IC-ARM-VPX3a

3U VPX LX2160A Arm®-based Single Board Computer

- *3U VPX*
- *NXP LX2160A Arm® processor*
- *VITA 65.0 Slot Profile SLT3-PAY-1F1F2U1TU1T1U1T-14.2.16*
- *10, 25, 40 and 100 GbE interfaces*
- *Aligned with the SOSA™ Technical Standard*

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Overview

Designed in alignment with the SOSA™ Technical Standard, the **IC-ARM-VPX3a** is a low-power 3U VPX board ideal for command and control functionality of sensor systems, as well as applications needing high multi-threaded performance (target tracking or C4ISR).

Description

The **IC-ARM-VPX3a** is a 3U VPX Single Board Computer based on the low-power NXP QorIQ LX2160A processor, featuring 16 ARM® Cortex®-A72 cores. This processing board provides the defense and industrial embedded electronic markets with the latest technological innovations provided by the NXP LX2160A multicore communication processor.

This 3U VPX module is compliant with the VITA 65.0 (OpenVPX) Slot profile SLT3-PAY-1F1F2U1TU1T1U1T-14.2.16.

The **IC-ARM-VPX3a** offers 10/40GigE as well as 25/100GigE interfaces, a 25/100 Gigabit Ethernet Data Plane, a 4-lane PCI Express© Gen2/3 Expansion Plane and a 10 Gigabit Ethernet Control Plane.

With its hardware accelerator and its large caches, it provides outstanding computing performance with powerful packet processing offload and Ethernet controllers.

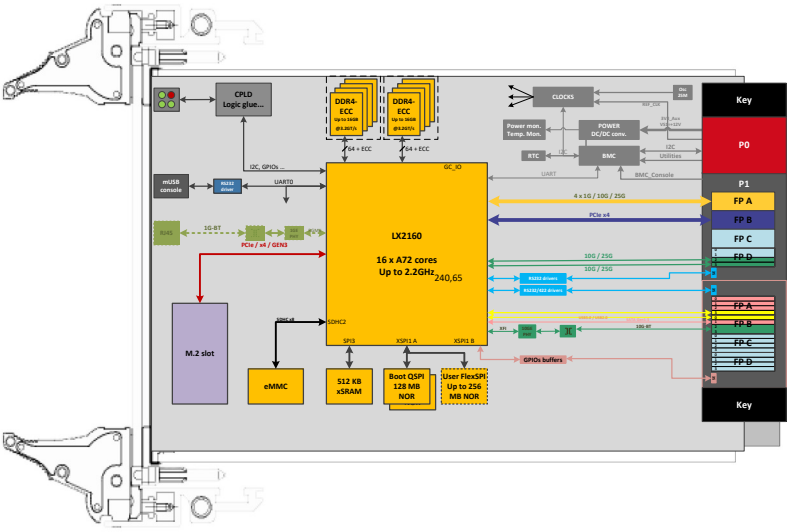
The **IC-ARM-VPX3a** provides up to 32GB of DDR4-ECC and various storage solutions including M.2 slot, eMMC, xSRAM, SATA3 interfaces, which deliver system designers with flexibility to meet large centralized systems' topology requirements and handle scenarios with heavy traffic on specific backplane segments.

The **IC-ARM-VPX3a** is compliant with the VITA 46.0 standard 3U module definitions.

It is available in air-cooled and conduction-cooled versions.

SOSA Sensor Open Systems Architecture

Block Diagram



The IC-ARM-VPX3b is compliant with VITA 65.0 Slot Profile SLT3-PAY-1F1F2U1TU1T1U1T-14.2.16.

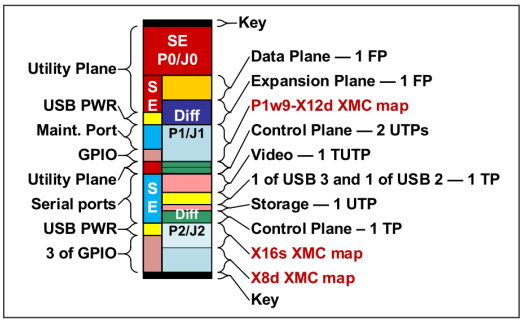


Figure 14.2.16-1 SLT3-PAY-1F1F2U1TU1T1U1T-14.2.16

XMC and video I/Os are not supported on this board.

Main features

VPX connector interfaces

- **Data Plane (P1)**
  - 4 * 10GBASE-KR or
  - 2 * 25GBASE-KR or
  - 1 * 40GBASE-KR4 or
  - 1 * 100GBASE-KR4
- **Expansion plane (P1)**
  - 1 * PCIe Gen2/3 x4 port
- **Control Plane (P1 & P2)**
  - 2 * 10GBASE-KR or
  - 2 * 25GBASE-KR
  - 1 * 10GBASE-T port
- **Storage (P2)**
  - 1 * SATA3
- **Serial ports (P1 & P2)**
  - 1 * RS232 UART (P1)
    - maintenance port
    - support for both LVCMOS and RS-232 voltage levels
  - 1 * RS232 / RS422 UART (P2)
- **USB (P2)**
  - 1 * USB2.0 / USB 3.1
  - 1 * USB2.0
  - Dedicated power supply pins on P1 and P2

NXP QorIQ LX2160A up to 2.2 GHz

- 32 GB DDR4-ECC
- 128 MB Quad SPI NOR Flash
- 512 KB xSRAM
- eMMC
- All protected by NVMRO

Board Management Controller

- VITA 46.11-2015 compliant with full Tier-2 support and HOST 3.0 extensions
- 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

- Front and back L2 maintenance covers

Accessories

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

Additional Ethernet ports can be supported on some of the signals that belong to the SOSA™ profile XMC map.
Please contact IC for further details.

On-board firmware

Interface Concept provides firmware that initializes the NXP QorIQ LX2160A 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.

SOSA™

The Sensor Open Systems Architecture (SOSA) Consortium is a voluntary, consensus-based member consortium of The Open Group, a vendor-neutral technology standards organization. The SOSA™ Consortium is a government, industry and academic alliance developing an open technical standard for sensors. The consortium, which is currently restricted to US-based companies and organizations, provides a vendor-neutral forum for members to work together to harmonize, align, and create open standards to facilitate the development of agile, interoperable, and affordable sensors.

Please contact us if you have any question about SOSA.

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, SAT 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.

Grades

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	1 .. 2 m/s	5 to 90%	-45 to 85°C	2G [20..2000]Hz	0.002g2 /Hz [10..2000]Hz	20G
Extended	Yes	-20 to 65°C	2 .. 3 m/s	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 (*)	2 .. 5 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.

For more information, please contact:

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