



TECHNOLOGY SOLUTION

Robotics, Automation and Control

Video Distribution & Storage Unit (VDSU)

All-in-one video distribution, processing, compression, and solid state recording in a low signal low power system

BENEFITS

- Low power, compact
- Reconfigurable from the ground
- Fault tolerant

Engineers of the NASA Goddard Space Flight Centers Satellite Services Projects Division (SSPD) have designed a high performance, space qualified video distribution and storage unit for Restore-L, a spacecraft that will rendezvous, grasp, refuel, and relocate client spacecraft. While previous space flight qualified technologies existed on the market, none provided the performance and capabilities provided by NASA-GSFCs VDSU. The VDSU is a single subsystem that provides all the features required for the Restore-L mission: reconfigurable from the ground, fault tolerant, high performance, low power, and highly capable.



THE TECHNOLOGY

VDSU is a state of the art, space flight qualified, reconfigurable, fault tolerant system that controls and receives video from up to 24 monochrome/color digital cameras and other sensors, acts as a video router, provides simultaneous JPEG2000 compression on multiple sources and provides solid state data recording functionality. The unit is radiation hardened by design Virtex 5 FPGA, and provides embedded processor support with high performance external DD2 memory. It includes a bank of radiation qualified and environmentally screened commercial ADV212 JPEG2000 video codecs, each including individual latchup current limiters, allowing for independent reset and reconfiguration. A space qualified processor configures, monitors, and scrubs the Virtex 5 FPGA. VDSU provides video router functionality through a novel high speed multi-channel interface that utilizes innovative cable skew management. Output is in the form of multiplexed multi-channel JPEG2000 compressed LVDS video. The VDSU possesses a bank of NAND flash memory, and the ability to store and playback compressed video from this memory. In summary, the VSDU provides extremely high performance all-in-one distribution, processing, JPEG2000 compression, and solid state recording in a low power, compact system.

APPLICATIONS

The technology has several potential applications:

- Satellite video distribution, processing, compression, and recording
- Imaging satellites

PUBLICATIONS

Patent No: 10075678

National Aeronautics and Space Administration

Agency Licensing Concierge

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