

# MCH-1010/1020

## MicroTCA Carrier Hub Module

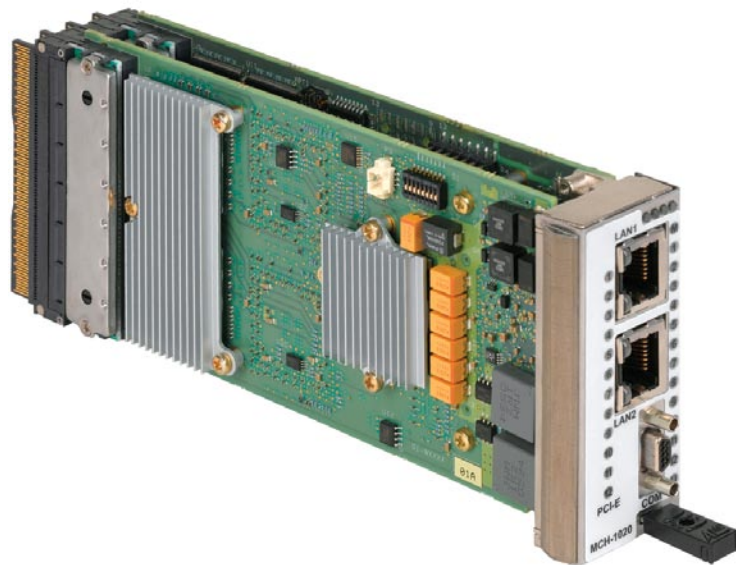
■ Embedded Computing for Business-Critical Continuity™

**Our MicroTCA™ Carrier Hub (MCH) modules include layer 2 Gigabit Ethernet and optional PCI Express fabric switches capable of supporting 12 AMC payloads, telecom clock switching and IPMI management**

- Full-size module designed to fit into MCH slot of MicroTCA platforms
- Layer 2 unmanaged Gigabit Ethernet switching to each of 12 payload slots with front panel uplinks for external connections
- Optional PCI Express switching with narrow or spread spectrum clock distribution for applications that require PCI Express capability
- IPMI management functions
- MicroTCA telecom clock distribution

The Emerson Network Power MCH-1010/1020 modules, designed to be MicroTCA.0 R1.0 compliant, are high performance and stable solutions for system builders wanting to create a MicroTCA solution using best-in-class components. By definition, MicroTCA is a small size and flexible standards-based form factor that is being utilized in many diverse markets – telecom, defense and aerospace, medical and industrial – each with different packaging requirements. Emerson provides some application-ready MicroTCA system platforms, and some customers will use their in-house expertise to create custom solutions based on commercial off-the-shelf (COTS) building blocks like our MCH.

Emerson has great experience in building switch modules for alternative open standards systems like PICMG® 2.16 and AdvancedTCA®. By leveraging our previous technology and expertise, we have created two MCH variants. The standard module, the MCH-1010, provides management, telecom clock switching and layer 2 unmanaged Gigabit Ethernet switching capability. The MCH-1020 variant includes an additional PCI Express fabric switch complete with narrow or spread spectrum clocking functionality for those applications that need local PCI Express connections.

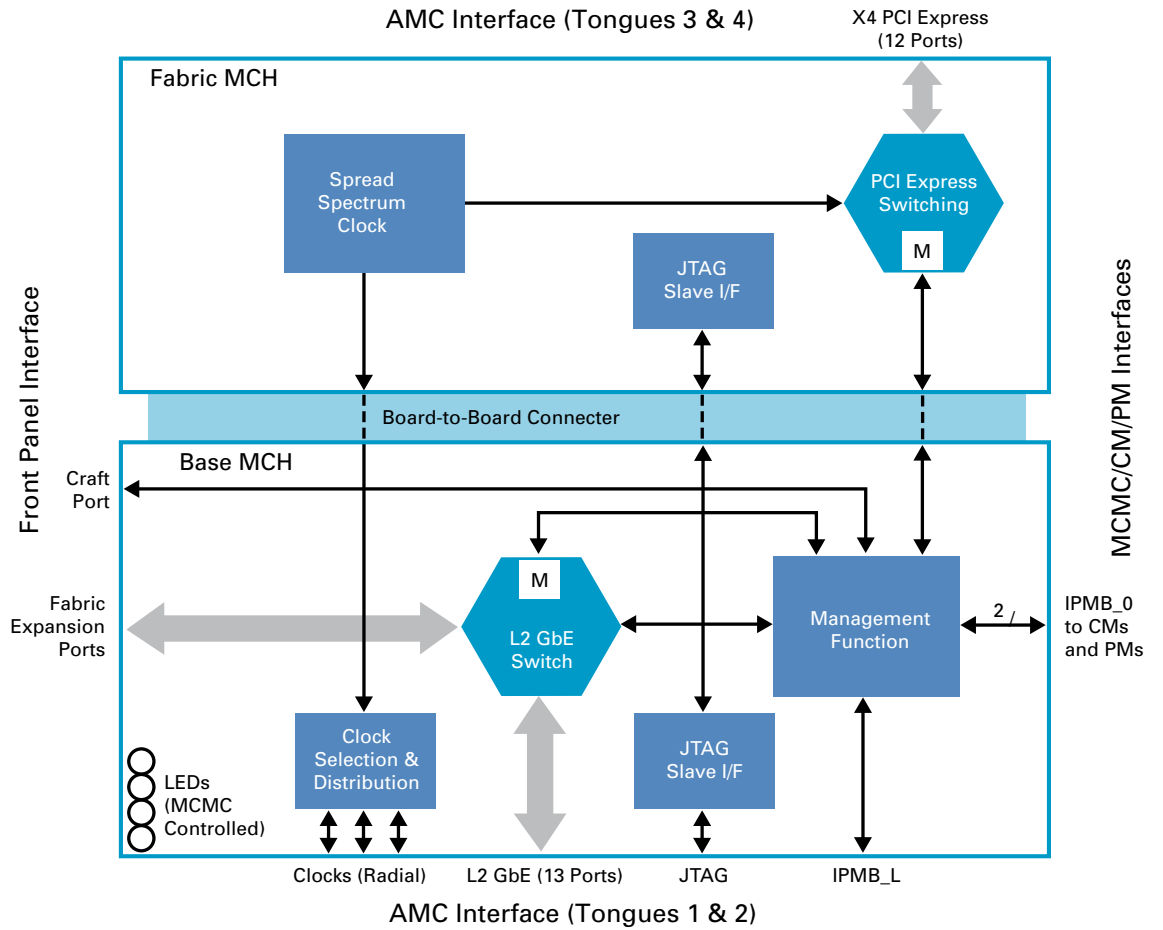


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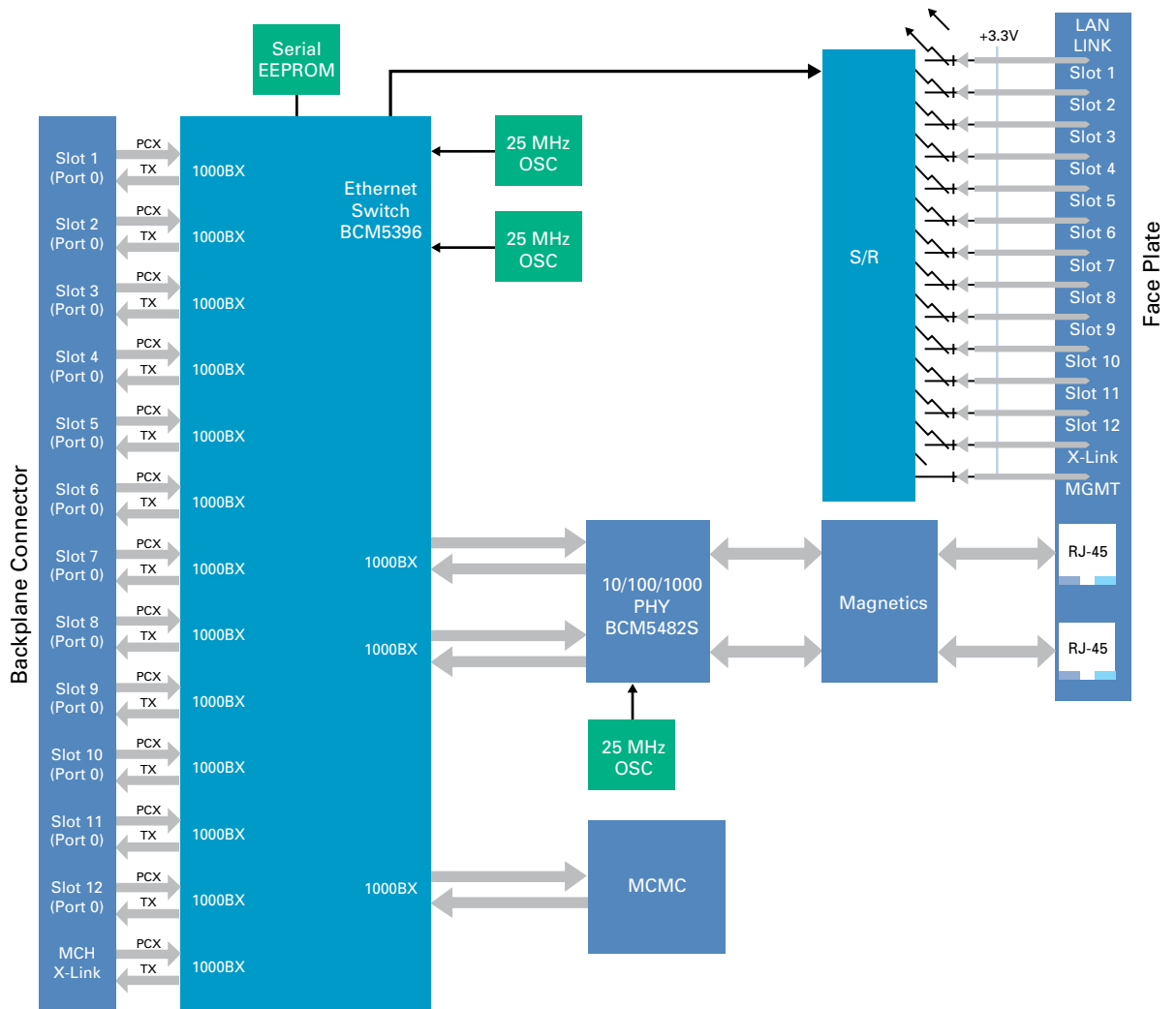
Block Diagram



## Ethernet Connectivity

Both versions of the MCH support a single star Gigabit Ethernet switching function to 12 AMC payloads. There are two front-panel mounted Gigabit uplink ports for connection to other shelves and/or external network equipment. There is an Ethernet management connection to the on-board MicroTCA Carrier Management and Shelf Manager Controller, and also a cross link port for connection to another MCH in the same shelf.

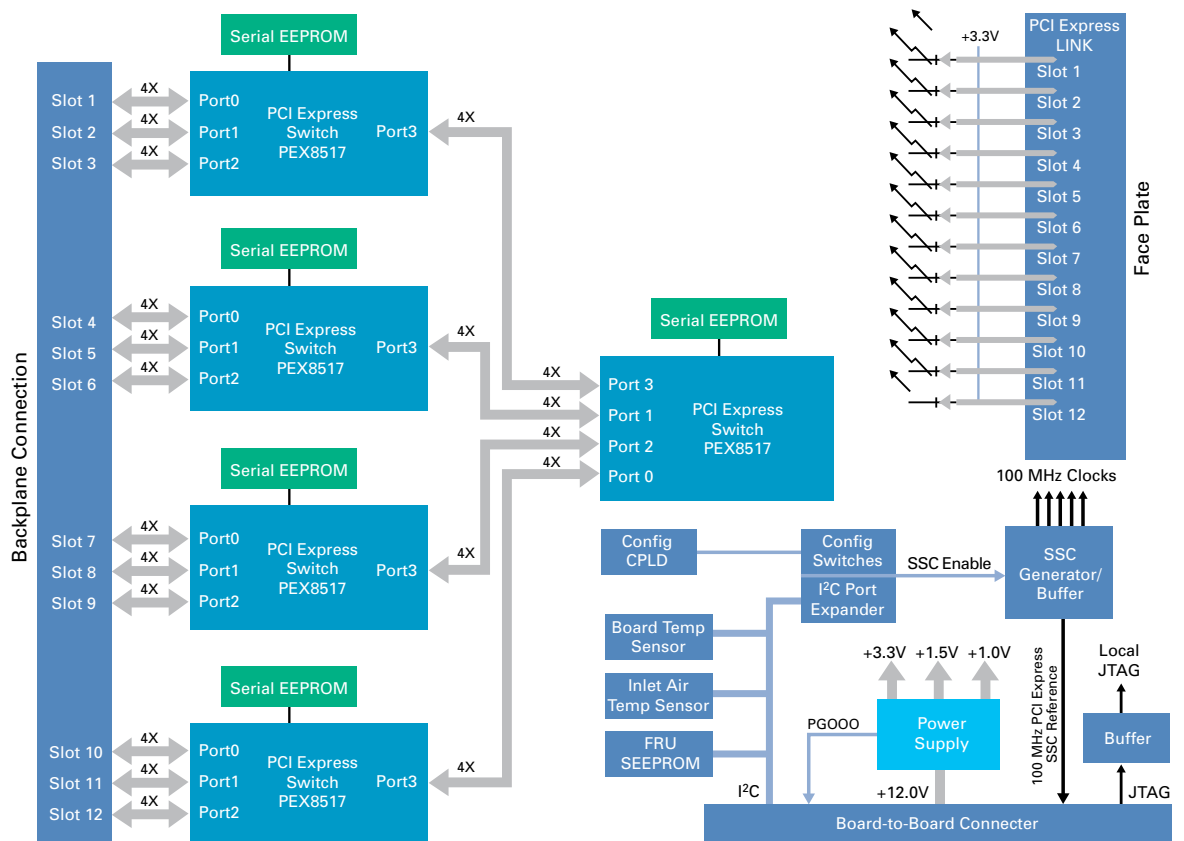
Initially provided in an unmanaged configuration, the BCM5396 switch device used can provide additional functions such as 802.1Q tag VLAN, 802.1p priority, spanning tree and port mirroring. Emerson expects to make example software available that demonstrates additional switch features.



## PCI Express Interface

The optional PCI Express MCH variant provides a fully non-blocking switching architecture with a flexible lane configuration of x1, x2 and x4. By utilizing multiple, interconnected switches, it will be possible to implement systems with different domain configurations. The default is for a single PCI Express domain across all the

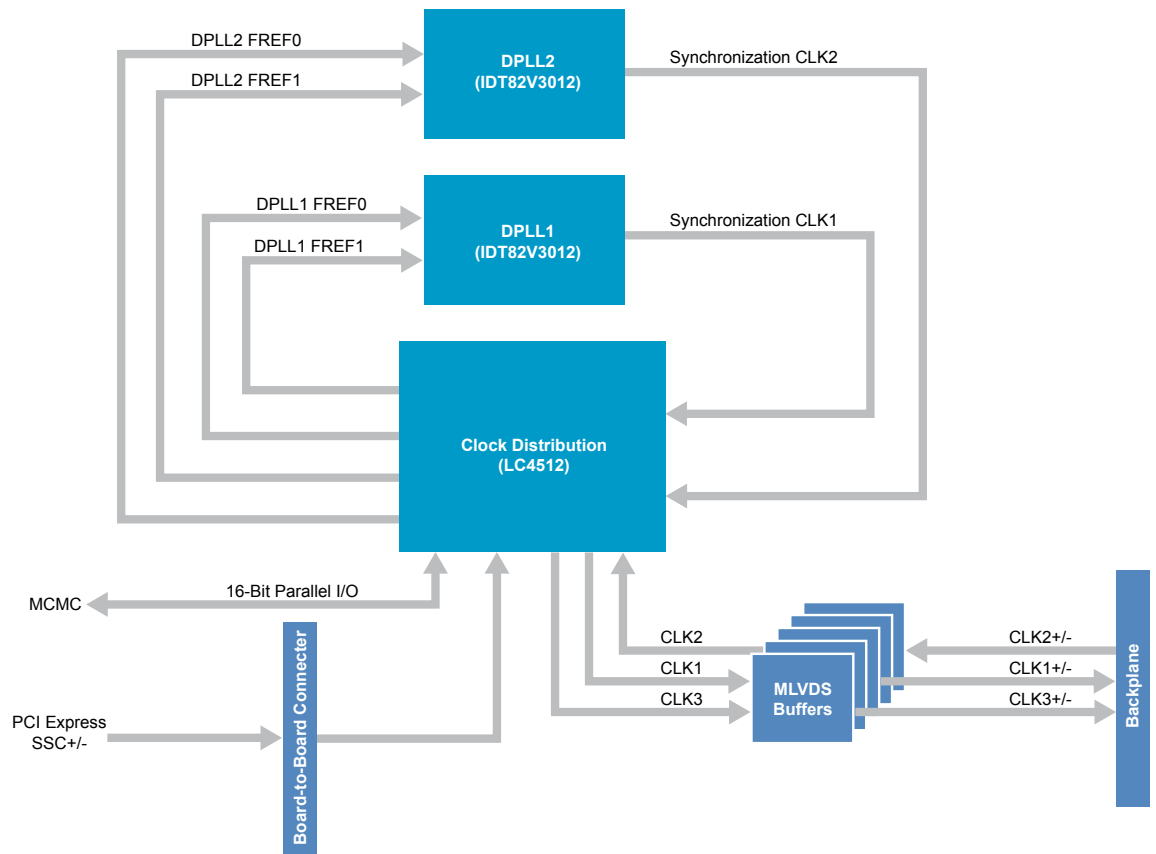
payload slots, but double, triple and quad domains could be supported (in a future firmware release). A PCI Express spread spectrum clock function is also supported. The PCI Express fabric interface resides on a mezzanine board, and interfaces via MCH connectors 3 and 4.



## Clocking Interface

Both versions of the MCH support Telco clock re-distribution or generation. The MCH base board provides up to two synchronization clocks for the MicroTCA system. The MCH base board is specifically designed to support 8 KHz and 19.44 MHz reference input clocks but other input clocks may be supported including but not limited to 1.544 MHz, and 2.048 MHz.

Basic operation is for the MCH-1010/1020 to receive reference clocks from any one of the twelve AMC payload slots on CLK2 and to be able to source any one of these clocks, an 8 KHz framing pulse, or a 19.44 MHz synchronization clock onto the CLK1 and CLK3 MicroTCA backplane connector pins.



## Panel Information

### FRONT PANEL INFORMATION

The front panel for the MCH-1010 consists of the following:

- Latch/handle
- Standard AMC LEDs
- RS-232 micro-DB-9 connector
- Two RJ-45 Ethernet connectors and Gigabit Ethernet status LEDs for the management interface
- AMC payload site indicators
- MCH update link

### ETHERNET LEDs

LED on solid indicates link on particular AMC slot  
Flashing LED indicates activity

Top RJ-45 LED indicates activity  
On solid = No Activity  
Flashing = Activity

Bottom RJ-45 LED indicates link speed  
Green = 1000BASE-T  
Amber = 10BASE-T or 100BASE-TX

### PCI EXPRESS LEDs

The MCH-1020 variant has an additional set of LEDs to indicate PCI Express fabric link status for the associated AMC payload site.

LEDs on solid indicates PCI Express x1, x2, or x4 link

## Board Specifications

### FORM FACTOR

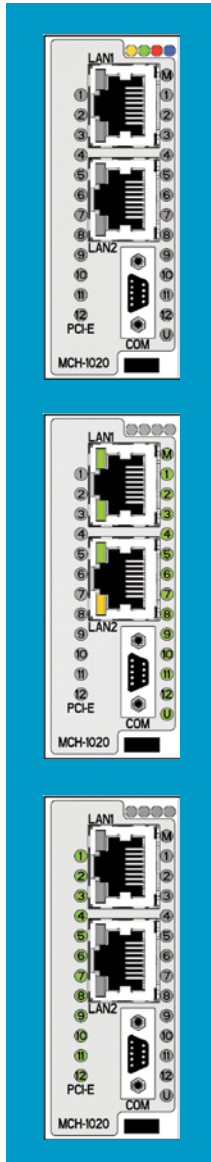
- Full size, 73.5 mm x 180.6 mm
- MCH-1010: Single PCB, single dual-tongue MCH connector
- MCH-1020: Stacked PCBs, two dual-tongue MCH connectors

### FRONT PANEL CONNECTIONS

- Two RJ-45 Ethernet, one Micro-DB-9 RS-232 Serial

### POWER CONSUMPTION

- MCH-1010: 10W nominal, 15W max
- MCH-1020: 30W nominal, 45W max



## Ordering Information

Part Number	Description
MTCA-MCH-1010	Single Star Gigabit Ethernet based MCH
MTCA-MCH-1020	Single Star Gigabit Ethernet and PCI Express MCH

## SOLUTION SERVICES

Emerson Network Power provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include global 24x7 technical support. Renewal services enable product longevity and technology refresh. Plus solution extras include enhanced warranty and repairs.

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