

# IC-ARM-VPX3b

3U VPX LX2080A/LX2160A Arm®-based Single Board Computer

- 3U VPX
- NXP LX2080A/LX2160A Arm®-based processor
- VITA 65 Slot Profile SLT3-PAY-1F4F2U-14.2.14 (partial)
- Data Plane: 10G or PCIe Gen3 interfaces
- Expansion plane PCIe Gen3



## Overview

Designed for applications requiring high processing and communication performance together with low power, the **IC-ARM-VPX3b** is a complete and versatile Single Board Computer dedicated to 3U VPX compact systems.

The **IC-ARM-VPX3b** partially complies with the VITA 65.0 Open-VPX Slot profile SLT3-PAY-1F4F2U-14.2.14.

This board provides the defense and industrial embedded electronic markets with the latest technological innovations through the NXP QorIQ® Layerscape® LX2160A multicore communication processor.

## Description

The **IC-ARM-VPX3b** is equipped with a NXP QorIQ® Layerscape® LX2080A or LX2160A multicore communication processor with up to 16 cores up to 2.2GHz, two large banks of DDR4 with ECC support, local storage and 10/40G Ethernet interfaces for high bandwidth connections.

The processor hardware accelerator and large caches provides outstanding computing performance to the **IC-ARM-VPX3b** with powerful packet processing offload and Ethernet controllers.

For applications requiring optimized power dissipation, the **IC-ARM-VPX3b** is proposed with the low power QorIQ® Layerscape® family member processor referenced as LX2080A. This processor features eight Arm® Cortex®-A72 32/64 bit cores, running at 1.8 GHz, 2.0GHz or 2.2GHz.

The **IC-ARM-VPX3b** features up to 32GB of DDR4-ECC and a variety of storage solutions (M.2 slot, eMMC, F-RAM, which provide flexibility for system designers to meet the topology demands of large centralized systems and handle scenarios with heavy traffic on specific back-plane segments.

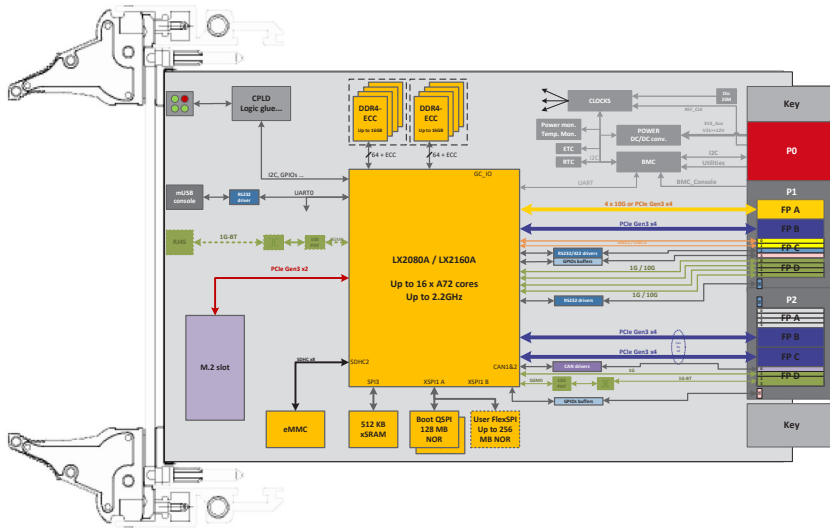
Furthermore, the board offers a significant number of security features.

The **IC-ARM-VPX3b** is available in air-cooled and conduction-cooled versions.

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## Block Diagram



The **IC-ARM-VPX3b** is compliant with VITA 65.0 Slot Profile SLT3-PAY-1F4F2U-14.2.14.

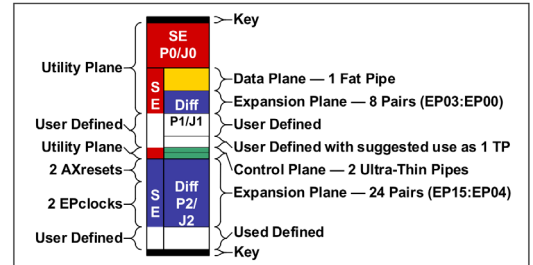


Figure 14.2.14-1 SLT3-PAY-1F4F2U-14.2.14

## Main features

### NXP QorIQ® LX2080A/LX2160A

- up to 2.2 GHz
- Up to 32 GB DDR4-ECC
- 128MB Quad SPI NOR Flash
- 512 KB F-RAM
- eMMC

### Board Management Controller

- PCI μ-controller for System Management (per VITA 46.11)
- RTC with supercap backup
- Elapse Time Counter
- DC and Thermal monitoring

### M.2 slot socket

### Accessories

- Engineering kit for debug: JTAG/COP, console
- 3U Rear Transition Module

### VPX connector interfaces

- **Data Plane (P1)**
  - 4 \* 10GBASE-KR or
  - 1 \* PCIe Gen2/3 x4 port
- **Expansion Plane**
  - 1 \* PCIe Gen2/3 x4 port (P1)
  - 2 \* PCIe Gen2/3 x4 ports (P2)

or

  - 1 \* PCIe Gen2/3 x8 port (P2)
- **Control Plane (P1)**
  - 4 \* 10GBASE-KR/KX
- **User-defined plane (P2)**
  - 1 \* 1GBASE-T
  - 1 \* 1GBASE-KX
  - 1 \* CAN Bus
  - 2 (+2) \* GPIOs (P1)
  - 4 \* GPIOs (P2)
- **Serial ports (P1)**
  - 1 \* RS232 UART
  - 1 \* RS232 / RS422 UART
- **USB (P1)**
  - 1 \* USB2.0 / USB 3.1
  - 1 \* USB2.0

The **IC-ARM-VPX3b** is a 3U VPX board compliant with the VITA 46.0 standard 3U module definitions.

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## On-board firmware

Interface Concept provides firmware that initializes the NXP QorIQ® Layerscape® LX2160A/LX2080A processor.

The firmware is based on UBOOT and is stored in a secured flash. It is automatically loaded when the board is powered up. It initializes the QorIQ® and its environment, performs a comprehensive Power-on self-tests (PBIT), before jumping into different applications according to the values stored in memory.

The firmware allows loading files from Ethernet via Bootp, running files in RAM or flashing them. In addition, it supports monitor functions such as the ability to display or modify the RAM data. Finally, it allows the user to perform maintenance tests.

## Real Transition Module

**RTM132** is a 3U VPX Rear Transition Module to be coupled with the **IC-ARM-VPX3b**:

3U VPX 1.0" pitch wide according to VITA 46.0

- Front panel accesses:
  - CPU console port
  - BMC console port
  - 1 \* QSFP+ connector
  - 2 \* SFP+ connectors
  - 1 \* RJ45 for 10GBASE-T port
- On-board accesses:
  - 1 \* mSATA slot
  - 1 \* M.2 Socket 3 PCIe x4 M-Keyed slot
  - 1 \* eUSB slot (USB 3.0 support)
  - 1 \* Vertical USB type A (USB 2.0 only)
  - 1 \* HE10-8 connector for 4 CPU's GPIOs
  - 1 \* HE10-8 connector for 1 RS-422/485 port

## Grades

Please consult the product user's manual for detailed grade information.

Criterion	Coating	Operation Temperature	Rec. Airflow	Oper. HR% no cond.	Storage Temperature	Sinusoidal Vibration	Random Vibration	Shock 1/2 Sin. 11ms
Standard	Optional	0 to 55°C	2.4 m/s (LX2160A)	5 to 90%	-45 to 85°C	2G [20..2000]Hz	0.002g2 /Hz [10..2000]Hz	20G
Extended	Yes	-20 to 65°C	3.5 m/s (LX2160A)	5 to 95%	-45 to 85°C	2G [20..2000]Hz	0.002g2 /Hz [10..2000]Hz	20G
Rugged	Yes	-40 to 75°C or 85° C (+)	TBD m/s	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.05g2 /Hz [10..2000]Hz	40G
Conduction-Cooled 71°C	Yes	-40 to 71°C at the thermal interface (+)	-	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.05g2 /Hz [10..2000]Hz	40G
Conduction-Cooled 85°C	Yes	-40 to 85°C at the thermal interface (+)	-	5 to 95%	-45 to 100°C	5G [20..2000]Hz	0.1g2 /Hz [10..2000]Hz	40G

(+) : Temperature grades are subject to availability according to IC products. Please consult us.

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## BSP

Interface Concept can supply a BSP for VxWorks® or for Linux®.

The Linux® BSP is supplied together with an SDK developed by Interface Concept which integrates a build environment and cross development toolchain.

Interface Concept's BSP is based on a standard distribution. It is responsible for hardware initialization, interrupt handling and generation, hardware clock and timer services, memory management, PCI management, mapping of memory spaces, serial ports, Ethernet & USB drivers, SATA drivers with Raid functions, NAND and NOR Flash file systems.

Other Real Time Operating Systems such as PikeOS, LynxOS, Integrity can be supported. Please contact us to discuss specific requests.

## RTM132



RTM132 - Rear Transition Module

For more information, please contact:



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