# » AM4901 «
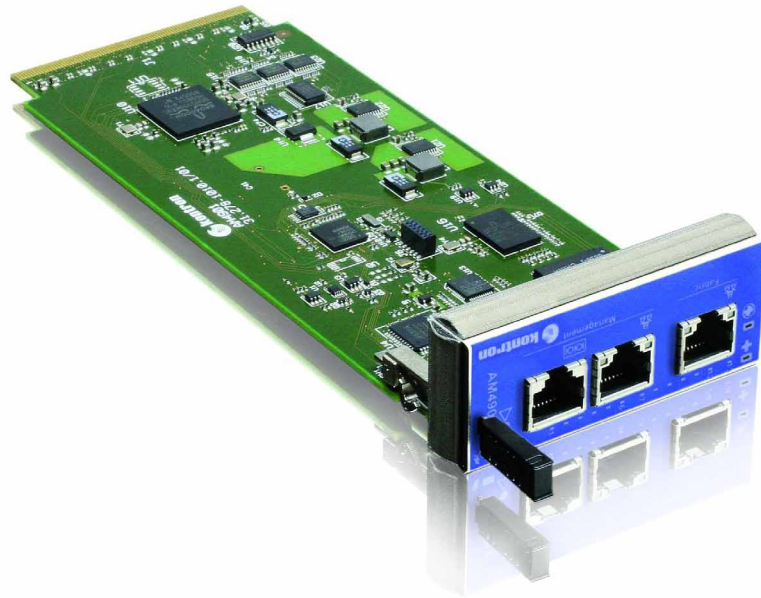
**Cost optimized MicroTCA Carrier Hub (MCH) enables applications outside of telecommunications segment**

» Cost optimized design by focusing to essential requirements

» System management + Ethernet Switching

» Front panel GbE uplink

» MCH update and cross-over Channel

If it's embedded, it 's Kontron.

# AM4901 MCH for cost optimized MicroTCA solutions
## No-frills approach, still providing the essential features

The two main functions of an MCH are system management (i.e. IPMI controlled power management, electronic keying, hot-swap of AMCs) and Ethernet switching. The AM4901 provides those functions for up to  6 AMCs - designed as a single PCB solution with one MCH tongue. Unlike in the telecommunication segment, where advanced feature sets require managed switches with complex control software, such features are not required in most industrial applications. The AM4901 contains an unmanaged BCM5396 Ethernet switch, which allows to simplify the design and to improve costs (lower cost components, no switch controller, no software for switch controller).

Among the typical applications are image processing in the industrial environment or medical environment, industrial control systems, information systems for trains and simple communication systems without the need for managed switches.

The AM4901 provides one GbE uplink on front, and on the edge connector 12x GbE for AMCs (Fabric [A]) plus 1x GbE for the MCH update channel. In addition to the

standard LED indicators, there are status LEDs for 13 GbE ports (Fabric [A] and MCH update channel) on the front, as well as RJ45 connectors for one management interface and one serial interface to access the management controller (MCMC).

For management functions the AM4901 contains a MCMC LPC2368 with Kontron's own IPMI software. The MCH supports IPMB-L links to up to 12 AMCs, I2C to the SEEPROM on the backplane, and I2C as well as IPMB-0 [A:B] links for power management and cooling. A  JTAG connection is also provided.

The AM4901 represents a an MCH designed according MicroTCA.0 with a cost improved design. It supports the Kontron family of cost optimized MicroTCA platforms, as well as a range of other 3rd party platforms. The AM4901 helps customers to address with MicroTCA a broader range of applications. The choice of the AM4901 is a perfect fit for designing a complete and highly versatile MicroTCA platform that is cost-effective by focusing to the application needs.
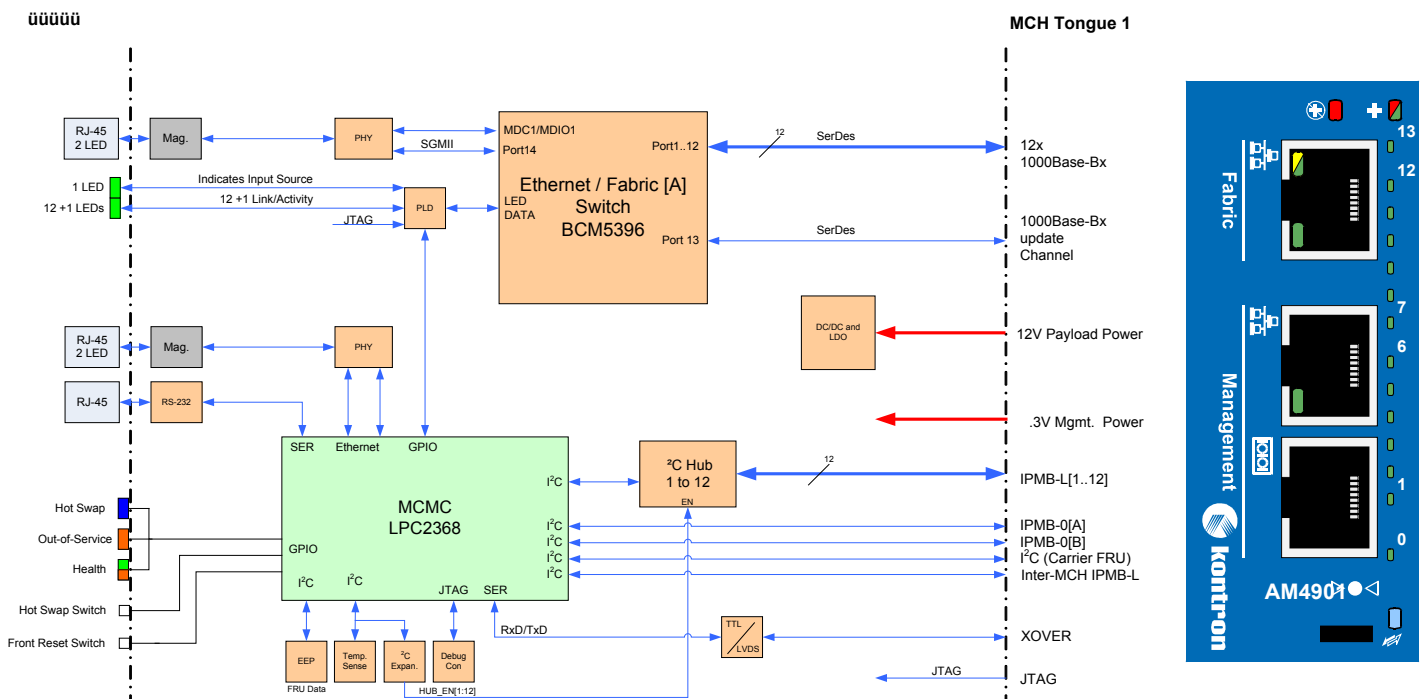
## Technical Information

### MCMC

**NXP® LPC2368 microcontroller**

| |
|---|
| 16-bit / 32-bit, 70 MHz ARM7 CPU |
| 512 kB Flash |
| 58 kB SRAM |
| IPMI |
| Watchdog timer |
| I²C busses for IPMB usage |
| Command line interface |

### Ethernet Switch

**Broadcom BCM5396 Gigabit Ethernet switch**

| |
|---|
| 16 SerDes / SGMII ports, only 14 ports are used on the AM4901: |
|    12 ports connected to the Fabric [A] |
|    1 port connected to the MCH update channel |
|    1 port connected to the uplink port on the front panel |
| Non-blocking |
| Low latency |
| Unmanaged layer 2 switch |
| Automatic address learning and aging |
| 256 kB on-chip packet buffer |

### System Interconnect

| | |
|---|---|
| Gigabit Ethernet | 12x 1000BASE-BX (SerDes) on Fabric[A] |
| | 1x 1000BASE-BX (SerDes) on MCH update Channel |
| I2C | 12x IPMB-L to AMC Modules |
| | 2x IPMB-0 [A:B] redundant to Power Modules and Cooling Units |
| | 1x IPMB-L inter-MCH |
| | 1x I2C to carrier FRU |

### Front Interfaces

| | |
|---|---|
| Gigabit Ethernet | One 1000BASE-T on RJ-45 connector |
| Ethernet | One 10BASE-TX on RJ-45 connector |
| Serial Port | One terminal port with RS-232 signaling on an RJ-45 connector |
| Reset | One reset switch |
| LEDs | 12 Link LEDs (green) for each port on the Fabric[A] |
| | 1 Link LED (green) for the MCH update Channel |
| | 1 LED (green) for control purchase |
| | 4 bicolor (red / green) LEDs to indicate system states |
| | 3 AMC management LEDs (Hot Swap, Out-of-Service, Health) |

### Compliancy

| | |
|---|---|
| MicroTCA | According to PICMG MTCA.0 Micro Telecommunications Comp. Architecture R1.0 |
| CE | EN55022, EN55024, EN61000-6-2/-6-3, EN300386, EN60950-1 |
| Vibration/Shock | IEC60068-2-6 / IEC60068-2-27 |
| WEEE | Directive 2002/96/EC |
| RoHS | Directive 2002/95/E |

### Environmental

| | |
|---|---|
| Temperature Range | Operational: -5 °C to +55 °C |
| | Storage: -40 °C to +70 °C |
| | no module heat sink, forced system airflow |
| Humidity | 93% RH at 40°C, non-condensing |
| Vibration (operating) | 5-150 [Hz] frequency range |
| | 1 [g] acceleration |
| | 1 [oct/min] sweep rate |
| | 10 sweeps/axis |
| | 3 directions: x,y,z |
| Shock (operating) | 15 [g] acceleration |
| | 11 [ms] pulse duration |
| | 3 shocks per direction |
| | 5 [s] recovery time |
| | 6 directions, ±x, ±y, ±z |

## Technical Information

### Misc

| | |
|---|---|
| Dimensions | Single, Full-Size MCH module |
| | 181.5 mm x 73.5 mm x 28.95 mm |
| Power Supply | 12 V Payload Power, 3.3 V Management Power |
| Power Consumption | Typ. 5W |
| Board Weight | 100 grams |
| MTBF | 799,923 h acc. Bellcore Issue 6, Ground Benign, Controlled, 30 C |

## Ordering Information

| Article | Description |
|---|---|
| AM4901 | MCH with unmanaged GbE switch |

## AM4901 PLATFORMS

OM6062

OM6040



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