

EnsembleSeries™ SFM8104

Rugged AdvancedTCA 40 Gb/s Ethernet or InfiniBand switch



- Full 40 Gb/s Ethernet or InfiniBand switching:
 - Ethernet ecosystem; 40GBASE-KR4 and 10GBASE-KX4
 - Or InfiniBand ecosystem; FDR-10, QDR, DDR and SDR
- Scalable with 2-, 5-, and 14-slot AdvancedTCA chassis options

The EnsembleSeries™ SFM8104 is a rugged AdvancedTCA switch featuring the latest Ethernet and InfiniBand™ bridging and switching technology from Mellanox’s 6th generation SwitchX®-2 VPI. Bandwidths of up to 40 Gb/s and a theoretical maximum duplex bandwidth of 2Tb/s are possible.

This AdvancedTCA® switch is designed to the 8U standard AdvancedTCA PICMG 3.0 form-factor and provides comprehensive layer-2 switching and system management for up to 12 payload slots.

Data Plane Switching

- Standard PICMG 3.1 compliant open architecture switching for net-centric processing and control applications with:
 - Ethernet (10GBASE-KX4, 40GBASE-KR4)
 - or InfiniBand (FDR10, QDR, DDR, or SDR) speeds
- Switching for up to 12 AdvancedTCA payload slots
- Front-panel I/O for inter-chassis communication or I/O interfacing

Base Channel Switching

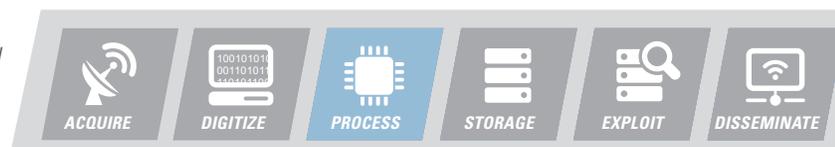
The EnsembleSeries SFM8104 supports the standard AdvancedTCA base channel, allowing for internal switching

Fabric Management

The base and fabric channels are managed by locally running fabric management software. The software accesses the management command line interface (MCLI) and module’s management information base (MIB). The following features are supported by the EnsembleSeries SFM8104 fabric management utilities:

- | | |
|---------------------------------------|----------------------|
| • SNMP MIB Support | • Event log (syslog) |
| • Inbound and Outbound telnet | • Serial console |
| • Inbound/Outbound SSH with passwords | • Ping |
| • FTP Client | • Trace route |
| • SCP Client | • IF MIB |
| • ASCII editable configuration file | • Entity MIB |
| • Industry standard CLI – mcli | • Entity sensor MIB |

Mercury Systems is a leading commercial provider of secure sensor and safety-critical processing subsystems. Optimized for customer and mission success, Mercury’s solutions power a wide variety of critical defense and intelligence programs.



Software/Firmware/Protocols

- Base and fabric channels link aggregation including LACP, IPv4, and IPv6 based fabric management
- VLAN, spanning three protocols (including MSTP, RSTP and STP), IGMP snooping, port mirroring, unicast and multicast forwarding with support for jumbo packets (10K)

Front-Panel I/O

- One RJ45 10/100/1000 Ethernet port (fabric manager, soft/firmware updates)
- Two RJ45 1000 Ethernet ports (base channel)
- Eight QSFP+ Ethernet ports (base and fabric channels)

System Management

Each EnsembleSeries SFM8104 switch implements the advanced system management functionality inherent to the AdvancedTCA standard to enable remote monitoring, alarm management, hardware revision and health status.

Using the standard IPMI-A and IPMI-B bus, intelligent platform management controller (IPMC) and IPMI protocol, the on-board system management block implementation is designed to comply with PICMG 3.0. This allows the EnsembleSeries SFM8104 switches to:

- Read sensor values
- Read and write sensor thresholds, allowing an application to react to thermal, voltage, or current variations that exceed thresholds
- Reset the entire switch
- Power up/down the entire switch
- Retrieve switch field replaceable unit (FRU) information

Open Software Environment

Mercury leverages over 35 years of multicomputer software expertise, including multicore processor expertise, across its many platforms. The switch management software and module management software on the EnsembleSeries SFM8104 switch was developed by Mercury in the United States, using the provided SDK

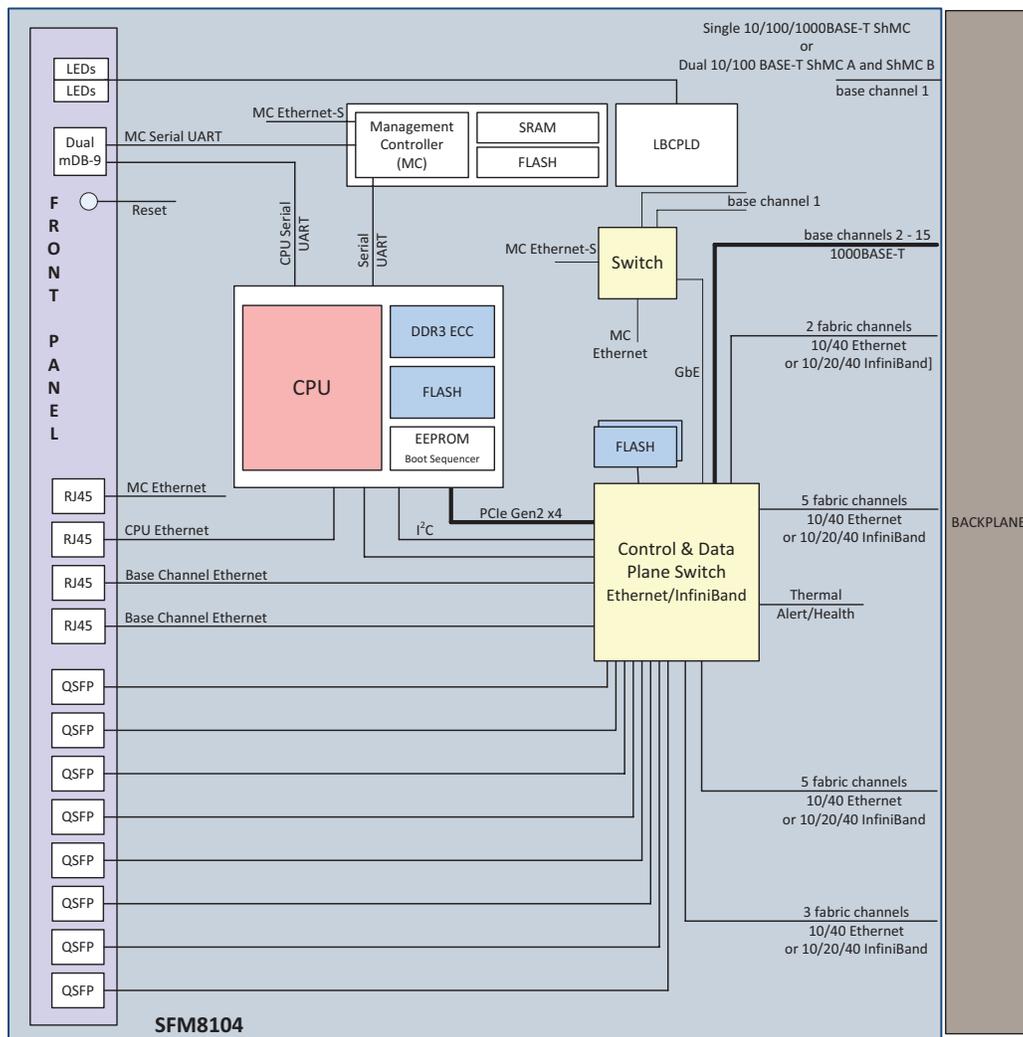


Figure 1 - EnsembleSeries SFM8104 Functional Block Diagram

Mercury Sensor Processing Ecosystem

Modern sensor compute subassemblies are customized assemblies of interoperable building blocks built to open standards. Mercury's hardware and software portfolio of building blocks are physically and electrically interoperable as defined by international industrial standards, including AdvancedTCA.

Mercury AdvancedTCA subsystems are designed from a suite of sophisticated open architecture building blocks that are combined and scaled to meet a broad range of advanced sensor chain processing requirements. Our subsystems may include analog, digital and mixed-signal receiver modules, single-board computers and signal processing payload modules. Payloads may have acquisition, digitization, processing, and exploitation and dissemination elements and include FPGA, CPU, GPU or ADC/DAC technology.

Specifications

Fabric Channels

MMellanox 6th generation SwitchX®-2 VPI with Ethernet - 10GBASE-KX4, 40GBASE-KR4

Or InfiniBand - FDR10, QDR, SDR

Up to 12 payload slots

Memory

2GB DDR3-1333 with ECC

Front-panel I/O

One RJ45 10/100/1000 Ethernet for fabric manager, firmware/software updates

Two RJ45 1000 Ethernet ports to control plane

Eight QSFP+ base/fabric channel ports

AdvancedTCA System Management

Fully compliant intelligent platform management controller (IPMC) supports:

Sensor reading and event logging (thermal, voltage, etc.)

Health monitoring, threshold setting, and event management

Payload control (power-up/down, cold/warm reset)

Field replaceable unit (FRU) information retrieval

Mechanical and compliance

8U AdvancedTCA (PICMG 3.0)

1.2" slot pitch

Power consumption ~120W per switch

Environmental

		Standard ATCA Product Environmental Qualification Levels	
Cooling Method		Air-cooled	
Ruggedness		ATCA Rugged Level A1	ATCA Rugged Level A2
Temperature	Operating*	0°C to +40°C	-5°C to +40°C
	Storage	-40°C to +70°C	-40°C to +85°C
Humidity	Aggravated	10-95%, non-condensing	
Altitude	Operating*	0-10,000ft	
	Storage	0-30,000ft	
Vibration	Sine	0.5G Sine, 5-100 Hz, .25 Octave/min, 1 hr/axis	1G Sine, 5-100 Hz, .25 Octave/min, 1 hr/axis
	Shock	z-axis: 10g; x and y-axes: 10g; (11ms ½-sine pulse, 3 positive, 3 negative)	z-axis: 10g; x and y-axes: 30g; (11ms 1/2-sine pulse, 3 positive, 3 negative)
Required Flow Rate		Contact Factory	

* Customer must maintain required cfm level. Consult factory for the required flow rates. Reduced max ambient operating temperature or increased airflow may be required to maintain full operation at altitude.

Additional Services			
Optional Environmental Screening and Analysis Services		Standard Module, Optional Services	
• Cold Start Testing	• Safety Margin Analysis	• Engineering Change Order (ECO) Notification	• Alternate Mean Time Between Failure (MTBF) Calculations
• Cold Soak Testing	• Temperature Cycling	• ECO Control	• Hazmat Analysis
• Custom Vibration	• Power Cycling	• Custom Certificate of Conformity (CofC)	• Diminished Manufacturing Sources (DMS) Management
• CFD Thermal Analysis	• Environmental Stress Screening	• Custom UID Labeling	• Longevity of Supply (LOS)
• Finite Element Analysis			• Longevity of Repair (LOR)
Contact factory for additional information			

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3085.05E-1118-DS-Ensemble SFM8104



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