

Malaviya National Institute of Technology Jaipur

Jawahar Lal Nehru Marg, JAIPUR-302017 (Rajasthan)

**Ministry of Education
(Government of India)**



Single Tender Enquiry

For

Procurement of Boards

NIT Number: F5(2014)ST/MNIT/ECE/2022

Date:01.03.2022

MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY
JLN MARG, JAIPUR-302017

To,

M/s XILINX Inc.

Or (it's authorized dealer/distributor)

M/s

.....

.....

Email id:

Sub: Invitation for Quote for the Purchase "Boards".

Registrar, Malaviya National Institute of Technology Jaipur invites Quote from M/s CoreEL Technologies (I) Pvt. Ltd, India. The hard copy of your offer addressed to the Office of Deputy Registrar (Stores & Purchase) MNIT, JLN Marg, Jaipur- 302017 is required to be submitted on or before Dated 24.03.2023. The important information related to tender are as follows:

Sr. No.	Name of Item	Qty.	Specifications
1	PYNQ™-Z2 Embedded system development Boards	10	As per Annexure - E
2	Spartan Edge Accelerator Board - Arduino FPGA Shield with ESP32	10	
3	SoC boards- Xilinx Versal ACAP- AI edge series, VE2102 (Compute Acceleration Platform) Dual Arm Cortex-A72 Dual Arm Cortex-R5F 7nm Programmable Logic DSP and AI Engines; Ethernet (x2); UART (x2); CAN-FD (x2); USB 2.0 (x1); SPI (x2); I2C (x2) Programmable Network on Chip	02	
4	Nexys 4 DDR Artix-7 FPGA: Trainer Board	05	

1. The bids should contain the following document:

- i. Detailed technical product catalogue.
- ii. Bidder should be the manufacturer / authorized dealer. In case bidder submitted the bid on behalf of OEM than Letter of Authorization from original equipment manufacturer (OEM) specific to the tender enquiry should be enclosed (as per Annexure A).
- iii. A certificate from OEM to the affect that the said good/software is a proprietary item
- iv. A certificate to the affect that the price quoted by you is the lowest and not more than the price quoted to other Educational Institutes in India.
- v. A certificate to the affect that your firm has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three

- years.
- vi. List of industrial and educational establishments where the items enquired have been supplied must be provided.
- vii. Previous Purchase Order's.
2. **Validity:** The validity of the offer shall remain valid for 90 days from the date of submission of the offer.
3. **Award of Contract** MNIT, Jaipur shall award the contract to the bidder whose bid has been accepted and determined as responsive.
4. **Installation:** The supplier is required to do the installation and demonstration of the equipment / software within two weeks of the arrival of materials at the MNIT Jaipur, site of installation.
5. **Payment Terms:** For Indigenous supplies, 100% payment shall be made by the Purchaser against delivery, inspection, successful installation, commissioning and acceptance of the equipment at MNIT Jaipur in good condition and to the entire satisfaction of the Purchaser.
- i. GST Deduction at source as per Order/ notification of the Govt.
- ii. GST No of MNIT Jaipur is **08AAAJM0351L1Z6**
- iii. HSN/SAC No of the items must be clearly mentioned in the quotation along with GST No.
- iv. MNIT Jaipur is exempted from paying custom duty under notification No.51/96 (partially or full) and necessary "Custom Duty Exemption Certificate" can be issued after providing following information and Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute, no certificate will be issued to third party:
6. **Defective Equipment:** If any of the equipment supplied by the Supplier is found to be substandard, refurbished, un-merchantable or not in accordance with the description/specification or otherwise faulty, the committee will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Supplier with 18% interest if such payments for such equipment have already been made. All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 7 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges. In case supplier fails to replace above item as per above terms & conditions, MNIT Jaipur may consider "Banning" the supplier.
7. **Liquidated Damages (L.D):** If a supplier fails to execute the order in time as per the terms and conditions stipulated therein, it will be open to the purchaser to recover liquidated damages for delay in delivery and installation from the supplier at the rate 0.5% of the value of the order per week subject to a maximum of 10% of the total order value. The L.D charges can be increased in case of gross violation of the Purchase Order terms as decided by the Director of the Institute.
8. **Cancellation:** MNIT Jaipur reserves the right to accept or reject or cancel any or all enquiries or quotations at any stage without assigning any reason thereof.
9. The bid submission of last Date & Time- **24th March, 2023 by 02.00 PM**
10. All disputes are subject to Jaipur jurisdiction.
11. Must ensure to submit Declaration of Local Content. (Annexure-B)
12. Must ensure the price bid/financial bid be furnished as per the price bid format (Annexure-C)
13. Must ensure to submit duly signed checklist (as per Annexure- D)

Deputy Registrar (S&P)

ANNEXURE- A

MANUFACTURERS' AUTHORIZATION FORM

[The Tenderer shall require the Manufacturer to fill in this Form in accordance with the Instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer].

Date: [insert date (as day, month and year) of Bid Submission]

Tender No.: [insert number from Invitation for Bids]

To: [insert complete name and address of Purchaser] WHEREAS

We [insert complete name of Manufacturer], who are official manufacturers of [insert type of goods manufactured], having factories at [insert full address of Manufacturer's factories], do hereby authorize [insert complete name of Tenderer] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with the Terms and Conditions, with respect to the Goods offered by the above firm.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer] Title: [insert title]

Duly authorized to sign this Authorization on behalf of: [insert complete name of Tenderer] Dated on day of,

[insert date of signing]

DECLARATION OF LOCAL CONTENT**[For Local Content of Products, Services or Works]**

(To be given on Company Letter Head – For tender value below Rs.10 Crores)

(To be given by Statutory Auditor/Cost Auditor/Cost Accountant/CA for tender value above Rs.10 Crores)

To,

The Registrar
MNIT Jaipur

Subject: Declaration of Local Content

Tender reference No. _____

1. Country of Origin of Goods being offered: _____
2. With reference to Order No. P- 45021/2/2017-PP(BE-II) dated 16-09-2020 of DPIIT, Ministry of Commerce and Industry, Govt. of India, we fall under the following category of supplier (please tick the correct category) for the items for which this tender has been floated and being bided.
 - Class I local supplier – has local content equal to more than 50%. Local contents added at _____ (name of location).
 - Class II local supplier – has local content more than 20% but less than 50%. Local contents added at _____ (name of location).
 - Non-local supplier – has local content less than or equal to 20%. Local contents added at _____ (name of location).
3. We are solely responsible for the above mentioned declaration in respect of category of supplier. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which we may be debarred for up to 2 years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Signature of Bidder/ Agent

Name: _____

Designation: _____

Organization Name: _____

Annexure –C

FORMAT FOR PRICE BID SUBMISSION

(In letterhead of the supplier with seal)

(in letterhead of the supplier with seal)													
1	2	3		4	5			6	7				8
Sl. No.	Name of Goods	Part Item Sl. No.	Name of Part-Item	Accounting unit & quantity	Price per unit (Rs.)			Total Item price	Delivery Charges (Rs.)				Total Bid Price (Rs.)
					Ex-factory/ ex-warehouse/ ex-show room off-the shelf	GST payable	Overall Basic unit price (Col. a+b)		Packing and forwarding	Transit Insurance, Other duties and taxes, if any (other than sales tax) and incidental costs	Any other charges (please specify)	Total Inland Transportation	
1	2	3		4	5(a)	5(b)	5(c) = 5(a)+5(b)	6 = 4x 5(c)	7(a)	7(b)	7(c)	7= 7(a)+7(b)+7(c)	(6)+(7)
1	Item No 1												
2	Item No 2												
3	Item No 3												
4	Item No 4												
GRAND TOTAL													

Total bid price (for Indian components) in Indian Currency*: (in figures) :

(in words):

Signature of Bidder/ Agent

Name:

Designation:

Organization Name:

MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR

The bidders submitting quotations for the supply of items must ensure to fill the checklist as mentioned below:

S.No.	Document/Details sought for	Page No.	Yes	No
1	Detailed technical product catalogue.			
2	Bidder must be manufacturer/authorized distributor/dealers and they have to enclose a certificate of authorization of manufacturer in format at Annexure –A, (Authorization certificate in any other format will not be valid) OEM itself or any one authorized dealer on behalf of OEM a may participate in bid. OEM and its dealers both may not participate at the same time.			
3	A certificate from OEM to the effect that the said good /software is a proprietary item			
4	A certificate to the affect that the price quoted by you is the lowest and not more than the price quoted to other Educational Institutes in India.			
5	A certificate to the affect that your firm has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency / Govt. Department / Public Sector Undertaking in the last three years.			
6	List of industrial and educational establishments where the items enquired have been supplied must be provided.			
7	Previous Purchase Order's.			
8	Declaration of Local Content			

Any other important point requested in the bid invitation letter

Annexure-E

Annexure-I (PYNQ board)

SPECIFICATION:

- Outline Dimension: 87mm*140mm/3.43"*5.51"
- ZYNQ XC7Z020-1CLG400C Board:
- 650MHz dual-core Cortex-A9 processor
- DDR3 memory controller with 8 DMA channels and 4 High-Performance AXI3 Slave ports
- High-bandwidth peripheral controllers: 1G Ethernet, USB 2.0, SDIO
- Low-bandwidth peripheral controller: SPI, UART, CAN, I2C
- Programmable from JTAG, Quad-SPI flash, and MicroSD card
- Programmable logic equivalent to Artix-7 FPGA
- 13,300 logic slices, each with four 6-input LUTs and 8 flip-flops
- 630 KB of fast block RAM
- 4 clock management tiles, each with a phase-locked loop (PLL) and mixed-mode clock manager (MMCM)
- 220 DSP slices
- On-chip analog-to-digital converter (XADC)

Memory:

- 512MB DDR3 with 16-bit bus @ 1050Mbps
- 16MB Quad-SPI Flash with factory programmed 48-bit globally unique EUI-48/64™ compatible identifier
- MicroSD slot

Power: Powered from USB or 7V-15V external power source

USB and Ethernet:

- Gigabit Ethernet PHY
- Micro USB-JTAG Programming circuitry
- Micro USB-UART bridge
- USB OTG PHY (supports host only)

Audio and Video:

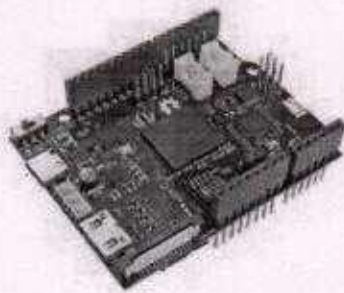
- HDMI sink port (input)
- HDMI source port (output)
- I2S interface with 24bit DAC with 3.5mm TRRS jack
- Line-In with 3.5mm jack

Switches, Push-buttons, and LEDs:

- 4 push-buttons
- 2 slide switches
- 4 LEDs
- 2 RGB LEDs

Expansion Connectors:

- Two standard Pmod ports
- 16 Total FPGA I/O (8 shared pins with Raspberry Pi connector)
- Arduino Shield connector
- 24 Total FPGA I/O
- 6 Single-ended 0-3.3V Analog inputs to XADC
- Raspberry Pi connector
- 28 Total FPGA I/O (8 shared pins with Pmod A port)



- [Description](#)
- [Reviews \(0\)](#)

Spartan Edge Accelerator Board Is a Xilinx Spartan FPGA development board in the Arduino UNO shield form factor. With the onboard ESP32 chip, it can also provide WiFi and Bluetooth functions.

When we talk about Arduino, very few people associate it with FPGAs. Because the two have little in common, to be frank, they are exactly the opposite. Arduino – cheap to buy, easy to learn, simple to use, but can't deal with complex calculations and large projects. FPGA – flexible and powerful, easily handle complex calculations like audio and video processing, but hard to learn and very expensive.

Spartan Edge Accelerator Board is a Xilinx Spartan FPGA development board in the Arduino UNO shield form factor. It can work with Arduino as an FPGA shield and as a stand-alone FPGA development board. With the onboard ESP32 chip, the Spartan Edge Accelerator Board also features 2.4GHz WiFi and Bluetooth 4.1. Moreover, this development board has a wealth of peripherals and interfaces which are extremely playable. Such as an 8-bit ADC, a 6-axis accelerometer, two RGB LEDs, a MINI HDMI interface, a CSI camera interface, two Grove interfaces, etc. All in all, it will be a perfect FPGA board for Makers and Hobbyists.

FPGA:

The Spartan Edge Accelerator Board is built around Xilinx Spartan-7 XC7S15 FPGA, which is a cost-effect but powerful FPGA chip. When it comes to Arduino FPGA, the first mover Arduino MKR Vidor 4000 was always mentioned. Compared with the official Arduino MKR Vidor 4000, the Spartan Edge Accelerator Board has a similar performance, but the price is less than half! Spartan Edge Accelerator Board can run at up to 100Mhz clock speed and offers 12.8K logic cells, 360Kb block RAM. Well, to drive a camera or HDMI display is just a piece of cake. Besides we breakout 10 user-programmable I/O pins of XC7S15, you can configure them as PWM, I2C, I2S, UART, SPI, etc.

ESP32:

We know you love ESP32, so we used it as the wireless core. It supports 802.11 b/g/n 2.4GHz WiFi as well as Bluetooth 4.1 with BLE. Just a single board to enable your Arduino with FPGA and Wireless function.

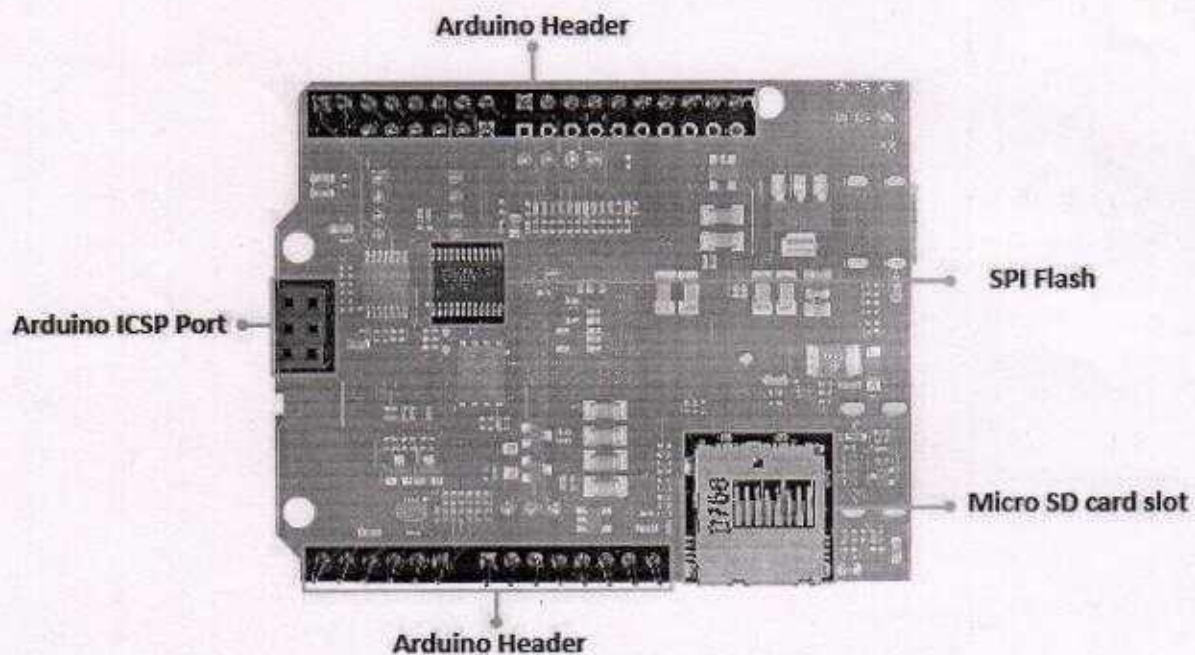
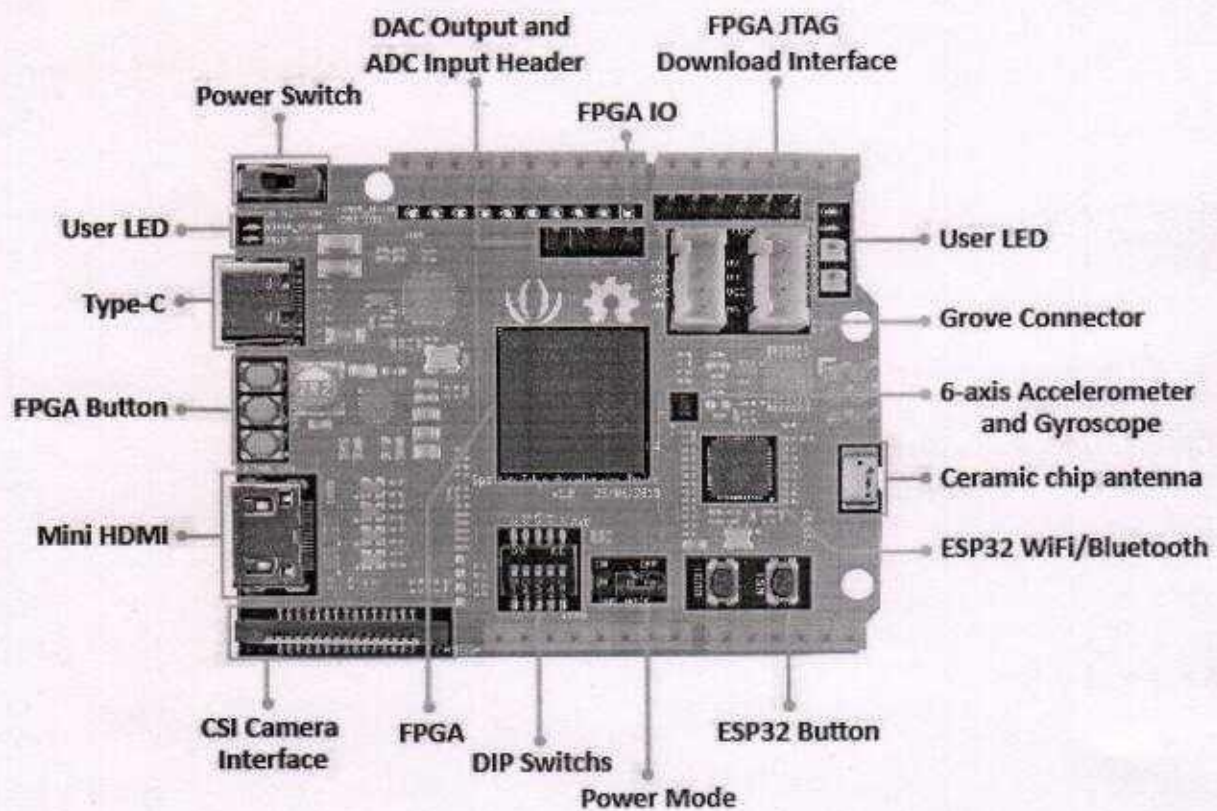
Arduino FPGA API:

On top of that, we provide a full Arduino FPGA API to help you use FPGA resources to control FPGA I/Os with Arduino IDE even if you know nothing about the FPGA theory. Spartan Edge Accelerator Board will equip Arduino with the ability that was once unimaginable, such as edge technology, image recognition, signal sampling and processing, and so on.

Features:

- Full FPGA APIs for Arduino
- Support Arduino UNO and Seeeduino V4.2(5V I/O)
- Spartan-7 XC7S15 FPGA with 12.8K Logic Cells and 360Kb block Ram
- Stand-alone mode/Arduino Shield mode
- On-board ESP32 802.11 b/g/n 2.4GHz WiFi as well as Bluetooth 4.1 with BLE
- On-board 8 bit ADC
- On-board 6 axis Accelerometer and Gyroscope
- Mini HDMI; CSI Camera Interface (now support OV5640 only)
- On-board Grove Connector(I2C/D2)

Hardware Overview :



Package Includes:

1 x Spartan Edge Accelerator Board

Versal AI Edge Series

- > 4X AI Performance/Watt vs. GPUs¹
- > Accelerates the Whole Application with the Highest Levels of Safety & Security
- > World's Most Scalable and Adaptable Portfolio from Edge to Endpoint

OVERVIEW

The Versal® AI Edge series delivers 4X AI performance/watt vs. leading GPUs for intelligence in automated driving, predictive factory and healthcare systems, multi-mission payloads in aerospace & defense, and a breadth of other applications. More than just AI, the Versal AI Edge series accelerates the whole application from sensor to AI to real-time control, all with the highest levels of safety and security to meet the stringent functional safety requirements in IEC 61508 and ISO 26262, among others.

As an adaptive compute acceleration platform (ACAP), the Versal AI Edge series allows developers to rapidly evolve their sensor fusion and AI algorithms while leveraging the world's most scalable device portfolio for diverse performance and power profiles from edge to endpoint.

HIGHLIGHTS

Architectural Innovation for Breakthrough AI Performance/Watt

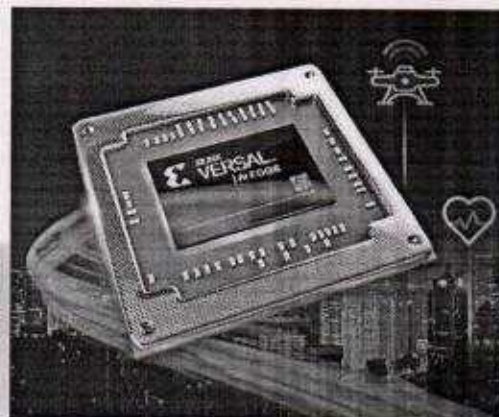
- > Optimized AI Engines-ML deliver 4X performance/watt vs. GPUs
- > Native support for diverse ML data types: INT8, INT4, BFLOAT16
- > 4MB on-chip accelerator RAM extends memory hierarchy for AI performance

Accelerates the Whole Application w/the Highest Levels of Safety & Security

- > Programmable I/O to integrate any sensor, any interface
- > Adaptable Engines for sensor fusion and pre-processing
- > Intelligent Engines for AI, vision processing, and radar & LIDAR processing
- > Scalar Engines for embedded compute and real-time control
- > Architected to meet IEC 61508 and ISO 26262 safety standards

World's Most Scalable and Adaptable Portfolio from Edge to Endpoint

- > Broadest device selection to scale from edge sensor to CPU accelerator
- > Design once and scale with same architecture, tools, and certifications
- > Scale for varying levels of compute safety & security targets
- > Hardware adaptable for custom AI, vision, and sensor strategies



TARGET APPLICATIONS

ADAS and Automated Drive

- > Edge Sensor (e.g., radar, LIDAR, vision)
- > Domain Controllers
- > CPU Accelerator

Computer Vision

- > Edge AI Box
- > Machine Vision Camera
- > Security Camera

Industrial

- > Collaborative Robotics
- > Converged Networking
- > Industrial-Grade PC

Medical

- > Ultrasound
- > Endoscopy
- > CT Scanner
- > Surgical Robotic Systems

Aerospace and Defense

- > Unmanned Aerial Vehicles
- > MILCOM Radio

¹ Versal AI Edge VE2802 ACAP vs. Jetson AGX Xavier (MAX N-Mode), ResNet50 224x224, batch=1

FEATURES

FEATURES OVERVIEW

Scalar Engines	<ul style="list-style-type: none"> > Up to 1.7GHz dual-core Arm® Cortex®-A72 application processor for Linux-class operating systems > Up to 750MHz dual-core Arm Cortex-R5F real-time processor with low latency and determinism > Embedded compute for complex algorithms and highest levels of functional safety (ASIL & SIL) > Platform management for quick boot, power & thermal management, and safety & security enclave
Adaptable Engines	<ul style="list-style-type: none"> > Scalable and adaptable sensor fusion for any combination of sensor or data types > Adaptable for any workload, including deterministic networking, motor control, and signal conditioning > Capable of over-the-air hardware updates to instantly update AI acceleration, sensor fusion algorithms, and more > Dynamic Function Exchange (DFx) to swap functionality in milliseconds, reducing device cost and system power
Intelligent Engines	<ul style="list-style-type: none"> > AI Engines-ML (AIE-MLs) for low power and low latency inference, with native support for INT8, INT4, BFLOAT16 > C-programmable for software developers and library-base design for data scientists > DSP Engines for diverse workloads including image signal processing, support for single and half-precision floating point
Safety and Security	<ul style="list-style-type: none"> > Built to meet stringent safety and security standards including IEC 61508 and ISO 26262 > Security processing subsystem includes cryptographic acceleration, key management, and anti-tamper > Safety measures across the platform, including triple redundant platform management, system monitoring, and ECC
Accelerator RAM	<ul style="list-style-type: none"> > 4MB of on-chip memory for high bandwidth memory access from any engine > Optimizes AI performance by reducing the need for external memory > Extends the platform's adaptable memory hierarchy to optimize for system performance
Programmable I/O	<ul style="list-style-type: none"> > Hardened memory controller for DDR4-3200 and LPDDR4-4200 > Configure the same I/O for any sensor, network connectivity, or DDR interface > Native MIPI support to handle up to 8-megapixel resolutions and beyond—critical to Level-2 ADAS and above

World's Most Scalable Edge AI Platform

Total AI Compute (INT4)	13TOPS	18TOPS	37TOPS	53TOPS	221TOPS	124TOPS	431TOPS
Total AI Compute (INT8)	7TOPS	10TOPS	21TOPS	31TOPS	120TOPS	124TOPS	228TOPS
Adaptable Engines	20K LUTs	37K LUTs	105K LUTs	150K LUTs	375K LUTs	448K LUTs	520K LUTs
Total Memory	95Mb	103Mb	156Mb	172Mb	554Mb	253Mb	575Mb

TAKE THE NEXT STEP

For more information about the Xilinx® Versal AI Edge series, visit <https://www.xilinx.com/versal-ai-edge>.

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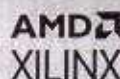
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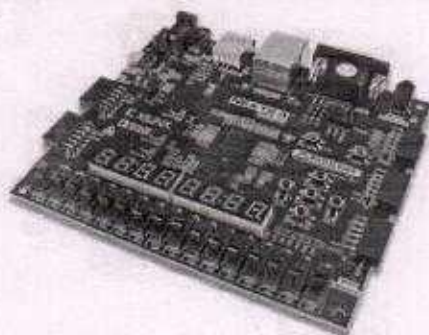
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- [Description](#)
- [Reviews \(0\)](#)

The Nexys 4 DDR is a drop-in replacement for our cellular RAM-based Nexys boards. Featuring the same Artix™-7 field programmable gate array (FPGA) from Xilinx®, the Nexys 4 DDR is a ready-to-use digital circuit development platform designed to bring additional industry applications into the classroom environment. The Artix-7 FPGA is optimized for high performance logic, and offers more capacity, higher performance, and more resources than earlier designs. With its large, high-capacity FPGA (Xilinx part number XC7A100T-1CSG324C) and collection of USB, Ethernet, and other ports, the Nexys 4 DDR can host designs ranging from introductory combinational circuits to powerful embedded processors. Several built-in peripherals, including an accelerometer, a temperature sensor, MEMs digital microphone, speaker amplifier and plenty of I/O devices allow the Nexys 4 DDR to be used for a wide range of designs without needing any other components. The most notable improvement is the replacement of the 16 MiB CellularRAM with a 128 MiB DDR2 SDRAM memory. Digilent will provide a VHDL reference module that wraps the complexity of a DDR2 controller and is backwards compatible with the asynchronous SRAM interface of the CellularRAM, with certain limitations.

The Nexys 4 DDR is compatible with Xilinx's new high-performance Vivado® Design Suite as well as the ISE® toolset, which includes ChipScope™ and EDK. Xilinx offers free WebPACK™ versions of these toolsets, so designs can be implemented at no additional cost.

Processor/IC: Xilinx Artix-7 FPGA XC7A100T-1CSG324CStats:

Connector(s):

- UART/JTAG USB port
- Pmod port for XADC signals
- Audio connector
- Ethernet connector
- USB host connector
- microSD card connector

Support Materials

[Datasheet \(PDF\)](#)

[Schematics \(PDF\)](#)

- 12-bit VGA output
- Four Pmod ports
- Power jack

Programming: Vivado Design Suite as well as the ISE toolset

Features:

- Xilinx Artix-7 FPGA XC7A100T-1CSG324C
- 15,850 logic slices, each with four 6-input LUTs and 8 flip-flops
- 4,860 Kbits of fast block RAM
- Six clock management tiles, each with phase-locked loop (PLL)
- 240 DSP slices
- Internal clock speeds exceeding 450 MHz
- On-chip analog-to-digital converter (XADC)
- 128 MiB DDR2
- Serial Flash
- Digilent USB-JTAG port for FPGA programming and communication
- microSD card connector
- Ships with rugged plastic case and USB cable
- USB-UART Bridge
- 10/100 Ethernet PHY
- PWM audio output
- 3-axis accelerometer
- 16 user switches
- 16 user LEDs
- Two tri-color LEDs
- PDM microphone
- Temperature sensor
- Two 4-digit 7-segment displays
- USB HID Host for mice, keyboards and memory sticks
- Pmod for XADC signals
- 12-bit VGA output
- Four Pmod ports