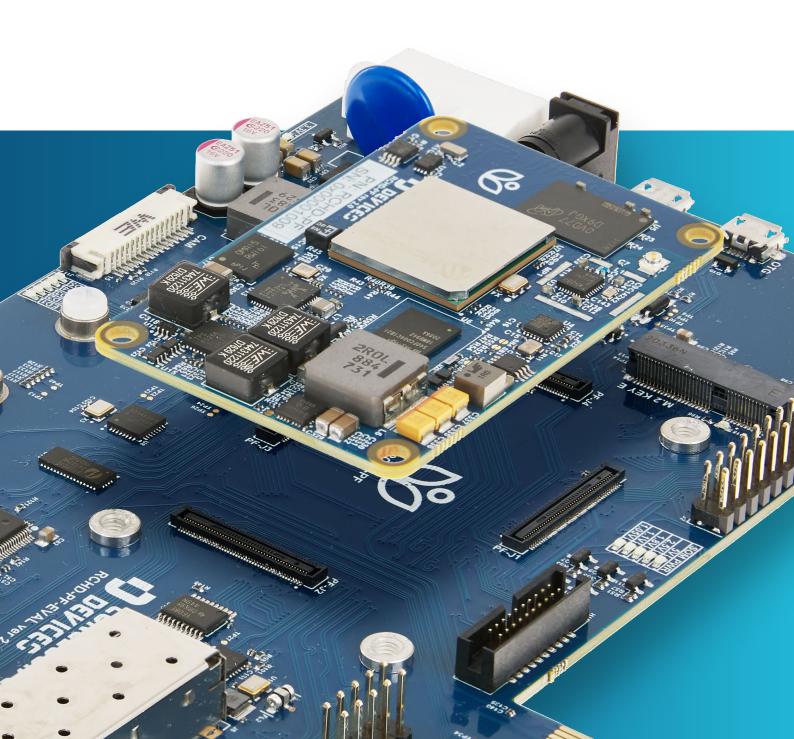


Cutting-Edge SoM Hardware & SBC Products





Products

We design and develop Single Board Computers and System On Modules for a broad range of applications. Looking for maximum performance, low power consumption and maximum efficiency? Our product lines feature cutting-edge boards designed to satisfy your most demanding needs.







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Hardware is just the start

All our boards and modules come with an excellent software support: included **Board Support Packages** offer support for latest U-Boot and Linux kernels as well as system-specific libraries and frameworks such as DPDK or express Data Path.



System on Modules

Overview

Product	SoC	CPU Architecture	Memory
RCHD-PF	Microchip PolarFire® FPGA SoC	RISC-V, up to 667 MHz, 5 cores 4x RV64GC application cores 1x RV64IMAC monitor/boot core Performance: 3.125 CoreMarks/MHz, 1.714 DMIPS/MHz	LPDDR4 • 512 MB • 1 GB • 2 GB • 4 GB 1600 MT/s
RCHD-SPARX	Microchip SparX-5 Ethernet Switch • VSC7552 • VSC7556 • VSC7558 • VSC7546 • VSC7549	1 GHz dual-core Arm® Cortex®-A53 Arm® Cortex®-M3	DDR4 SDRAM with ECC support 1 GB 2 GB 4 GB
RCHD-AM62	Texas Instruments AM623x/AM625x	Up to 4x Arm® Cortex®-A53 1400MHz Single core Arm® Cortex®-M4 Single core Arm® Cortex®-R5	DDR4 SDRAM 512 MB 1 GB 2 GB 4 GB 8 GB
HPC-LX2	NXP Layerscape® LX2 SoC variants: • LX2080A, 8 core Arm® Cortex®-A72 2.2 GHz CPU with DPAA2 • LX2120A, 12 core Arm® Cortex®-A72 2.2 GHz CPU with DPAA2 • LX2160A, 16 core Arm® Cortex®-A72 2.2 GHz CPU with DPAA2	-	4x DDR4 DIMM socket supporting up to 256 GB DDR4 SDRAM with ECC (up to 3200 MT/s)

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RCHD-PF

Polarfire System on Module



RCHD-PF key features:

- 667 MHz RISC-V, 5 cores
- Microchip PolarFire® FPGA: 23K 254K Logic Elements
- RISC-V and FPGA integrated on a Single Chip
- High-Speed I/O and 12.7 Gbit/s transceivers
- Real-Time Signal Processing with Hardware Offloading

RCHD-PF Polarfire System on Module

Highly scalable System-on-Module, capable of performant and extremely efficient digital signal processing.

Ideal for FPGA-specific loads like video processing, imaging, artificial intelligence, deep packet inspection, advanced sensor fusion, and Operational Technology systems supervision

- all in real-time.



RCHD-PF Specifications	
SoC	Microchip PolarFire® FPGA SoC
CPU Architecture	RISC-V, up to 667 MHz, 5 cores 4x RV64GC application cores 1x RV64IMAC monitor/boot core Performance: 3.125 CoreMarks/MHz, 1.714 DMIPS/MHz
FPGA	Microchip PolarFire® SoC: MPFS025T - 23k logic elements MPFS095T - 93k logic elements MPFS160T - 161k logic elements MPFS250T - 254k logic elements
Memory	LPDDR4 (512 MB, 1, 2 or 4 GB) 1600 MT/s
Ethernet	1x 1 Gbit/s Ethernet PHY 1x 1 Gbit/s Ethernet MAC (SGMII interface)
Mass storage	eMMC 5.0 (4-64 GB) 4 KB EEPROM NOR Flash memory (32 MB) for FPGA configuration
PCle	PCIe 2.0 up to x4
USB	1x USB 2.0 OTG
Debug	Conclusive Developer Cable connector providing access to: System UART JTAG port System I2C bus
Additional features	802.11 b/g/n WiFi with u.fl antenna connector (optional) RTC with external battery back-up 30 high speed differential GPIO / 60 high speed single ended GPIO 32 differential GPIO / 64 single ended GPIO 4 XCVR bidirectional lanes (12.7 Gbit/s)
Software support	Linux 6.5 & 6.1, U-Boot, Yocto, Buildroot, Ubuntu, FreeBSD (on request)
Operating Temperature	-40 °C to 85 °C
Power supply	3.3 V
Dimensions	65 x 45 mm



RCHD-AM62

Industrial System on Module



RCHD-AM62 key features:

- TI AM62x Sitara™ with up to 4 Cortex®-A53 Cores
- Up to dual 1080p Video Output and 3D Graphics Acceleration
- Dual 1 Gbit/s Ethernet, Wi-Fi 6, and Bluetooth
 5.4 Connectivity
- Up to 1080p video input, industrial I/O interfaces
- Single 3.3 V power input for straightforward integration

RCHD-AM62 Industrial System on Module

The RCHD-AM62 is an industrial System on Module that seamlessly integrates very high processing power with energy efficiency, making it the ideal solution for industrial purposes and power-constrained edge devices.

visit product website

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RCHD-AM62 Specificat	ions
SoC	Texas Instruments AM623x/AM625x
CPU Architecture	Up to 4x Arm® Cortex®-A53 1400MHz Single core Arm® Cortex®-M4 Single core Arm® Cortex®-R5
GPU	3D Graphics Processing Unit OpenGL ES 3.1, Vulkan 1.2
Memory	DDR4 SDRAM (512 MB, 1 GB, 2 GB, 4 GB, 8 GB)
Ethernet	2x 1 Gbit/s
Mass storage	eMMC (4 – 64 GB) EEPROM (32 KB)
USB	2x USB 2.0 DRD (Dual Role Device)
Wireless connectivity	2.4/5 GHz Dual-Band Wi-Fi® 6 IEEE 802.11ax Bluetooth® 5.4 IEEE 802.15.4 Zigbee / Thread / Matter
Other Interfaces	3x SPI 5x UART 3x ePWM 3x CAN-FD 3x eCAP 4x I2C 3x eQEP QSPI/OSPI
Security features	HSM (Secure Boot), TRNG, SHA, AES, SKA, MD5, DRBG, QSPI/OSPI
Hardware accelerators	PRU-SS
Debug	USB Micro-B 2.0 console port on eval kit JTAG
Software support	Linux 6.5 & 6.1 U-Boot Yocto Buildroot Ubuntu FreeBSD (on request)
Power supply	3.3 V
Dimensions	82 x 45 mm



RCHD-SPARX

Networking Switch SoM



RCHD-SPARX key features:

- 1 GHz Dual-Core Arm® Cortex®-A53 Processor
- Up to 4 GB DDR4 RAM
- Up to 200 Gbit/s switching throughput
- Up to 65 Configurable Ethernet Ports
- Advanced Features:
 L2/L3 Switching, QoS, PCIe 3.0, TSN, SyncE, optional TPM 2.0

RCHD-SPARX High performance switch

RCHD-SPARX provides functionalities of a high performance switch in a small form factor solderable SoM. Up to 200 Gbit/s of switching bandwidth. Packed with hardware and software networking features.

Baseboards	1U rack mounted form factor
Baseboard A:	8x 25 GbE SFP28 12x 5 GbE RJ-45 PoE++ 12x 10 GbE RJ-45 PoE++
Baseboard B:	8x 25 GbE SFP28 48x 2.5 GbE RJ-45 PoE++
Baseboard C:	8x 25 GbE SFP28 12x 10 GbE SFP+ 12x 5 GbE RJ-45 PoE++

RCHD-SPARX Specific	cations
SoC	Microchip SparX-5 Ethernet Switch - VSC7552, VSC7556, VSC7558, VSC7546, VSC7549
CPU Architecture	1 GHz dual-core Arm® Cortex®-A53 Arm® Cortex®-M3
Memory	DDR4 SDRAM with ECC support (1, 2 or 4 GB)
Ethernet	64, 90, 128, 160, 200 Gbit/s total switching bandwidth 65 Configurable Ethernet ports Sample configuration: 8x 25 Gbit/s + 12x 10 Gbit/s + 24x 2.5 Gbit/s Support for QSGMII, USGMII, USXGMII, HSGMII, SGMII, 10GBASE-R, 25GBASE-R
Mass storage	eMMC (4 – 64 GB) EEPROM (32 KB) SPI NOR flash for bootloader (32 MB) Optional M.2 NVMe via baseboard
PCle	1x 3.0 PCle configurable as root complex or endpoint mode
Other Interfaces	SPI I2C GPIO
Debug	JTAG
Software support	Linux 6.1 & 6.5 U-Boot Yocto Buildroot Ubuntu FreeBSD (on request)
Additional features	IEEE1588, TSN, RTC, TPM 2.0 optional
Power supply	5 V
Dimensions	75 x 80 mm





HPC-LX2

System on Module



HPC-LX2 key features:

- Form factor: COM-HPC Server variant D
- NXP Layerscape® LX2 SoC variants:
- LX2160A/LX2120A/LX2080A
- Up to 256GB DDR4 DIMM with ECC
- 10/25/40/100 Gbit/s Ethernet connectivity
- Over 224,000 CoreMark® Performance



HPC-LX2 Specification	ns
SoC	NXP Layerscape® LX2 SoC variants: • LX2080A, 8 core Arm® Cortex®-A72 2.2 GHz CPU with DPAA2 • LX2120A, 12 core Arm® Cortex®-A72 2.2 GHz CPU with DPAA2 • LX2160A, 16 core Arm® Cortex®-A72 2.2 GHz CPU with DPAA2
Memory	4x DDR4 DIMM socket supporting up to 256 GB DDR4 SDRAM with ECC (up to 3200 MT/s)
Ethernet	8x 25 Gbit/s SerDes lanes capable of: up to 2× 100 Gbit/s or 2× 40 Gbit/s up to 6× 25 Gbit/s up to 8× 10 Gbit/s 1x 1 Gbit/s with on-board 1000BASE-T PHY
PCle	32x PCle Gen 3 lanes 1x PCle Gen 3 lane for BMC
SATA	2x 6 Gbit/s SATA 3.0 ports
USB	4x USB 3.0 4x USB 2.0
Additional features	2x UART 12x GPIO 2x SPI 2x I2C SMBus, IPMB 16MB QSPI flash for firmware
Security	TPM 2.0 Secure boot
Debug	Conclusive Developer Cable connector providing access to: System UART JTAG port System I2C bus
Software support	Linux 6.1 & 6.5 U-Boot Yocto Buildroot Ubuntu FreeBSD (on request)
Power supply	12 V DC
Dimensions	160 x 160 mm
Form factor	COM-HPC Server variant D



Single Board Computers

Overview

Product	SoC	Memory	Connectivity
WHLE-LS1	NXP Layerscape® SoC variants: S1026, 2 core Arm® Cortex®-A72 1.8 GHz CPU with DPAA LS1046, 4 core Arm® Cortex®-A72 1.8 GHz CPU with DPAA LS1048, 4 core Arm® Cortex®-A53 1.4 GHz CPU with DPAA2 LS1088, 8 core Arm® Cortex®-A53 1.6 GHz CPU with DPAA2	1x SO-DIMM socket up to 32 GB DDR4 SDRAM with ECC (up to 2100 MT/s)	Ethernet: 4x 1 Gbit/s RJ45 2x 10 Gbit/s SFP+
KSTR-SAMA5D27	Microchip SAMA5D27 1 core Arm® Cortex®-A5 500 MHz 32-Bit CPU	256 MB LPDDR2	Ethernet: 10/100 Mbit/s Ethernet (RJ-45) Wireless: 2.4 GHz WLAN IEEE 802.11 b/g/n Bluetooth 4.1
KSTR-IMX93	NXP i.MX93 • 1-2 core Arm®Cortex®-A55 1.7 GHz CPU • 1 core Arm® Cortex®-M33 250 MHz CPU	LPDDR4 (512 MB, 1 GB or 2 GB) Up to 128 GB eMMC uSD card slot	Ethernet: 1x 1 Gbit/s RJ-45 1x 1 Gbit/s with RGMII interface Wireless: LTE Cat-M1 / NB-IoT WiFi 6 2.4 GHz and 5 GHz Bluetooth 5.4 802.15.4 Thread DECT NR+ GNSSbuilt in E-SIM / Soft SIM

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WHLE-LS1

High Performance Single Board Computer



WHLE-LS1 key features:

- NXP Layerscape® LS1 SoC Variants: LS1026A / LS1046A / LS1048A / LS1088A
- DDR4 SODIMM with ECC
- Robust Connectivity: 4× 1 Gbit/s Ethernet, 2× 10 Gbit/s SFP+, 3x PCle M.2
- Over 45,000 CoreMark® Performance with SmartNIC Capabilities

WHLE-LS1 Specifications		
SoC	NXP Layerscape® SoC variants: LS1026, 2 core Arm® Cortex®-A72 1.8 GHz CPU with DPAA LS1046, 4 core Arm® Cortex®-A72 1.8 GHz CPU with DPAA LS1048, 4 core Arm® Cortex®-A53 1.4 GHz CPU with DPAA2 LS1088, 8 core Arm® Cortex®-A53 1.6 GHz CPU with DPAA2	
Memory	1x SO-DIMM socket supporting up to 32 GB DDR4 SDRAM with ECC (up to 2100 MT/s)	
Ethernet	4x 1 Gbit/s RJ45 2x 10 Gbit/s SFP+	
Mass storage	4-64 GB eMMC 16 MB QSPI NOR Flash 8 KB EEPROM	
PCle	M.2 Key-M 2280 PCIe 3.0 x2 NVMe M.2 Key-M 2280 PCIe 3.0 x1 NVMe M.2 Key-E 2230 PCIe 3.0 x1 WiFi/BT with USB 2.0, I2C, UART	
USB	1x or 2x USB A 3.0	
Debug	Conclusive Developer Cable connector providing access to: System UART JTAG port System I2C bus 1x USB Micro-B 2.0 console port (System UART)	
Software support	Linux 6.5 & 6.1 U-Boot UEFI-EDK2 Yocto Buildroot Ubuntu FreeBSD (on request)	
Additional features	RTC with CR2032 back-up battery Boot source selector DIP switch 2x bi-color status LED Two channel fan controller with 3 pin and 4 pin fan connectors 6x GPIO (3.3 V) External I2C (3.3 V)	
Power supply	12 V DC, 5 A, 2.5 x 5.5 mm barrel connector	
Dimensions	130 x 130 mm	





KSTR-SAMA5D27

Single Board Computer



KSTR-SAMA5D27 key features:

- Arm® Cortex®-A5 500 MHz Processor
- 10/100 Mbit/s Ethernet, 96 Mbit/s Wi-Fi b/g/n, Bluetooth 4.1 LE
- Arm® TrustZone® Security, Stackable GPIO Headers, Secure Boot
- USB-C/Li-lon battery powered with battery charging features
- Compact Form Factor: 50×70 mm



KSTR Specifica	tions
SoC	Microchip SAMA5D27, 1 core Arm® Cortex®-A5 500 MHz 32-Bit CPU
SoC Features	Arm® TrustZone® Secure Boot Hardware encryption engine Memory Integrity Monitor Real-time clock on-die Less than 200 µA low power state with fast wake up 5 µA backup mode
Memory	256 MB LPDDR2
Ethernet	10/100 Mbit/s Ethernet (RJ-45)
Wireless connectivity	2.4 GHz WLAN IEEE 802.11 b/g/n Bluetooth 4.1
Mass storage	SD card slot 4 KB EEPROM
USB	1x USB 2.0 OTG (USB Type-C connector) 1x USB 2.0 Host (on expansion header)
Debug	Conclusive Developer Cable connector providing access to: System UART JTAG port System I2C bus Console debug UART on the expansion header
Software support	Linux 6.5 & 6.1, U-Boot, Yocto, Buildroot, Ubuntu, FreeBSD (on request)
Additional features	3 status LEDs - Power Indicator, System Heartbeat, user programmable RTC Battery backup (CR1220) for RTC and static RAM VDDIO voltage switch pins (3.3 V or 1.8 V selection) Reset switch 34 and 30 pin connectors with the following interfaces: • 3.3 V, 2.5 V, 1.8 V, 5.0 V and VBAT power supply pins • 2x Flexcom (configurable: I2C, SPI, UART) • I2C • 6 channel ADC with Vref • 10-bits ISC (Image Sensor Controller), 10-bit and 12-bit sensors support • 4-channel PWM • Timer I/O • CAN • USB • PDMIC audio input • Console UART • QWIIC connector
Power supply	USB Type-C connector External Li-lon battery with charging, charge level and temperature monitoring support. 3 pin connector and solder pads
Dimensions	50 x 70 mm



KSTR-IMX93

Single Board Computer



KSTR-IMX93 key features:

- First Linux capable Single Board Compute featuring Nordic Semiconductor solutions
- All-in-one wireless solution featuring i.MX93 and nRF91, nRF53, and nRF7002
- Ultra low-power IoT platform with Li-Ion battery support
- Versatile connectivity options: Wi-Fi, Thread, Bluetooth, Zigbee, and LTE

KSTR Specifications	
SoC	NXP i.MX93 • 1-2 core Arm® Cortex®-A55 1.7 GHz CPU • 1 core Arm® Cortex®-M33 250 MHz CPU
Nordic solutions	nRF5340 nRF9161 nRF7002
Memory	LPDDR4 (512 MB, 1 GB or 2 GB) Up to 128 GB eMMC uSD card slot
Ethernet	1x 1 Gbit/s RJ-45 1x 1 Gbit/s with RGMII interface
USB	USB 2.0 OTG Type-C
Wireless connectivity	LTE Cat-M1 / NB-IoT WiFi 6 2.4 GHz and 5 GHz Bluetooth 5.4 802.15.4 Thread DECT NR+ GNSS built in E-SIM / Soft SIM
Features	MIPI-DSI MIPI-CSI2 2x CAN-FD transceiver 4x UART 3x I2C 1x SPI 4x ADC up to 37x i.MX93 GPIO up to 15x nRFxx GPIO
Software support	 i.MX93: Linux 6.1 & 6.5, U-Boot, Yocto, Buildroot, Ubuntu, FreeBSD (on request), Zephyr RTOS (integrated M33 core) nRFxx: Zephyr RTOS
Power	5V USB Type-C External Li-lon battery with charging, charge level and temperature monitoring support PoE IEEE 802.3af
Dimensions	50 x 70 mm





Eval Kits and Accessories

Overview

Product	Description
RCHD-PF-EVAL	Evaluation Board Compatible with an entire RCHD-PF System On Module family
ETH-1000-T1	1 Gbit/s RJ-45 to 1000BASE-T1 Automotive Single Pair Ethernet media converter
ETH-SFP-LTE	Linux-powered SFP form factor LTE to SFP bridge

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RCHD-PF-EVAL

Evaluation Board



RCHD-PF-EVAL key features:

- Compatible with an entire RCHD-PF System On Module family
- Includes standard peripheral connectors and can be placed inside a PC using the PCle

RCHD-PF-EVAL Specifications		
SoM	Supports the whole RCHD-PF family of products	
Memory	Provided by the SoM	
Mass storage	1x M.2 Key-M NVMe	
Ethernet	1x 10 Gbit/s SFP+ 2x 1 Gbit/s RJ-45	
PCle	1x PCIe 2.0 x1 M.2 Key-M 1x PCIe 2.0 x1 M.2 Key-E 1x PCIe x1 edge card connector (device mode)	
USB	1x micro USB-AB 2.0 OTG 1x micro USB-B with 4 virtual COM ports	
Debug	Conclusive Developer Connector providing access to: System UART JTAG port System I2C bus 1x micro USB-B with 4 virtual port com Microchip FlashPro5/FlashPro6 Programmer Connector	
Software support	Determined by the SoM	
Power supply	2.5 x 5.5 mm DC Jack barrel connector, 12V DC, 7.5 A 1x Molex power input	
Additional features	1x CR1220 battery holder for RTC upkeep 1x HDMI video output 4x general purpose user-programmable switch 1x Raspberry Pi compatible GPIO header Power domains status LEDs 5x user programmable LEDs MIPI-DSI Camera header, Raspberry Pi compatible CAN bus	
Dismensions	11.15 mm x 175.7 mm	





ETH-1000-T1

Automotive Media Converter



ETH-1000-T1 key features:

- 1 Gbit/s RJ-45 to 1000BASE-T1 Automotive Single Pair Ethernet media converter
- PoE or USB Type-C power input
- USB configuration interface
- · On-board configuration switches

ETH-1000-T1 Specifications		
Ethernet	10/100/1000 Mbit/s RJ-45 1000BASE-T 100/1000 Mbit/s 1000BASE-T1	
Features	Configuration interface via USB port On-board configuration switches	
Power	IEEE 802.3af PoE in USB Type-C	
Form factor	84 x 47 x 26 mm (LxWxH)	





ETH-SFP-LTE

Linux powered SFP form factor LTE to SFP bridge



ETH-SFP-LTE key features:

- Linux powered SFP form factor
- LTE to SFP bridge
- Remote management of network infrastructure
- Emergency access to provisioned network devices
- Maintenance automation
- Network performance monitoring

ETH-SFP-LTE Specifications		
SoC	LS1012A - 1 core Arm® Cortex®-A53 1.0 GHz	
Memory	DDR3L - 1 GB or 2 GB Up to 4 GB eMMC	
Ethernet	SFP up to 2.5 Gbit/s	
Wireless connectivity	LTE Cat-M1 / NB-IoT DECT NR+ GNSS built in eSIM / SoftSIM	
Features	USB Serial port SMA LTE Antenna connector	
Software support	Linux 6.1 & 6.5 U-Boot Yocto Buildroot Ubuntu	
Power	3.3 V via SFP connector	
Form factor	SFP module	





Custom PCB

Design and Manufacturing

Need a fully custom embedded solution made from scratch? Not a problem! We'll handle everything - from need assessment to first prototype, production runs, testing and QA. Be sure to check our <u>software development</u> offer - we can deliver a turn-key product tailored to your needs.



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2. Develop your existing project

Do you have a custom project you'd like to upgrade or maintain?

Or maybe you're stuck in development of your dream solution, and searching for someone to put it back on track? Get in touch! We're experienced in working with the most demanding client solutions and resolving the most complex issues.roject forward!



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Looking for a one-stop-shop to provide you with a full design and manufacturing embedded hardware pipeline, from concept to market? You've come to the right place.

We'll handle everything - from need assessment to first prototype, production runs, testing and QA. Be sure to check our software development offer - we can deliver a turn-key product tailored to your needs.



Conclusive Enginnering Profile

Conclusive was founded in 2018 by Jakub Klama and Wojciech Kloska to merge their collective expertise in embedded systems. Today the heart of our company consists of over 30 exceptionally talented and experienced engineers. Our expertise spans across all frontiers of embedded system development, and allows us to adapt to most demanding endeavors.

Over the years, we've delivered crucial, mission-critical systems to the biggest global companies. You can find the fruit of our work in the fields of transportation, computation, data storage, and more. We've always delivered top notch products, and take pride in their flawless and infallible performance.

Technology partners











Our services

From device driver development to embedded systems design and manufacturing



Custom PCB Design and Manufacturing



Operating Systems and Bootloaders



Device Drivers Development



Application layer and middleware



Firmware Development



Edge Computing, AI and Machine Learning



Debugging and profiling

