

NAT-MCH Family

The **NAT-MCH** is a MicroTCA (MTCA) Carrier Hub in the form factor of a single or double width, full-size Advanced Mezzanine Card (AMC). As a MicroTCA Carrier Hub (MCH), it provides the central management and data switching entity for any MicroTCA system. It comprises of a base module and numerous optional daughter cards which can be mounted on the base module.

The **NAT-MCH** offers power and system management for MTCA systems with up to 12 AMCs (13 in a non-redundant system without 2nd MCH), support for up to two Cooling Units and up to four Power Modules, which can be configured in various (redundant) configurations.

The single-width **NAT-MCH** aims for applications in MTCA.0 form factor, whereas the double-width **NAT-MCH-M4** is the ideal choice for a MTCA.4 system. Functionally both variants are identical in most parts, however, the **NAT-MCH-M4** provides the option for a Zone3 connector and mounting space for a SATA-HDD, both useable in combination with an optional **NAT-MCH-RTM**.

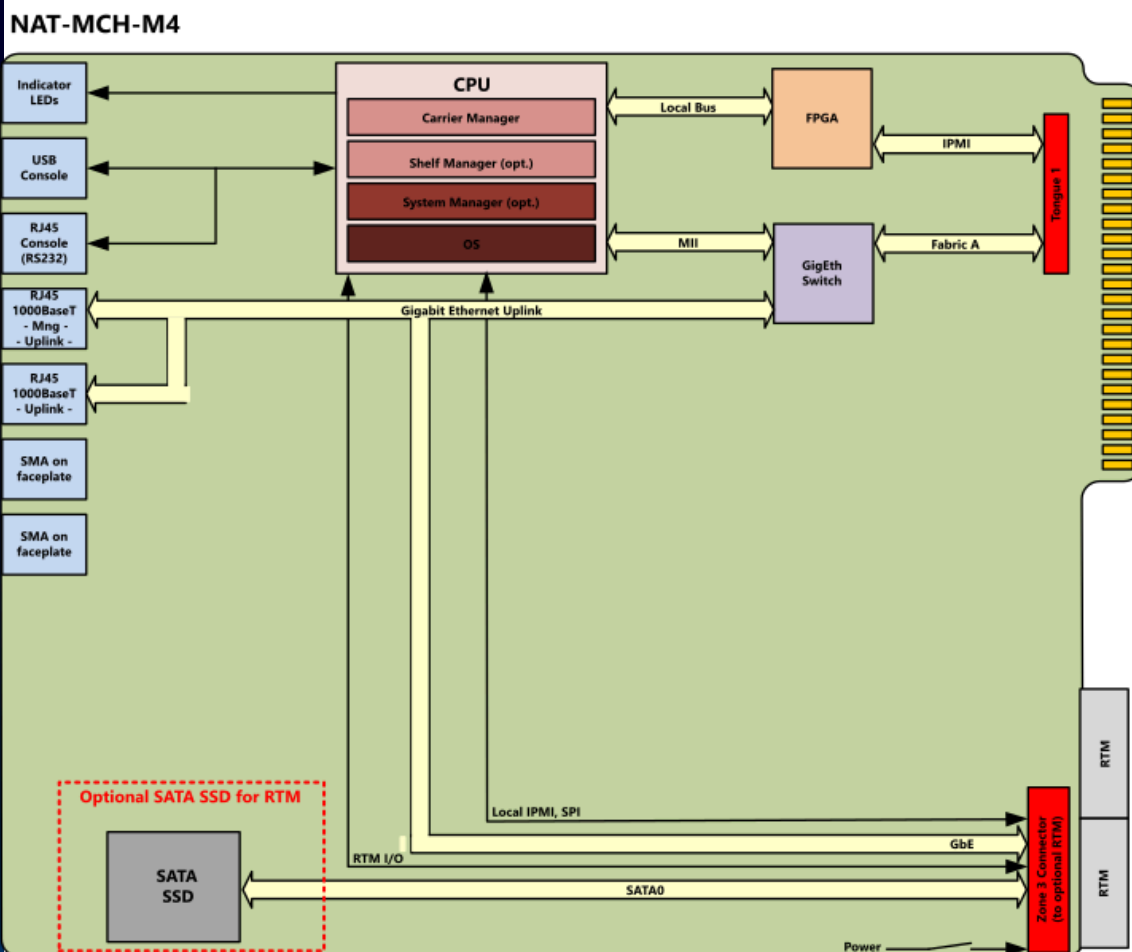
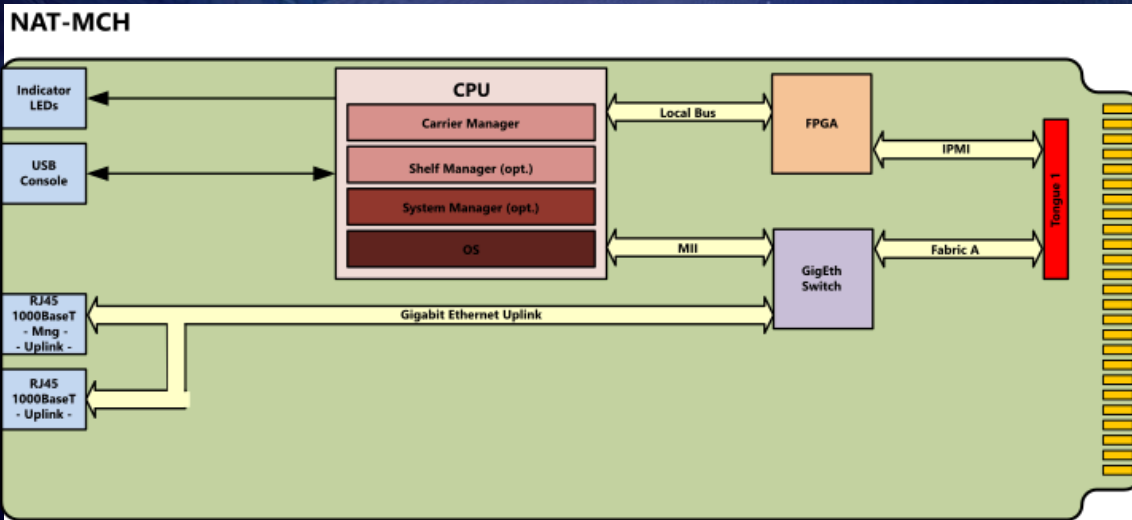
Moreover, the **NAT-MCH-M4** is the base of the **NAT-MCH-PHYS/-PHYS80**, which is designated for physics applications.

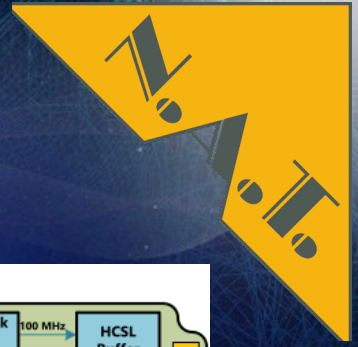
Generally, the base board offers Gigabit Ethernet supporting port-based and tagged VLAN, Rapid Spanning Tree, as well as a port-based rate control via Fabric A. It also provides uplink ports on the front panel to interconnect to other systems.

For advanced clocking switching and distribution, a separate clock module can be mounted (**NAT-MCH-CLK** or **NAT-MCH-CLK-PHYS**). Additionally, a HUB-Module (**NAT-MCH-SRIO**, **NAT-MCH-HUB-E**, **NAT-MCH-PCIex48**, or **NAT-MCH-PCIex80**) offers FatPipe connection via Fabrics D-G to the backplane and optional front uplinks.



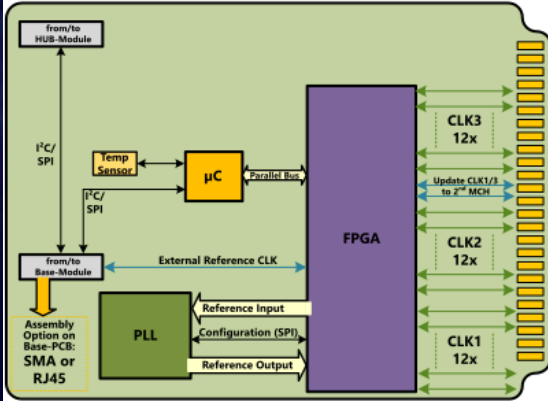
Base Board Variants



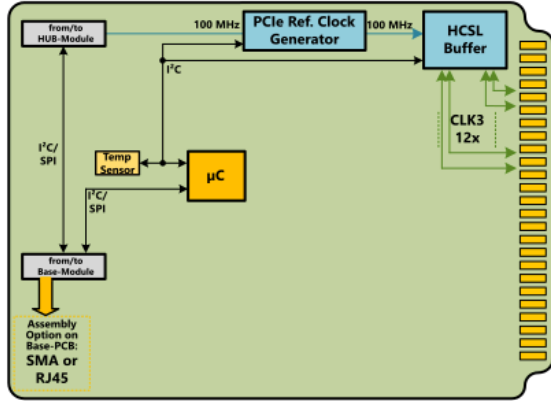


Clock Modules

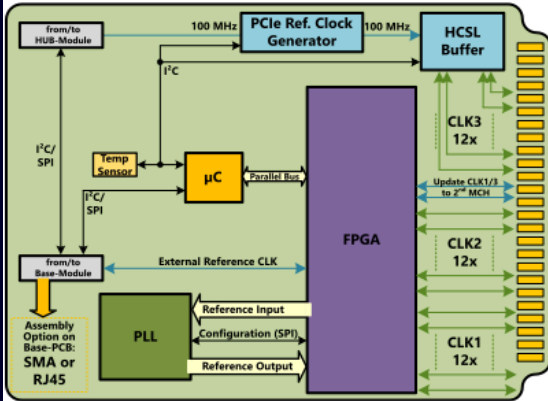
NAT-MCH-CLK-123



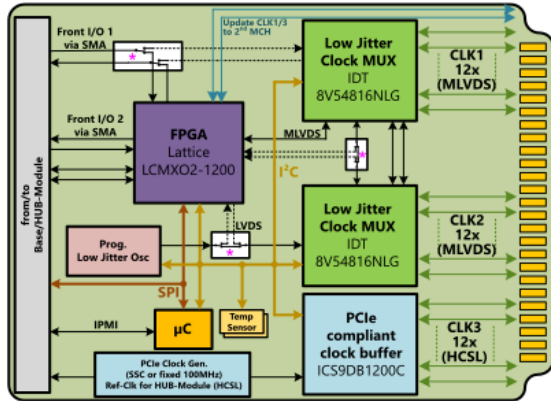
NAT-MCH-CLK-00F



NAT-MCH-CLK-12F

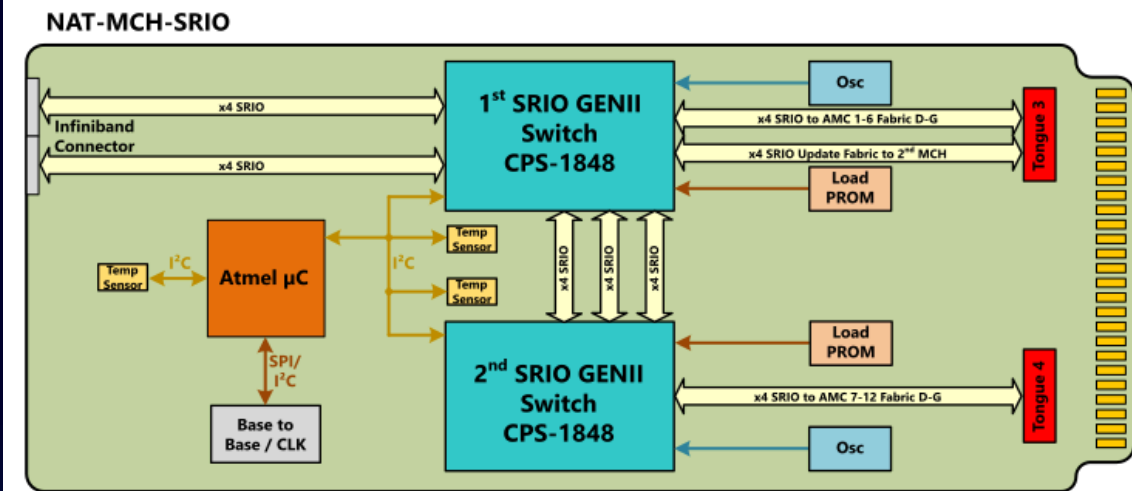
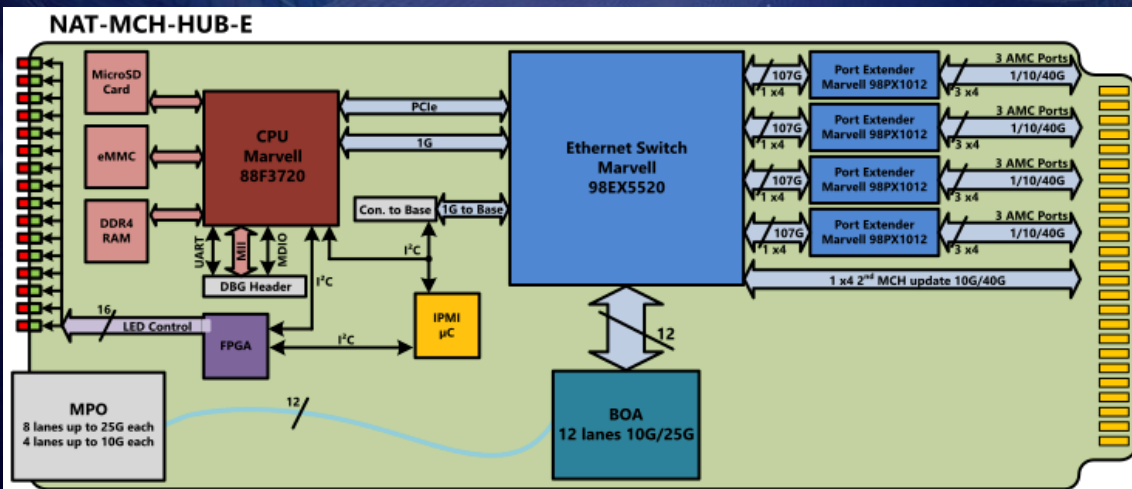


NAT-MCH-CLK-PHYS



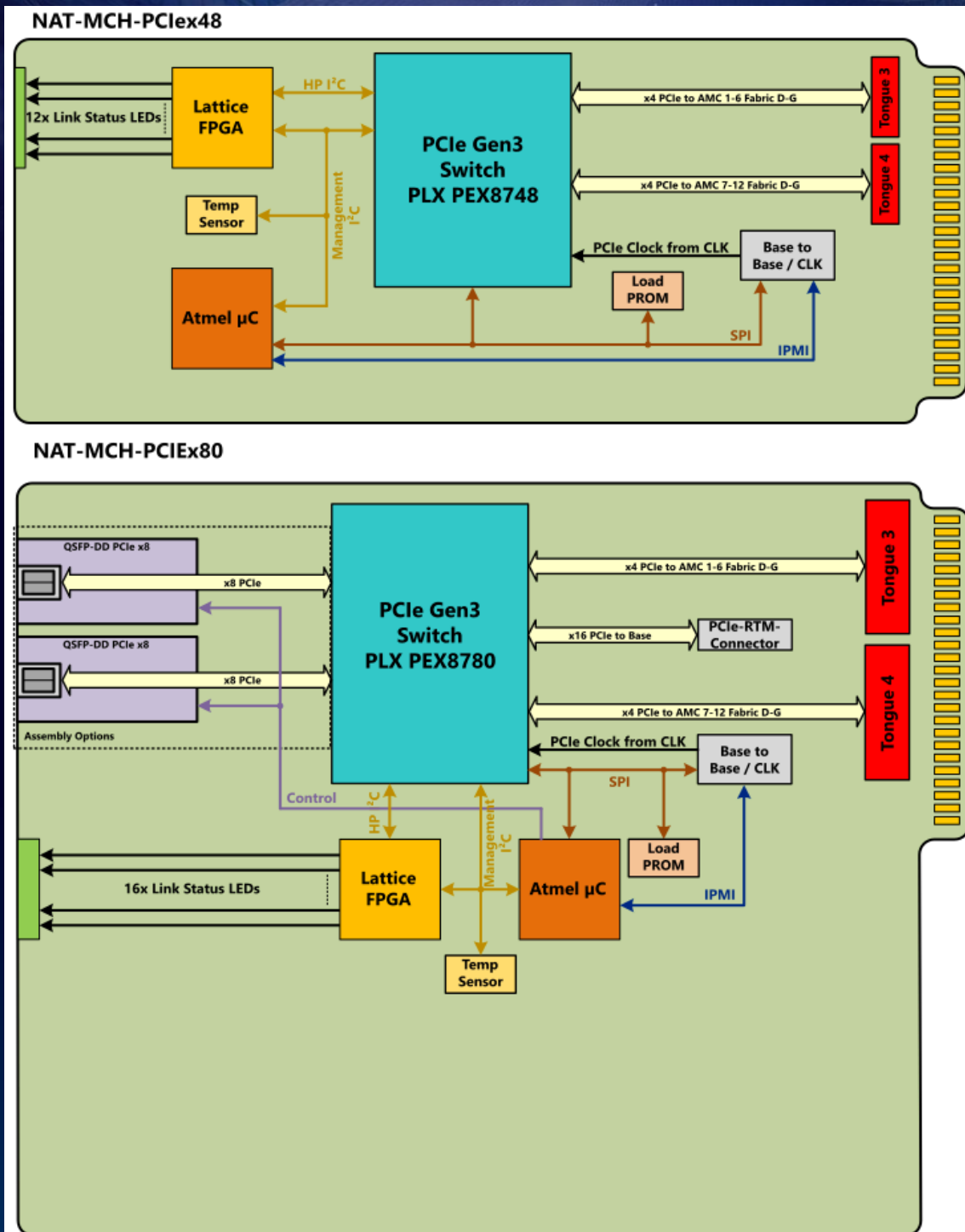
* Assembly option only!
Cannot be changed by customer!

HUB Modules





HUB Modules





Key Features

NAT-MCH

- Single-width, full-size MCH
- Management of up to 13 AMCs, 4 Cooling Units, and 1-4 Power Modules
- NXP Coldfire MCF54452 CPU @266MHz
- 32 / 64 MB DDR2 RAM
- 16 / 32 / 64 MB FLASH
- Console via USB
- 16 LEDs reflecting AMC / CU / PM status
- Software / Firmware: OK1
- Compliance to MTCA.0, AMC.0, AMC.1, AMC.2, AMC.3, AMC.4, IPMI V1.5, HPM.1, CE, RoHS, REACH

NAT-MCH-CLK

- Option -123:
 - M-LVDS
 - FPGA and Stratum-3 PLL
 - CLK1 / CLK2 / CLK3: Telecom Clock
- Option -00F:
 - HCSL
 - CLK1 / CLK2: not supported
 - CLK3: 100 MHz PCIe Ref Clock
- Option -12F:
 - M-LVDS / HCSL
 - FPGA and Stratum-3 PLL
 - CLK1 / CLK2: Telecom Clock
 - CLK3: 100 MHz PCIe Ref Clock
- Option -PHYS:
 - M-LVDS / HCSL
 - CLK1 / CLK2: Telecom Clock
 - CLK3: 100MHz PCIe Ref Clock
 - Special low-jitter clock multiplexer
 - Variable clock switching and distribution

NAT-MCH-M4

As NAT-MCH, additionally:

- Double-width, full-size MCH
- Optional Zone3 connector for NAT-MCH-RTM
- Mounting space for NVMe / SSD memory devices

NAT-MCH-HUB-E

- Dual A53 Marvell 88F3720 CPU
- Marvel 98EX5520 Ethernet Switch
- Front Uplink via MPO 25G / 100G
- Backplane: 1-10G / 10G (XAUI) / 40G
- 10GbE / 40GbE update to 2nd NAT-MCH-G4 (no XAUI)

NAT-MCH-SRIO

- 2x SRIO Gen 2 switches
- Flexible port width with x1 and x4 support
- 1.25 / 2.5 / 3.125 / 5.0 / 6.25 Gbaud
- 2 uplink ports at front panel

NAT-MCH-PCIex48

- PCIe Gen 3 switch
- Non-blocking switch fabric, up to 6 independent cluster
- Backplane options:
 - 12x PCIe x1 / x4
 - 6x PCIe x8 if supported by backplane

NAT-MCH-PCIex80

- As NAT-MCH-PCIex48, additionally:
- Double-width HUB module
- PCIe x16 to optional NAT-MCH-RTM
- PCIe x8/x16 optical front uplink via QSFP-DD