



## **SLC-ARMADA • *CompactPCI*<sup>®</sup> *Serial***

ARM<sup>®</sup> v8 Microcomputer SoM  
Mezzanine Module for Ethernet Switch Carrier Cards

Preliminary Edition

## Overview

As a System on Module, **EKF** introduces the **SLC-ARMADA**, a dual core 1GHz industrial microcomputer for networking applications, equipped with a low power Marvell® ARMADA® 3700 SoC (ARM® v8 Cortex™-A53).

The SLC-ARMADA was designed to support EKF Ethernet switch boards equipped e.g. with a Marvell® 88E6390 (industrial) or 88Q5072 (automotive) switching device. The SLC-ARMADA enables protocol support such as AVB/TSN and can be used for management and custom specific applications.

The SLC-ARMADA is provided with a high speed mezzanine connector, and communicates with the carrier card Ethernet switch via its 2.5GbE SerDes port and SMI/MDIO master interface.

The mezzanine module is equipped with up to 64GB e•MMC flash, 1GB DDR4 RAM and up to 64Mb SPI flash. In addition, the SLC-ARMADA offers popular I/O via its mezzanine connector such as USB3, PCIe® and UART, which makes the SoM interesting for universal industrial usage.

## Technical Features

*General*

- ▶ System on mezzanine module microcomputer for general use and networking management
- ▶ Intended as mezzanine supplement to EKF Ethernet switch boards
- ▶ Marvell® ARMADA® 3700 SoC family
- ▶ 88F3720 dual-core 1GHz
- ▶ Low power consumption under different workloads
- ▶ Optimal performance-per-Watt in the embedded markets
- ▶ Industrial PCB assembly
- ▶ PCB Dimensions 61.0mm x 94.0mm (fits e.g. on a Eurocard)
- ▶ Power input 12VDC

*CPU*

- ▶ Marvell® Armada® 88F3720 dual-core SoC
- ▶ ARM® v8 Cortex™-A53
- ▶ 1GHz for industrial temperature range
- ▶ 32 KB-instruction / data (4-way) set associative L1 cache with parity/ECC protection
- ▶ Integrated power switches for dynamic shut down of CPU cores and unused functions
- ▶ Optimal performance-per-Watt
- ▶ High-performance security offload engine including IPSec, SSL, DTLS, and IKE
- ▶ Hardware compliance with ARM Trustzone® architecture for DRM
- ▶ Enhanced Secure-Boot flow using integrated one time programmable (OTP) memory
- ▶ FIPS-140 certified
- ▶ DDR4 512Mb x 16 (1GB) soldered DRAM
- ▶ e•MMC 5.1 Flash (up to 64GB)
- ▶ SPI Flash 64Mb
- ▶ 2.5 Gigabit Ethernet port (SERDES) for switch host management (mezzanine connector)
- ▶ SMI/MDIO Master interface for switch host management (mezzanine connector)
- ▶ USB 3.0 (mezzanine connector)
- ▶ PCIe® Gen2 (mezzanine connector)
- ▶ 2 x UART (mezzanine connector)

## Technical Features

*Networking*

- ▶ 2.5 Gigabit Ethernet port (SERDES) in use for mezzanine connector
- ▶ SMI Switch host management (under development)
- ▶ Option AVB/TSN protocol stacks (AVNU certified) available

*Available as Stacked Assembly*

- ▶ SLA-SOLO CompactPCI® Serial 100BASE-T1 Single-Pair-Ethernet switch board
- ▶ 7L600 ModBlox7®100BASE-T1 Single-Pair-Ethernet switch module
- ▶ More to come

*Mezzanine Connector*

- ▶ MicroSpeed board-to-board connector male 2mm height Tyco 224557-E
- ▶ Dual row 1.0mm pitch, 50 signal contacts 10Gbps + 18 GND
- ▶ For use with complementary carrier card connectors
- ▶ Board-to-board height carrier card to SLC-ARAMADA PCB minimum 6mm up to 12mm
- ▶ Recommended mating female part Tyco 144662-E 4mm height (6mm board-to-board)
- ▶ Fits into 4HP front panel width when in use on a CompactPCI® Serial carrier board

*Ecosystem*

- ▶ Complete SDK available including U-Boot, Mainline Linux BSP
- ▶ AVB/TSN support (option)
- ▶ HTML Web server
  
- ▶ JTAG port (option on-board pin header) suitable for deep hardware/software debugging
- ▶ UART1 wired to FT234XD for diagnosis and programming via USB
- ▶ USB UART drivers suite (FTDI website)

## Technical Features

*Applications*

- ▶ To be combined with eligible EKF Ethernet switch boards for host management or protocol support
- ▶ Low power CPU card for industrial electronics based on PCIe®, USB3, Ethernet
- ▶ Industrial networks - IIoT
- ▶ Industrial, factory and building automation
- ▶ Rugged environments
- ▶ Edge & Fog computing
- ▶ Transportation
- ▶ Railway
- ▶ Multi-protocol gateways
- ▶ Host management for networking (AVB/TSN)
- ▶ Customized connector loading
- ▶ Customized board design
- ▶ Customized programming service

*Power Requirements*

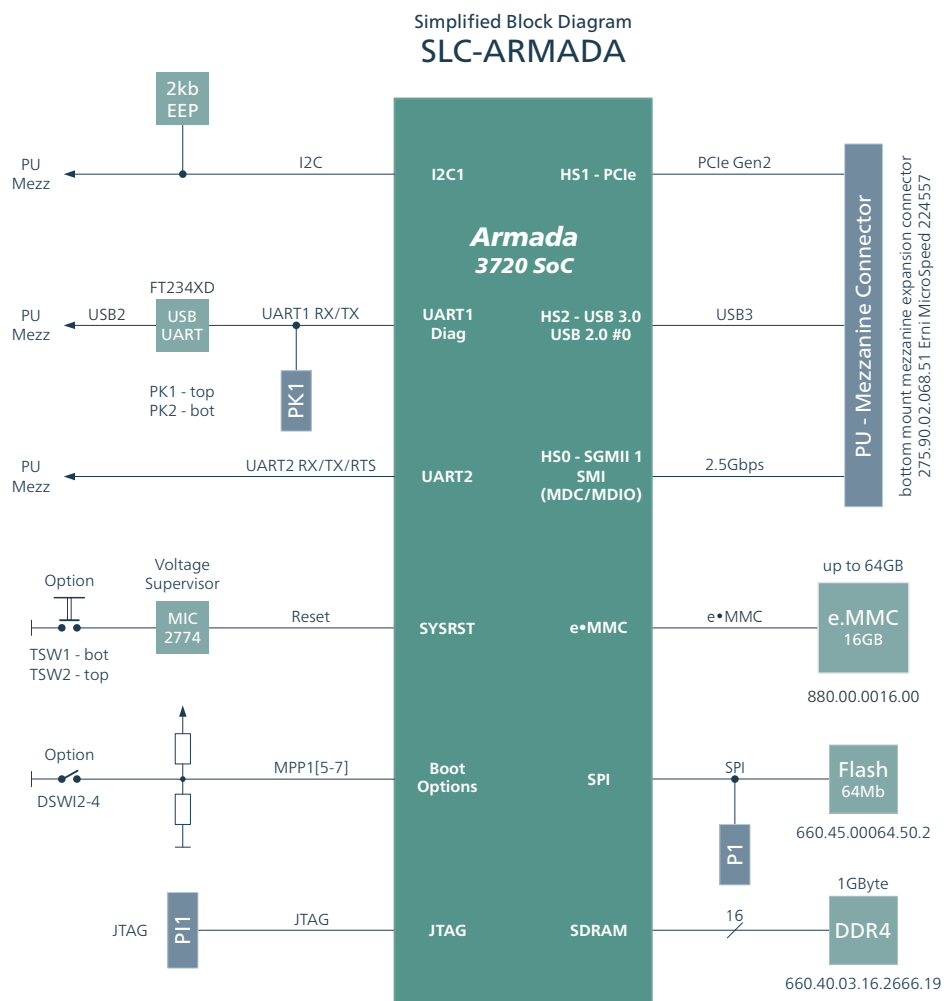
- ▶ 12VDC (mezzanine connector)
- ▶ Rated power consumption 3W

*Environmental, Regulatory*

- ▶ Designed & manufactured in Germany
- ▶ ISO 9001 certified quality management
- ▶ Long term availability
- ▶ Rugged solution
- ▶ Conformal coating, sealing, underfilling on request
- ▶ RoHS compliant
- ▶ Operating temperature -40°C to +85°C (industrial temperature range)
- ▶ Storage temperature -40°C to +85°C, max. gradient 5°C/min
- ▶ Humidity 5% ... 95% RH non condensing
- ▶ Altitude -300m ... +3000m
- ▶ Shock 15g 0.33ms, 6g 6ms
- ▶ Vibration 1g 5-2000Hz
- ▶ EC Regulatory EN55035, EN55032, EN62368-1 (CE)
- ▶ MTBF tbd years (MIL-HDBK-217F, SN29500 @+40°C)

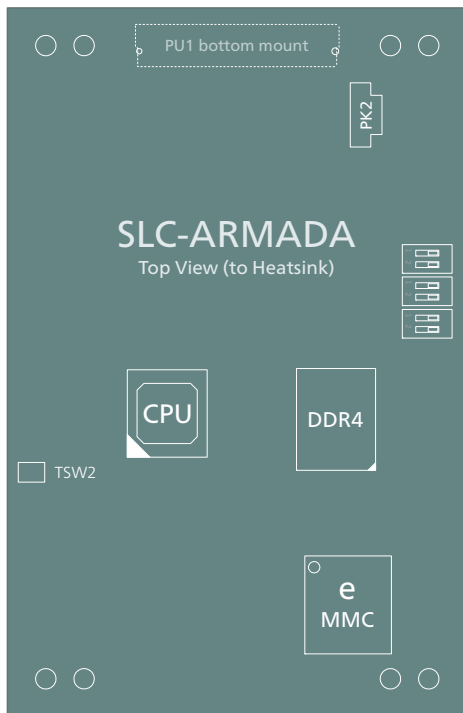
all items may be subject to technical changes w/o further notice

## Block Diagram

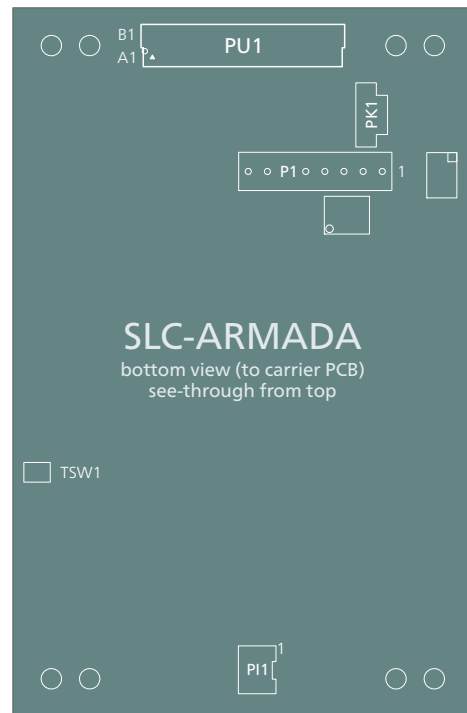


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## Components

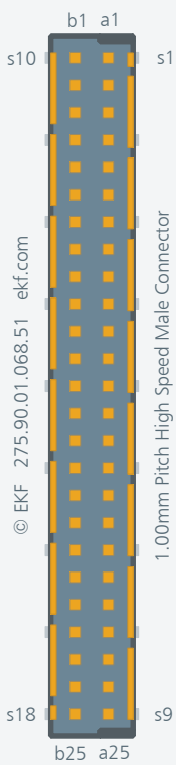


Top



Bottom /See-Trough)

## Mezzanine Connector

PU				
	GND	b1	a1	SYSRSTN_3.3V
	2.5G_SERDES_TXP	b2	a2	GND
	2.5G_SERDES_TXN	b3	a3	GND
	GND	b4	a4	2.5G_SERDES_RXP
	GND	b5	a5	2.5G_SERDES_RXN
	USB3_TXP	b6	a6	GND
	USB3_TXN	b7	a7	GND
	GND	b8	a8	USB2_DP
	GND	b9	a9	USB2_DM
	USB3_RXP	b10	a10	GND
	USB3_RXN	b11	a11	GND
	GND	b12	a12	PCIE_RXP
	GND	b13	a13	PCIE_RXN
	PCIE_TXP	b14	a14	GND
	PCIE_TXN	b15	a15	GND
	GND	b16	a16	PCIE_CLKP
	UART2_TXD_1.8V	b17	a17	PCIE_CLKN
	UART2_RXD_1.8V	b18	a18	GND
	UART2_RTSN_1.8V	b19	a19	PCIE_PERSTN_3.3V
	I2C_SDA_3.3V	b20	a20	PCIE_CLKREQN_3.3V
	I2C_SCK_3.3V	b21	a21	USB_UART1_DETECT
	SMI_MDIO_2.5V	b22	a22	USB_UART1_DP
	SMI_MDC_2.5V	b23	a23	USB_UART1_DM
	+12V	b24	a24	+12V
	+12V	b25	a25	+12V

The SLC-ARMADA can be equipped with a 2mm (default) or 1mm stacking height male mezzanine connector, mating with female receptacles 4/6/8/10mm stacking height, resulting in a board-to-board height 5-12mm. For connector details and mating components please refer to the TE Connectivity part no. 224557-E <https://www.te.com/usa-en/product-224557-E.html>.



### Ordering Information

For popular SLC-ARMADA SKUs please contact [sales@ekf.de](mailto:sales@ekf.de)

### Product Homepage

<https://www.ekf.com/s/slc/slc.html>

### Related Products

SLA-SOLO	CompactPCI® Serial 100BASE-T1 Single Pair Ethernet switch card
7L600	ModBlox7® 100BASE-T1 Single Pair Ethernet switch module

# ***Embedded Gold***

Ready-for-Use Industrial PCB Assemblies



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