

LCH3403V100-System On Module

Product Brief

V1.0



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Version History

Version	Date	Description
V1.0	2024/12/16	Initial version

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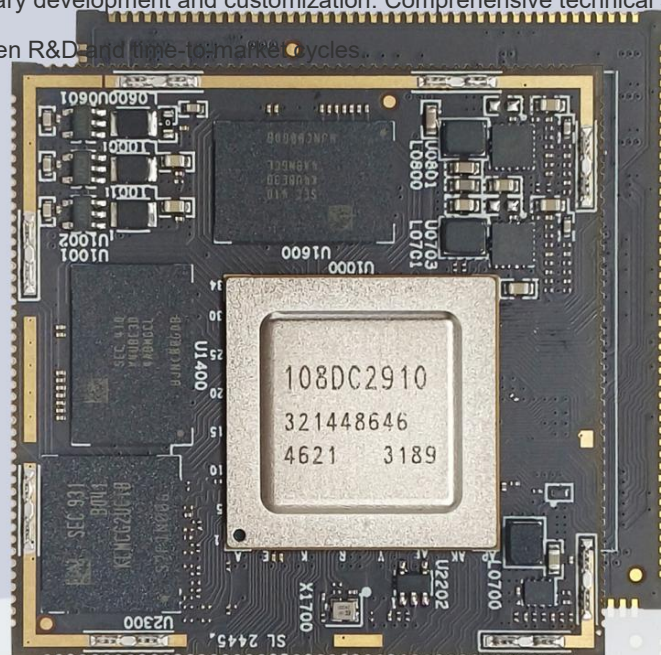
1.Product Introduction

The LCH3403V100 core module is a fully-featured design built on the HiSilicon Hi3403V100 SoC, measuring only 50 mm × 50 mm. Connection to the carrier is made through a 180-pin castellated edge connector that exports all Hi3403V100 I/Os while meeting demands for high reliability, low cost, and maximum flexibility.

LCH3403V100 integrates CPU, DDR, eMMC, and PMU. DDR uses mainstream LPDDR4/LPDDR4X for lower power and higher speed, available in 4 GB or 8 GB options. eMMC complies with the high-speed eMMC 5.1 standard, offered in 16 GB or 64 GB capacities. Peripheral interfaces include one 4-lane MIPI_DSI output plus one HDMI port, one 4-lane MIPI_CSI and one configurable 2-lane MIPI_CSI/4-lane MIPI_CSI, two standard Gigabit RJ45 ports, one PCIe, one USB 3.0 and four USB 2.0, four speaker outputs, two MIC inputs, one headphone jack, one I²S audio interface, two RS232 serial ports, one SDIO, one SPI, one independent I²C, and ten GPIOs, satisfying diverse expansion requirements.

The module incorporates a high-efficiency neural-network inference unit delivering up to 10 TOPS (INT8) and supports mainstream industry frameworks. Its ISP handles 4 K @ 60 fps, processes multi-sensor inputs, and enables high-performance stitching and panoramic capture. Built-in image-enhancement algorithms include 3F WDR, multi-level noise reduction, 6-axis stabilization, and hardware stitching. Video codecs cover H.264, H.265, and MPEG-4 up to 8192 × 8192 resolution with multi-stream encode/decode and output bit-rates to 160 Mbps. ROI encoding and multiple rate-control modes adapt to varied streaming scenarios, delivering strong performance in security, intelligent transportation, smart home, and industrial automation.

Ubuntu, Buildroot, and OpenHarmony are supported. High performance, reliability, and expandability are assured, with full source code provided for secondary development and customization. Comprehensive technical support is available to help developers and enterprises shorten R&D and time-to-market cycles.



2. Function Overview



High-Performance Processor

CPU	Quad-core 64-bit (4×A55 @ 1.4 GHz), high performance, low power
NPU	10.4 TOPS INT8, dual-core heterogeneous
VPU	4K encode, 10×1080p decode, 4×4 MP30 in-camera real-time hardware stitch
DDR	LPDDR4/4X, 4 GB or 8 GB option
eMMC	eMMC 5.1, 16 GB or 64 GB option



Operating System

Ubuntu、Openharmony、Buildroot



Open Source Materials

WIKI <https://wiki.neardi.net/docs/welcome/>

Quick Start

Firmware Update

Linux Development

Kernel Driver

DEMO

System Customization

Accessories

FAQ

Release Notes

Hardware Materials

[Chip Datasheet](#)

[Core Module Pinout](#)

[Carrier Board Reference Schematic](#)

[Carrier Board Reference PCB](#)

[Critical BOM](#)

[Product 2D/3D Drawings](#)

Software Materials

[Burning Tool & Drivers](#)

[U-Boot & Kernel Source Code](#)

[Linux System Files](#)

3. Technical Specifications

Basic Parameters

SOC	Hi3403V100; quad-core 64-bit (4×A55 @ 1.4 GHz)
NPU	10.4 TOPS INT8, dual-core heterogeneous
VPU	Supports H.264/H.265/MPEG-4: 4K@60 fps + 1080p@60 fps Supports H.264/H.265: 4K@60 fps + 720p@30 fps, 8K@15 fps
DDR	LPDDR4/4X, 4 GB / 8 GB options
eMMC	eMMC 5.1, 16 GB / 64 GB options
OS	Ubuntu、Buildroot、OpenHarmony

Hardware Specifications

Video Input	8-lane image-sensor serial input supporting MIPI / LVDS / Sub-LVDS / HiSPi
	Accepts 2×4-lane or 4×2-lane combinations, up to 4 sensorsAccepts 2×4-lane or 4×2-lane combinations, up to 4 sensors
	Max resolution 8192 × 8192
Video Output	HDMI 2.0
	4-lane MIPI DSI/CSI @ 2.5 Gbps per lane
	Digital interfaces: 8-/16-/24-bit RGB, BT.656, BT.1120
	Max output 4096×2160@60 fps + 1920×1080@60 fps
Audio	On-chip 16-bit codec for input and output
	I ² S interface
Network	Dual Gigabit Ethernet ports
	RGMII / RMII modes
Peripherals	4-channel LSADC
	Multiple UART, I ² C, SPI, GPIO

2× SDIO 3.0

2× USB 3.0 / USB 2.0

2-lane PCIe 2.0

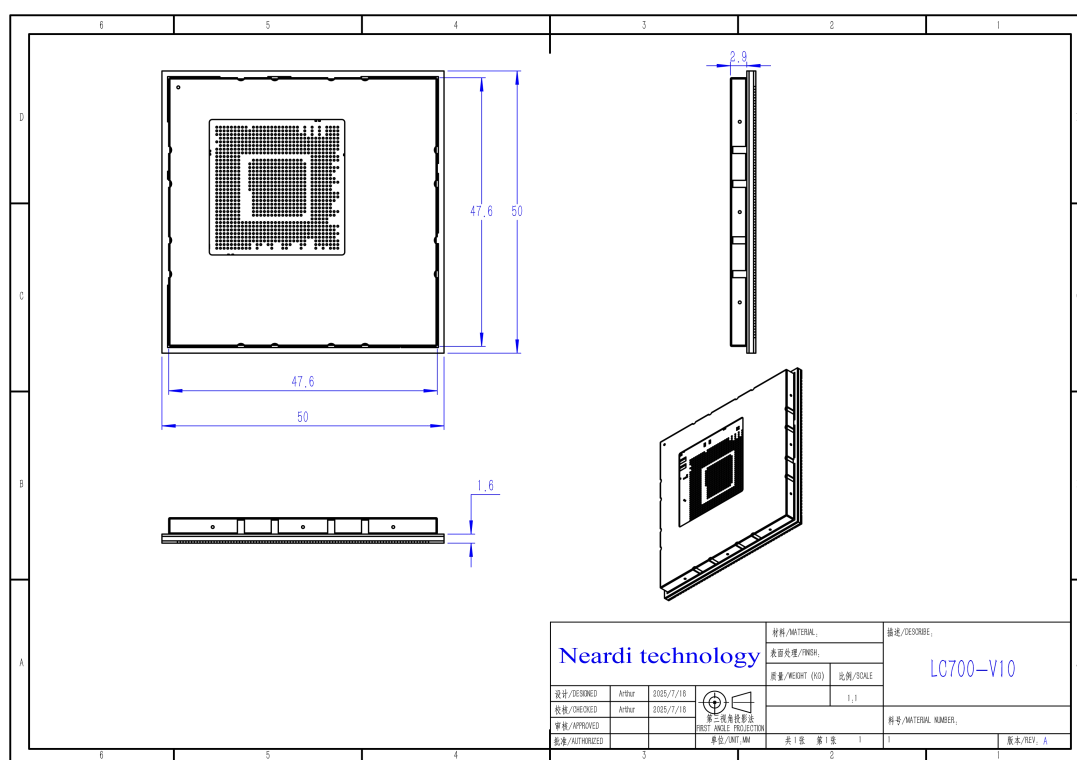
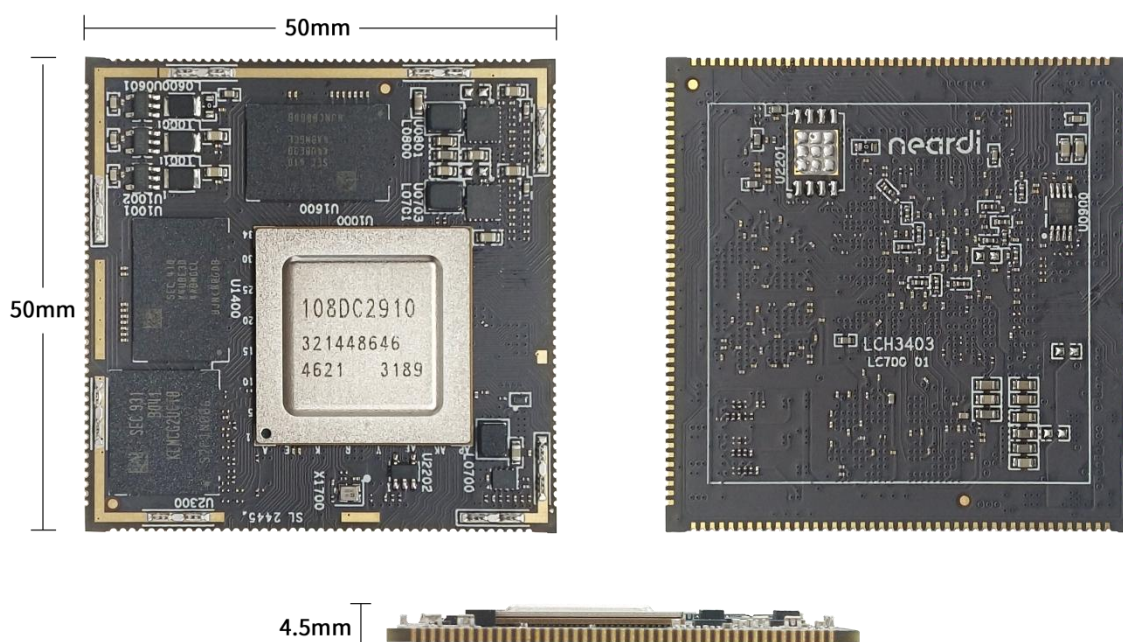
Other Parameters

Operating temperature	-20℃~ 70℃
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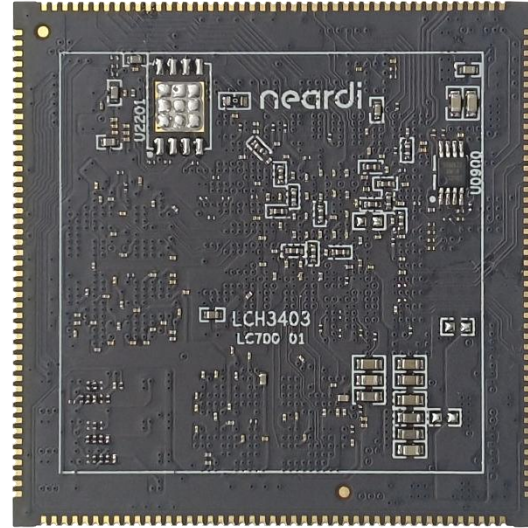
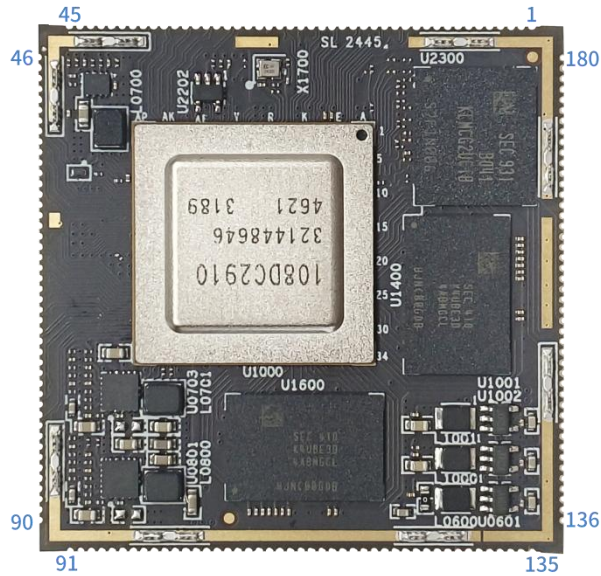
PCB interface	LGA (180Pin 1mm Pitch)
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PCB layers	10 layers
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PCB size	L* W *H(mm): 50 *50 * 4.5 (PCB Thickness1.6mm)
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5. Interface Definition



Pin Number	Pin Name
1	AC_OUTL
2	AC_OUTR
3	CVBS_IN
4	GND
5	HDMI_TXCP
6	HDMI_TXCN
7	HDMI_TX0P
8	HDMI_TX0N
9	HDMI_TX1P
10	HDMI_TX1N
11	HDMI_TX2P

12	HDMI_TX2N
13	MIPI_RX1_D2N
14	MIPI_RX1_D2P
15	MIPI_RX1_D3N
16	MIPI_RX1_D3P
17	MIPI_RX1_D0P
18	MIPI_RX1_D0N
19	MIPI_RX1_CK0P
20	MIPI_RX1_CK0N
21	MIPI_RX1_D1P
22	MIPI_RX1_D1N
23	MIPI_RX1_CK1P
24	MIPI_RX1_CK1N
25	MIPI_RX0_CK1P
26	MIPI_RX0_CK1N
27	MIPI_RX0_D1N
28	MIPI_RX0_D1P
29	MIPI_RX0_D3P
30	MIPI_RX0_D3N
31	MIPI_RX0_D2P
32	MIPI_RX0_D2N

33	MIPI_RX0_CK0N
34	MIPI_RX0_CK0P
35	MIPI_RX0_D0N
36	MIPI_RX0_D0P
37	GND
38	GPIO0_2_PWM0_O15_1V8
39	GPIO0_4_1V8
40	PWM_TO_1V1/UART1_2_VD3318_SEL
41	JTAG_TDO/LCD_RESET_1V8
42	JTAG_TCK/TP_RST_1V8
43	JTAG_TMS/P_IRIS_CONTROL4_1V8
44	GPIO9_6_1V8
45	GND
46	GPIO9_5_1V8
47	MUTE_IO10_0_1V8
48	5V0_MAIN
49	5V0_MAIN
50	5V0_MAIN
51	GND
52	UART4_TXD_1V8
53	UART0_TXD_1V8

54	UART4_RXD_1V8
55	UART0_RXD_1V8
56	PWR_WAKEUP1_1V8
57	PWR_EN1_IO9_7_1V8
58	PWR_WAKEUP0_1V8
59	SENSOR1_CLK/PCIE_DEEMPH_SEL
60	SPI1_CSN1/SENSOR3_CLK_1V8
61	JTAG_TDI/TP_INT_1V8
62	I2C0_SDA
63	I2C0_SCL
64	SENSOR1_VS/PCIE_SLV_BOOT_MODE
65	SENSOR1_RSTN
66	SENSOR1_HS/PCIE_REFCLK_SEL
67	SPI1_SCLK/I2C5_SCL_1V8
68	SPI1_SDO/I2C5_SDA_1V8
69	SPI1_SDI/I2C4_SCL_1V8
70	SPI1_CSN0/I2C4_SDA_1V8
71	SPI0_SDO/I2C2_SDA_1V8
72	SPI0_SCLK/I2C2_SCL_1V8
73	SENSOR2_CLK/RGMII0_VDD33_SEL
74	SENSOR0_CLK/UPS_MODE0

75	POR_ENABLE_1V8
76	JTAG_TRSTN/PWM_FAN_1V8
77	SENSOR0_HS/UPS_MODE1
78	SENSOR0_VS/FMC_READRETRY
79	SPI0_CSN/I2C3_SDA_1V8
80	SPI0_SDI/I2C3_SCL_1V8
81	SENSOR0_RSTN
82	PWM_LCD/SDIO1_VD3318_SEL
83	GND
84	1V8_SOC
85	1V8_SOC
86	1V8_SOC
87	3V3_PER
88	3V3_PER
89	3V3_PER
90	GND
91	MDCK0
92	MDIO0
93	DC_IRIS_PWM_V3318U12
94	USB_0_OVRCUR_1V8
95	USB_0_PWREN_1V8

96	USB_1_VBUS_1V8
97	USB_1_OVRCUR_1V8
98	USB_1_PWREN_1V8
99	PCIE_RST_N_1V8
100	GND
101	RGMII0_TXD2/BOOT_SEL1
102	RGMII0_TXD0/FAST_BOOT_MODE
103	RGMII0_TXEN
104	RGMII0_TXD1/SFC_EMMC_BOOT_MODE
105	RGMII0_TXD3/BOOT_SEL0
106	RGMII0_TXCKOUT
107	SPI2_CSN_1V8
108	SPI2_SCLK_1V8
109	SPI2_SDO_1V8
110	SPI2_SDI_1V8
111	GND
112	USB_DM1
113	USB_DP1
114	GND
115	SDIO1_CLK_V3318SD1
116	SDIO1_D2_V3318SD1

117	SDIO1_CMD_V3318SD1
118	SDIO1_D3_V3318SD1
119	SDIO1_D1_V3318SD1
120	SDIO1_D0_V3318SD1
121	RGMII0_RXDV
122	RGMII0_RXD0
123	RGMII0_RXD1
124	RGMII0_RXCK
125	RGMII0_RXD3
126	RGMII0_RXD2
127	GND
128	SDIO0_CDATA0
129	SDIO0_CARD_DET_V3318U12
130	SDIO0_CCLK_OUT
131	SDIO0_CDATA1
132	SDIO0_CDATA3
133	SDIO0_CCMD
134	SDIO0_CDATA2
135	SDIO0_CARD_PWR_EN_N_V3318U12
136	EPHY0_RSTN
137	UART1_RXD_V3318U12

138	UART1_TXD_V3318U12
139	UART1_CTSN_V3318U12
140	UART1_RTSN_V3318U12
141	EPHY0_CLK
142	DVDD3318_UART1_2
143	PWM_TO_0V6
144	UPDATE_MODE_N
145	DVDD3318_SDIO1
146	UART2_TXD
147	UART2_RXD
148	USB3_TXM1
149	USB3_TXP1
150	USB3_RXP1
151	USB3_RXM1
152	PCIE_TXM0
153	PCIE_TXP0
154	PCIE_RXM0
155	PCIE_RXP0
156	PCIE_REFCLKP
157	PCIE_REFCLKM
158	GND

159	USB_DP0
160	USB_DM0
161	GND
162	P_IRIS_CONTROL1_V3318U12
163	WDG_RSTN_1V8
164	DSI_D3N
165	DSI_D3P
166	DSI_D2N
167	DSI_D2P
168	DSI_CKN
169	DSI_CKP
170	DSI_D1N
171	DSI_D1P
172	DSI_D0N
173	DSI_D0P
174	AC_INL/P
175	AC_INR/N
176	HDMI_HOTPLUG
177	HDMI_SDA
178	HDMI_SCL
179	GND

180	AC_MICBIAS
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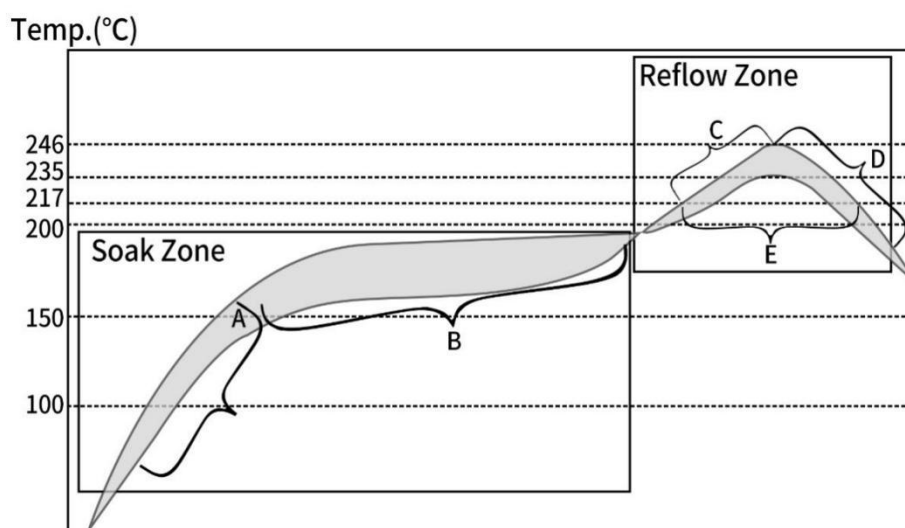
6. Production Guide

6.1 Storage

LCH3403V100 is MSL 3. Store sealed at $25\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, 35 %–60 % RH; shelf life 12 months. After bag opening, reflow within 24 h. If exposed $\leq 168\text{ h}$ at $\leq 60\text{ % RH}$, $25\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ (IPC/JEDEC J-STD-033), bake 8 h @ $120\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ before use. For longer exposure, keep in $< 10\text{ % RH}$ dry cabinet. Handle with ESD protection.

6.2 Soldering

Do not wipe the shield can with alcohol, IPA, acetone, TCE, etc. - rust risk. No ultrasonic cleaning - crystal damage risk. Ensure conformal coatings are chemically compatible and cannot wick inside. Use the recommended reflow profile below.



Item	Description	Value
Endothermic Zone Heating Rate	Interval A	$\leq 3^{\circ}\text{C/s}$
Soak time	From the end of interval A to the beginning of interval B	60~120s
Reflow Zone Heating Rate	Interval C	$\leq 3\text{ }^{\circ}\text{C/s}$
Maximum Temperature	Highest point of the curve	$246^{\circ}\text{C} (+5/-0^{\circ}\text{C})$
Cooling Rate	Interval D	$< 6\text{ }^{\circ}\text{C/s}$
Reflow Time	Interval E	60~150 seconds

7.Application Scenarios



AI



Machine Vision



Industrial Control



Energy and Power



Smart Tablet



VR



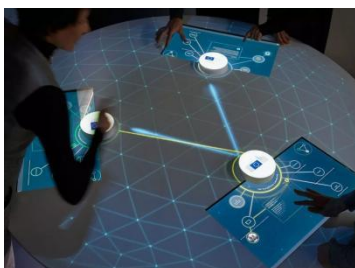
Smart Logistics



New



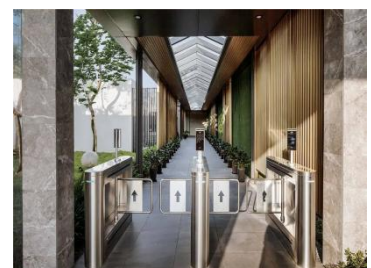
Smart Commercial



Object Recognition



Vehicle terminal



Security Surveillance

8.Ordering Model

Product Model	Status	CPU	DDR	eMMC	Operating Temperature
LC70043201	Mass Production	Hi3403V100	4GB	16GB	-20℃ - 70℃
LC70086401	Mass Production	Hi3403V100	8GB	64GB	-20℃ - 70℃

*For customized non-standard orders, please contact us via email at sales@neardi.com

9.About Neardi

Founded in 2014, Shanghai Neardi Technologies Co., Ltd. is a state-level high-tech enterprise and an official strategic partner of Rockchip. It is also an authorized distributor of Black Sesame Intelligent.

The company supports multiple chip platforms—Rockchip, HiSilicon, NVIDIA, vehicle-control MCUs, and Wi-Fi modules—and specializes in R&D and production of enterprise-grade open-source hardware platforms. Its portfolio covers core modules, industry boards, development kits, touch-panel tablets, and industrial PCs.

Guided by technical innovation and professional service, Neardi leverages its deep expertise to help partners achieve fast mass-production, delivering shorter development cycles, lower costs, and reduced project risk.

Company Advantages

Software Design / Custom OS / Product ODM / Bulk Delivery

Products

Rockchip

System On Module



LCB3588/J



LCH3576



LCH3562



LCH3506

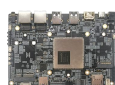


LCB1126B

Development Board



LKD3588/J



LKD3576



LKD3562



LKD3506



LKD1126B

Embedded Computer



LPB3588



LPM3588



LPC3588



LPB3568



LPM3568

HISI



LCB3403V100



LCB3519AV200



LKD3403V100



LBA3403V100



LPA3403V100

NVIDIA



LKD Orin Nano



LKD Orin NX



LPD Orin NX



LPD Orin Nano

Vehicle Terminal



LPA3588



LPS3576



LPA3568



LPA3399Pro



LPS3399Pro

WIFI Module



FD7352S



FD7352P



FD7352U



FD7155U



FD7256S