

DEFENCE AND SPACE
Space Products

CORECI 2

COmpression REcording
and Clphering



P A Y L O A D



CORECI 2 is a high performance integrated COmpression, REcording and Clphering equipment for high-resolution Earth observation satellites. CORECI 2, in flight since 2021, provides enhanced performance compared to the first generation, whilst maintaining the highest standards of quality and reliability. State of the art performance for on-board data storage, compression and encryption make CORECI 2 the ideal choice for the latest optical Earth observation satellites.

Airbus Defence & Space is a world leader in high performance solid state mass memories, with more than 30 units successfully operating in orbit, and has pioneered the development and qualification of flash technology for satellite data storage since 2008. With a first flight on SPOT 6 in 2012, CORECI first generation has proved the viability of flash technology in the space environment, showing no SEFIs, latch ups or uncorrectable errors and demonstrating the same performance in LEO orbit as on Earth!

Packaged in a compact unit, CORECI 2 receives and compresses up to 1050 Mpixel/s in real time from up to 6 image detectors. Up to 12 Tb of data can be recorded and simultaneously replayed.

This performance is based on use of the latest generation of high density COTS flash components, after qualification by Airbus Defence & Space, and combining with a high performance FPGA to provide unmatched data processing and high speed serial link performance.

INTERFACE

- Power bus : 22-37V (2 to 6)
- LVDS Video Inputs
- TMI: 8-bits LVDS (550Mbps)
- LCT: Wizard Links (900Mbps)
- Test : Wizard Links (1200Mbps)
- Redundant Mil-Std1553 TM/TC links
- Redundant PPS

ENVIRONMENTS

- Temperature Operating -10°C to +50°C
- Non-operating -20°C to +60°C
- Vibration 25g sine, 20g rms
- Shock 1000g/1000Hz
- Radiation compliant with 10 years LEO
- Residual memory error < 10⁻¹⁴ per day
- EMI/EMC MIL-STD-461

MAIN APPLICATIONS

- Optical earth observation satellites
- Scalable to best fit on scientific instruments

KEY FEATURES

- Scalable architecture allowing the accommodation of 2 to 6 identical slices.
- Each of the slices having all the necessary features to operate one detector individually.
- Powerful real time image compression and masked-time image compression.
- Image storage in flash memory with robust management for reliability and availability
- Platform housekeeping storage
- File system

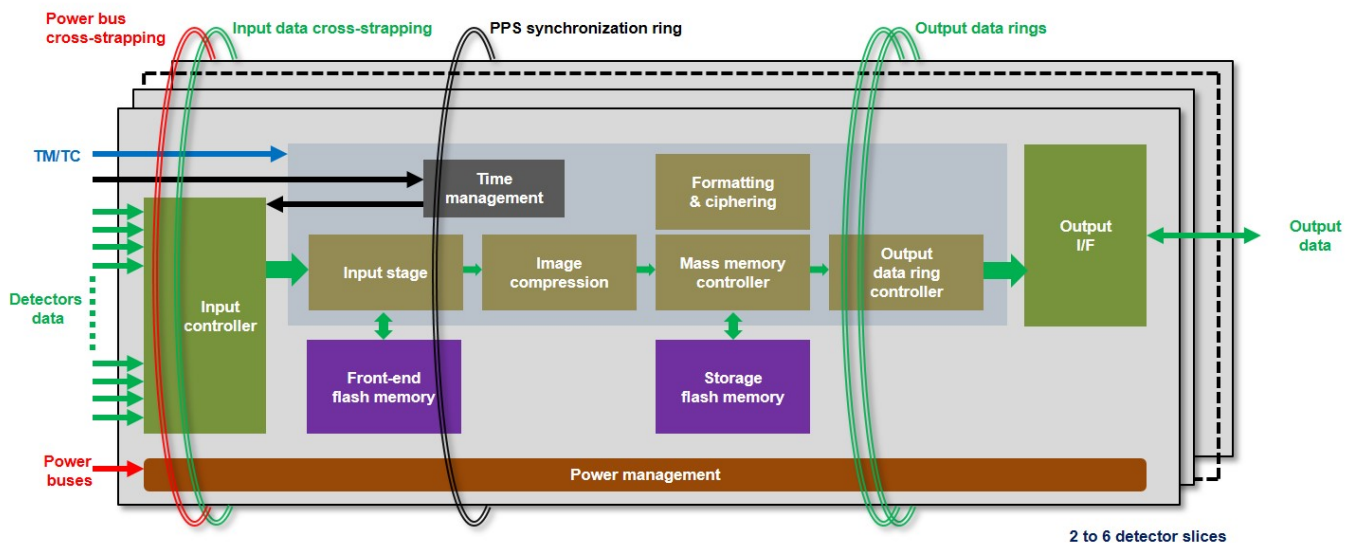
BUDGETS

- Mass: From 5 kg to 12 kg
- Volume: From 365(L) x 104(W) x 220(H) mm³ to 365(L) x 224 (W) x 220(H) mm³
- Power dissipation, depending of the configuration (2 to 6 slices):
 - 60W to 180W during simultaneous compression and replay
 - 12W to 72W in standby mode
- Reliability: 0,99 over 10 years in orbit for 6 slices

PERFORMANCE PARAMETERS

- User capacity: 4Tb to 12Tb
- Input rate: 1,8 Gb/s with 6 slices
- Real time image compression: from 350MPixels/s to 1050MPixels/s
- Compression ratio: 3 to > 6

Hardware and Functional Architecture



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