

OVERVIEW

Lario is a RISC-V Quad-Core embedded processor targeted at entry-level embedded and cloud terminal market applications. It offers excellent power efficiency and rich I/O connectivity for diverse embedded applications, integrating GPU (Vulkan 1.2 / OpenGL ES 3.2 / DirectX 11), dual-channel display (HDMI 2.0 + DP 1.4), H.264/H.265 video codec, multi-standard Ethernet, PCIe Gen 4.0, and comprehensive peripheral interfaces.

KEY FEATURES

Quad-Core RISC-V CPU RV64GC ISA, up to 2.0 GHz, 1 MB L3	Integrated GPU Vulkan 1.2 / DirectX 11 / OpenGL ES 3.2
Dual-Channel Display HDMI 2.0 (4K@60fps) + DP 1.4 (2K@60fps)	LPDDR4X / LPDDR5 3200 MT/s or 4800 MT/s
Multi-Standard Ethernet 2x 2.5GbE + 2x 1GbE	PCIe Gen 4.0 10 lanes / 8 configurable ports
H.264 / H.265 Codec HW encode & decode, 4K 30fps	Rich Peripheral I/O USB 3.1/2.0, SATA, eMMC, I ² C, SPI, CAN

CORE SPECIFICATIONS

PARAMETER	SPECIFICATION
CPU	
Architecture	RISC-V RV64GC, Quad-Core
Max Frequency	< 2.0 GHz
L3 Cache	1 MB Shared
MEMORY INTERFACE	
LPDDR4X	3200 MT/s
LPDDR5	4800 MT/s
GPU / DISPLAY	
GPU APIs	Vulkan 1.2 / DirectX 11 / OpenGL ES 3.2
Display Output	HDMI 2.0 (4K@60fps) + DP 1.4 (2K@60fps)
Video Encode	H.264 / H.265 @ 4K 30fps
Video Decode	H.264 / H.265 / AVS2.0
HIGH-SPEED CONNECTIVITY	
Ethernet	2x 2.5GbE (Base-X) + 2x 1GbE (RGMI)
PCIe	Gen 4.0 – 10 lanes / 8 ports
USB	2x USB 3.1 Gen1 + 6x USB 2.0
Storage	2x SATA 3.0 / eMMC 5.1 / SD 3.0
LOW-SPEED PERIPHERALS	
Serial / Control	I ² C / UART / SPI / CAN
GPIO / Timer	GPIO / PWM
POWER	
Typical Power	15 W

ABSOLUTE MAXIMUM RATINGS

PARAMETER	RATING
Core Supply Voltage (VDD_CORE)	-0.3 V to +1.1 V
I/O Supply Voltage (VDD_IO)	-0.3 V to +3.6 V
Storage Temperature (T _{STG})	-65 °C to +150 °C
Operating Junction Temp. (T _J)	-40 °C to +125 °C
ESD Protection (HBM / CDM)	±2000 V / ±500 V

△ Stress ratings only. Exceeding these limits may cause permanent device damage.

TARGET APPLICATIONS

- Cloud & Desktop Thin Client Terminal
- Industrial PC (IPC) & Machine Vision
- Industrial Control & PLC Gateway
- Embedded PC — Education / Medical
- IoT Edge Server & Smart Gateway
- Digital Signage & HMI Display
- Industrial Router & Network Appliance



PERFORMANCE

CPU	GPU
~35K DMIPS Multi-Core (est.)	~512 GF FP32 GFLOPS (est.)
~9 SPECi SPECint2006 Rate	2 Disp HDMI 4K + DP 2K

PACKAGE INFORMATION

PARAMETER	VALUE
Package Type	FCBGA
Body Size	25 × 25 mm
Ball Count	933 balls
Ball Pitch	0.64 mm
Bonding	Flip-Chip (FC)

Intelligence at the Edge,
Performance by Design.

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