Versatile Computing Systems

VCompS-4200 Distributed Processing and I/O

Distributed solution with an architectural approach that provides both flexibility and cost effectiveness.

Dissimilar Computing Capability
- GE Custom System On Chip (cSoC) processor architecture offers two fully independent processors in one package
- Xilinx Ultrascale+ Multi-Processor System on a Chip (MPSoC) provides a dissimilar ARM-based processor

Optimized Design
- Packaging developed to optimize size, weight, and power requirements for allowing for flexible integration on many type of aircraft
- GE Synergy software environment includes all components necessary to fully support an entire avionics application solution
- Field loadable via A615 data loader

Comprehensive Input/Output (I/O) Complement
- Standard digital avionics interfaces available are compatible and interoperable with a wide range of aircraft systems
- Large bank of analog and discrete signals offer flexibility for many aircraft applications
- Able to configure I/O to the multiple processing elements

Operating Environment
- Ruggedized design allows for operations at extreme temperature, altitude, and humidity conditions
- Protected from electro-magnetic interference, power transients, and lighting strikes

Certification Ready
- Full artifacts to efficiently create safe, certifiable systems at the highest levels of criticality
- Certifiable to safety critical design assurance levels in accordance with ARP4754, DO-178C, and DO-254.

geaviation.com
Performance specifications

Processors
- GE cSoC Dual Lane e5501 Power Architecture  1.2 GHz
- Xilinx UltraScale ARM A53/R5 1.5 GHz

GE cSoC Features (VCompS-1000)
- Dual lane, independent processor mode
- Fully coordinated cross-lane lockstep JTAG debugging
- Cross-lane communication mailbox (not available in lock-step mode)

Input/Output and Signal Characteristics
- 12x Discrete Output O/G: 250 mA
- 12x Discrete Output 28V/O: 28V @ 250 mA
- 36x Discrete Input configurable in banks of 8 - 28/V Open or GND/Open
- 6x RT ADDR: Open/Gnd (5+Parity)
- 3x in / 3x out Channel Operative (CHOP): 100 us pulse at 800 Hz at low voltage differential levels (RS-422)
- 3x DPIU Channel ID discretes
- 4x MIL-STD-1553B
- 4x 2 port node, 1x 3-port node IEEE-1394b: 200 mbps
- 16x RS-422/RS-485: up to 921.6 K Baud
- 10x Rx / 8x Tx ARINC 429: Low or High Speed
- 4x ARINC 825 (CAN)
- 4x Ethernet: 10/100/1000 BaseTx
- ARINC 664 Part 7 (AFDX): 10/100/1000 BaseTx (Option)
- 1x in / 2x out 1PPS: 0-10 V, 20 mSec pulse/sec
- 8x A-to-D Inputs (Differential or Single- Ended)
- 8x D-to-A Outputs (AC or DC, FOP or VOP)
- 4x Analog Current Output
- 4x +15V Excitation (various resistances)
- 4x in/3x out Mode/TTL Discretes
- 8x NVM control discretes
- 3x RS-232 (test)
- 3x 10/100 Ethernet (test)

Operating Environment
- Temperature: -40°C to +71.1°C
- Altitude: up to 50,000 ft
- Relative Humidity: >95%
- Vibration: up to 11.3 GRMS
- MIL-STD-461E: CE102, CS101, CS114, CS115, CS116, RE102, and RS103 (200V/m)
- DO-160E: A1J22 Lightning Protection
- MIL-STD-704F: 50 mSec transient protection

Software Environment
- GE Synergy w/ VxWorks7, ARINC 615A Data Loader, Factory Support Application, and comprehensive configuration, analysis, and development toolset

Safety
- BIT > 95% coverage
- Fast Restart (< 100 ms)
- Support for Single to Quad Redundancy: Cross Channel Data Link (CCDL) and Channel Operation Discretes (CHOPs)
- ARP4754, DO-178C, and DO-254 DAL A certifiable
- MIL-HDBK-516C Safety Critical verifiable

Feature Attribute
Size (L x W x H) 11.25 inches x 8.00 inches x 2.50 inches 28.6 cm x 20.3 cm x 6.4 cm
Weight < 10.0 lbs < 4.5 kg
Power < 70 W (passive cooling)