cPCI form factor. External interfaces are fully cross strapped.

The PIE design makes use of years of General Dynamics bus avionics experience combined with evolutionary enhancements to existing designs and the use of the latest FPGA technology. These strengths, combined with a flexible board suite that has 100% on-orbit success, results in an architecture that is scalable and reliable, and enables tailoring to specific program needs.

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space qualified

## Performance Characteristics

### General

- Mass: 27 pounds (12.25 kg) maximum
- Size: 10.25"L x 10.9"W x 7.7"H max envelope
- Temperature: -25° C to +50° C (Qualification)  
-40° C to +75° C (Survival)

### Input Power

- Operating Voltage: 22 - 37 VDC
- Power Consumption: < 22 W

### Payload 1: LVDS SERDES at 28MHz

- Nominal data rate of 265 Mbps with peak rate of 336 Mbps
- Selectable Compression

### Payload 2: LVDS SERDES at 28MHz

- Nominal data rate of 26 Mbps with peak rate of 336 Mbps

### SSR Record Interface

- Payload 1 - LVDS 400 Mbps (8-bits at 50 MHz)
- Payload 2 - LVDS 50 Mbps (serial at 50 MHz)

### SSR Playback Interface

- Playback 1 - LVDS 400 Mbps (8-bits at 50 Mhz)
- Playback 2 - LVDS 400 Mbps (8-bits at 50 Mhz)

### Transmitter Interface

- LVDS 384 Mbps (8-bits at 48 Mhz)

### Command and Telemetry

- 1 Mbps serial RS-485 bidirectional interface

### Time-of-Day Pulse

- 6 LVDS interfaces

### Other

- Sixteen (16) AD590 temp sensors
- Eleven (11) voltage and current telemetry
- Fully cross-strapped architecture

## For More Information, Contact:

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