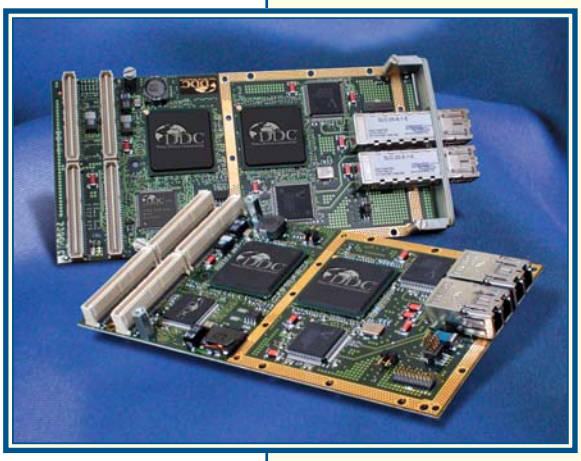
FibreACCESS™ Fibre Channel Network Access Controller

MODEL: FC-75000 Series

www.ddc-web.com



FEATURES

- DDC-Developed Technology to Support Long Life Cycles
- Dual-Channel Operation with Failover Options
- Conduction- or Convection-Cooled PMC Card Providing Extended Temperature Operation
- 1 Gb/s or 2 Gb/s Operation
- Class 2 and 3 Service Including Broadcast and Multicast
- 320 MBytes/s Throughput with Memory-to-Memory Latency Under 20 µS

DESCRIPTION

The FC-75000 FibreACCESS™ series are dual redundant Fibre Channel Network Access Controller (NAC) PMC cards optimized for use in military/aerospace applications. The FibreACCESS NAC is suitable for a wide variety of applications for embedded avionics and vetronics systems. These include sensor interfacing, multi-processor and DSP arrays, radar systems, display systems, serial backplanes, and storage.

Based on DDC developed Fibre Channel technology, FibreACCESS is optimized to meet the deterministic performance, high-reliability, and demanding environmental requirements of embedded, real time, military applications. The FibreACCESS FPGA-based architecture can be tailored to meet a wide range of specific system requirements and is not subject to rapidly changing commercial market forces that can result in shortened life cycles. DDC FibreACCESS NACs have been designed to meet the multi-decade life cycle demands of military/aerospace programs, continuing our demonstrated commitment as a long-term military COTS supplier of digital interface devices.

FibreACCESS cards support Class 2 acknowledged and Class 3 unacknowledged Fibre Channel service. The cards provide leading edge performance, with the capability of operating at sustained data rates of over 300 MBytes/s with 2 Gb/s signaling. Built-in DMA engines and 64-bit/66 Mhz PCI initiator/target interface, operating together with the frame, sequence and exchange management controller, autonomously move payload data to and from PCI space. Using host initiated descriptors, frames are assembled and disassembled

FC-75000 Series Block Diagram

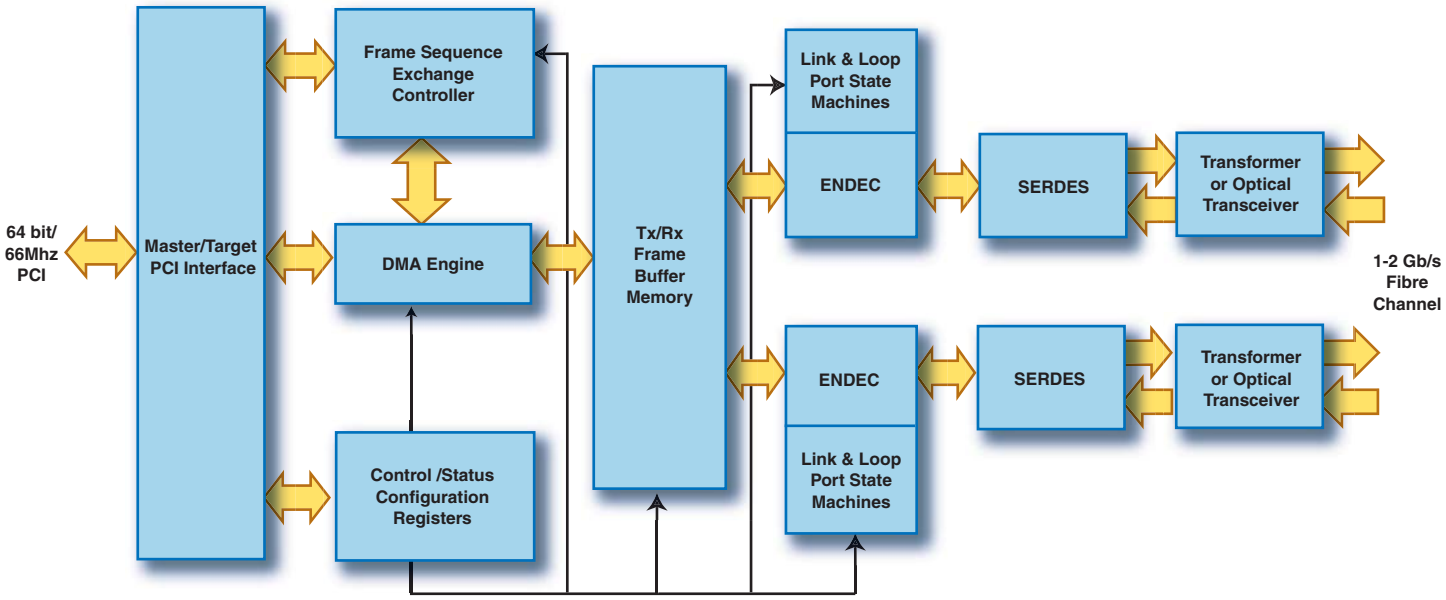


Figure 1 - Block Diagram

Features

To support the unique requirements of military aerospace applications, the FibreACCESS series includes a number of advanced architectural features such as simultaneous processing of pre-scheduled on-card exchanges, along with high and low priority on-demand exchanges. Other features include autonomous automatic failover; implicit Fibre Channel login; Fibre Channel priority; and ELS clock synchronization.

Environmental

The FibreACCESS conduction cooled cards are designed to operate in harsh environments at temperatures from -40 °C to +85 °C, and to withstand the mechanical shock and vibration typically found in military/aerospace environments.

Software Support

Host driver support is available for VxWorks and Linux. Support is provided for ASM, TCP/IP, SCSI Initiator and Raw Mode upper layer protocols. Figure 2 shows the host software layering.

Physical Layer Options

The FibreACCESS NACs operate at either 1 Gb/s or 2 Gb/s data rates in point-to-point, arbitrated loop or switched fabric topologies. Front panel copper or optical interfaces are supported as well as rear panel copper interfaces. Both standard SFF and compact form factor optical interfaces are available.

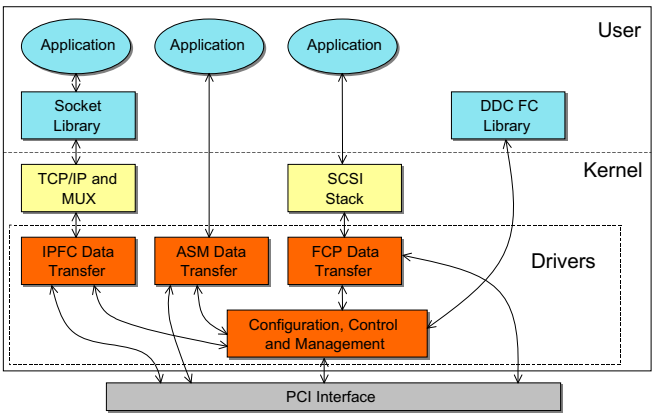


Figure 2 - Software Layering

Specifications

PARAMETER	MIN	TYP	MAX	UNITS
ABSOLUTE MAXIMUM RATINGS				
Supply Voltages				
+3.3V	-0.5		4.0	V
+5V	-0.3		6.0	V
POWER SUPPLY REQUIREMENTS				
Voltages/Tolerances				
+3.3 V	3.0	3.3	3.45	V
+5 V	4.75	5.0	5.25	V
Current Drain				
1 Gb/s Copper				
+3.3V		394		mA
+5 V		860		mA
2 Gb/s Optical				
+3.3V		880		mA
+5 V		660		mA
THERMAL				
Power Dissipation				
1 Gb/s Copper		5.6		W
2 Gb/s Optical		6.2		W
Operating Temperature	-40		+85	°C
Storage Temperature	-65		+100	°C
FIBRE CHANNEL PHYSICAL INTERFACE				
1 Gb/s Copper (transformer isolated) FC-PI 100-DF-EL-S				
Link Distance			30	m
1 Gb/s Optical FC-PI 100-M6-SN-I				
Link Distance			300	m
2 Gb/s Optical FC-PI 200-M6-SN-I				
Link Distance	0.5		150	m

PARAMETER	MIN	TYP	MAX	UNITS
PERFORMANCE CHARACTERISTICS				
Throughput				
Sustained		320		MB/s
Peak		400		MB/s
End-to-End Latency			20	µs

ENVIRONMENTAL CHARACTERISTICS

Humidity	0% to 95% relative humidity (non-condensing)
Shock	Half-sine, input amplitude of 40 g's, duration of 11 ms, in each of six directions.
Vibration	Random input, 15 to 2,000 Hz, overall RMS level of 14g applied for 40 min in each of three orthogonal axes.

PHYSICAL CHARACTERISTICS

Form Factor	PMC IEEE P1386.1, ANSI/VITA 20-2001 with secondary thermal interface
Size	144 x 74 mm (5.659 x 2.913 in)
Weight	96 g (3.4 oz)

Features	Benefits
Physical Layer	
1 Gbs and 2 Gbs signaling rate	Flexibility to support multi-speed networks
Transformer capacitive coupling (1 Gbps copper)	Provides choice of isolation based on cost-performance requirements
Front panel optical media option	Greater link distances, reduced cable weight, no EMI
Topologies Supported	
Point-to-point	Simple, supports high throughput
Arbitrated loop	Low cost interconnect topology
Fabric	Most flexible, high aggregate bandwidth
Upper Level Protocols Supported	
Raw mode	Lowest overhead, supports mapping of any protocol over Fibre Channel
ASM	Very low overhead, strong security, supports multicast
TCP/IP	Provides compatibility and bridging to standard networks
SCSI initiator	Provides support for network attached storage
Hardware Assist	
ASM offload	Maximized throughput while minimizing host loading
Full duplex segmentation & reassembly	Supports large sequences, guarantees in-order reception
Deep Rx and TX frame buffers	Maintains performance despite "bursty" traffic and PCI or network bottlenecks
Exchange queue	Offloads scheduling from the host, providing deterministic performance

Ordering Information

FC-750 00 M 2 -X00 N

Supplemental Process Requirements
N = Conformal Coat
Blank = No Conformal Coat

Temperature Range
2 = -40 to +85 °C
3 = 0 to +70 °C

Channel Count
2 = Dual Channel

Board Type
M = PMC Card

Media / Speed
00 = Copper 1 Gbps, transformer isolated
10 = Copper 1 Gbps, rear panel I/O
40 = Optical 1 Gbps
41 = Low-profile optical 1 Gbps
60 = Optical 2 Gbps
61 = Low-profile optical 2 Gbps

Base Product
FibreACCESS Network Access Controller

Note: These products contain tin-lead solder.

STANDARD DDC PROCESSING FOR DISCRETE MODULES/PC BOARD ASSEMBLIES		
TEST	**METHOD(S)**	**CONDITION(S)**
INSPECTION/WORKMANSHIP	IPC-A-610	Class 3
ELECTRICAL TEST	DDC ATP	—

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