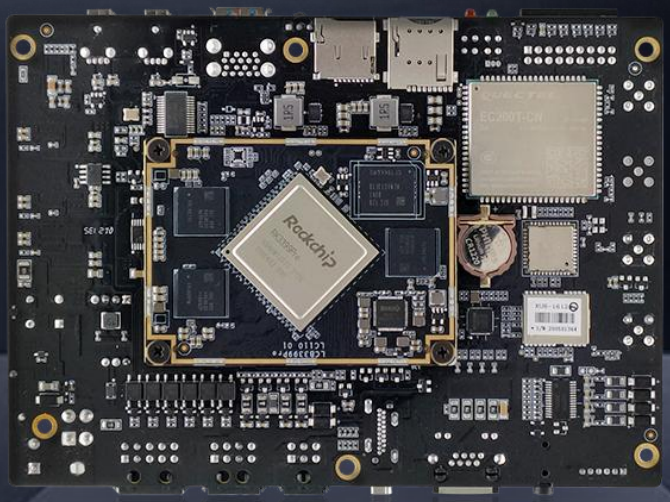
neardi

LKD3399Pro Development Board

Datasheet

V1.0



Shanghai Neardi Technology Co., Ltd.

www.neardi.com

Notes: All contengs only for explanatory and descriptive purposes. Please refer to the actual product. We strive to ensure consistency with the actual product. This document is provided for customers as a reference for product design and end application. It is better for you confirm the specifications and parameters carefully, provided in the document to ensure they meet the design or application requirements of the product. Whatsmore, it is strongly recommended that customers conduct detailed tests based on our actual products in the actual application scenario to ensure they meet the final usage requirements. Neardi Technology does not assume any responsibility for any damage suffered due to the use of the document, materials, and product functions.

Due to product version upgrades or other needs, our company may update the manual. If you need the latest version of the manual, please contact our company. We always adhere to the principle of customer first and provide customers with fast and efficient support services. If you have any needs, please feel free to contact our company at any time. Contact information is as follows:

Shanghai Neardi Technology Co., Ltd.
Phone: +86 021-20952021
Website: www.neardi.com
Email: sales@neardi.com

Version History

Version	Date	Description
V1.0	2022/8/23	Initial version

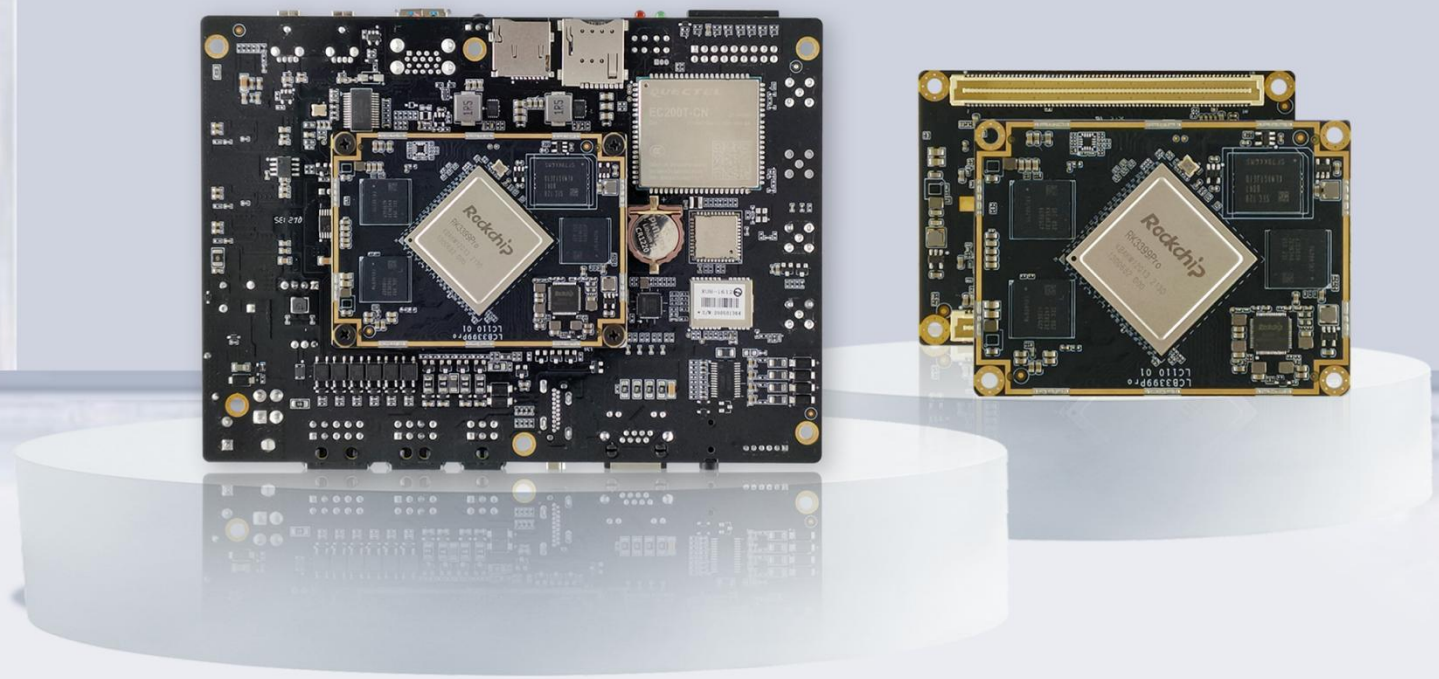
Contents

1.Product Introductio

The LKD3399Pro intelligent computer is a portable computing host developed based on the Rockchip RK3399Pro platform, designed for scenarios requiring extensive visual computing. It features an integrated NPU computing unit with 3.0 TOPS of computational power and supports a variety of algorithmic models. This product serves as a foundational device in AI scenarios, equipped with a rich set of hardware interfaces. Users only need to port algorithms to this platform to quickly implement products.

The LKD3399Pro development board supports input from up to 5 AHD cameras and is also compatible with various depth cameras, making it suitable for machine vision and ADAS product development. AHD cameras are widely used in the vehicle field, employing coaxial transmission that can reach tens of meters, and they use industry-standard aviation plug connections, which are stable, reliable, and easy to install.

The LKD3399Pro vision host integrates dual-band WIFI 802.11a/b/g/n/ac, BT5.0 low-power Bluetooth, GPS+BD dual-mode navigation, septa-mode universal 4G communication, and a 9-axis motion sensor. It supports a variety of communication interfaces, including RS232, RS485, CAN, and 1000M Ethernet. The rich set of interfaces allows users to develop a wide range of excellent products.



2. Function Overview

High-Performance Processor

CPU	Dual-core Cortex-A72 and quad-core Cortex-A53 architecture, with a clock speed up to 1.8GHz, offering high performance and low power consumption.
GPU	ARM Mali-T860MP4 GPU, supporting AFBC (Advanced Frame Buffer Compression).
NPU	3 TOPS of computational power.
VPU	Capable of 4K/1080P video encoding and decoding, with 4K display output.
DDR	LPDDR4/4x, with options for 3GB or 6GB.
eMMC	eMMC 5.1, with options for 16GB or 64GB.

Rich Interfaces

5 AHD high-definition cameras, 4 USB cameras.
Dual-band WIFI, BT5.0, 2G/3G/4G universal data transmission, GPS/Beidou dual-mode positioning.
2 USB 3.0 OTG ports, 2 USB 2.0 HOST ports.
1 HDMI port.
1 CANBUS, 1 RS485, 2 RS232 interfaces.

Operating System

Android

Linux （Buildroot / Debian / Ubuntu）

Open Source Materials

WIKI Documentation http://www.neardi.com/cms/en/wiki.html

Quick Start

Firmware Upgrade

Android Development

Linux Development

Kernel Drivers

DEMO

System Customization

Accessories

Frequently Asked Questions (FAQ)

Release Notes

Hardware Materials

Chip Datesheet

Product 2D/3D Drawings

Core Board Pin Definitions

Baseboard Reference Schematic

Baseboard Reference PCB

Key Bill of Materials (BOM)

Software Materials

Firmware Tools and Drivers

Android Source Code and Images

U-Boot and Kernel Source Code

Debian/Ubuntu/Buildroot System Files

3. Technical Specifications

Basic Parameters	
SOC	RK3399Pro; a dual-core Cortex-A72 plus quad-core Cortex-A53 architectural processor.
GPU	Mali-T860MP4 GPU, supporting OpenGL ES 1.1/2.0/3.0/3.1, OpenVG 1.1, OpenCL, DirectX 11; supports AFBC (Advanced Frame Buffer Compression).
NPU	3 TOPS computational power; supports 8-bit/16-bit operations; compatible with TensorFlow and Caffe models.
VPU	Capable of 4K VP9 and 4K 10-bit H265/H264 video decoding, up to 60fps at 1080P; multi-format video decoding (WMV, MPEG-1/2/4, VP8); 1080P video encoding, supporting H.264 and VP8 formats.
DDR	LPDDR4/LPDDR4X, with options for 3GB or 6GB.
eMMC	eMMC 5.1, with options for 16GB, 32GB, 64GB, or 128GB.
PMU	RK806
OS	Android / Ubuntu / Buildroot / Debian

Hardware Specifications	
Power	DC 9V - 36V
USB	2*Type-A USB3.0 HOST, 2*Type-A USB2.0 OTG
Display output	1*Type-A HDMI 2.0
Audio	φ3.5mm audio out and microphone input

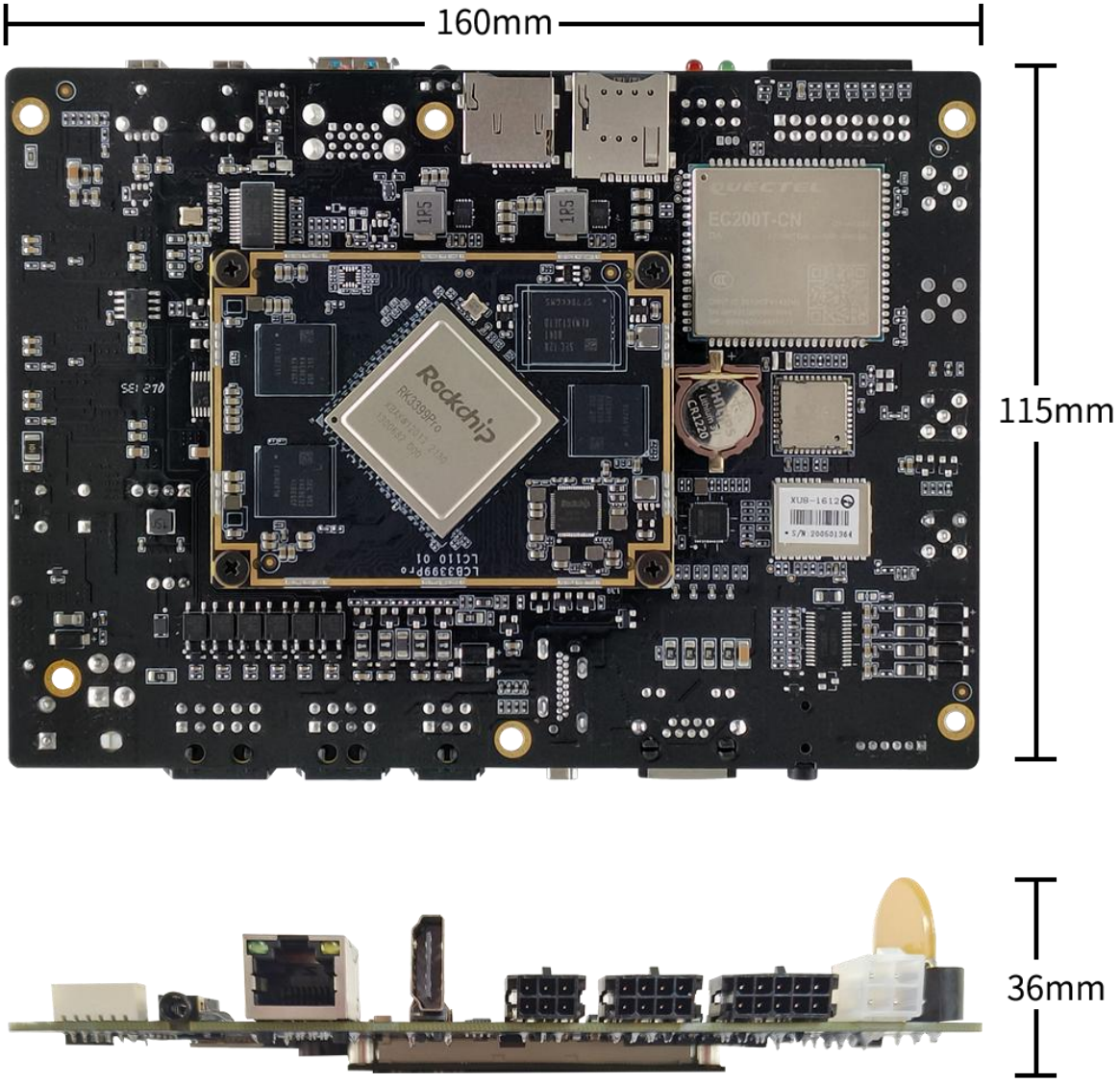
Storage	Micro SD card with SDIO 3.0 protocol
Connectivity	1*Uart，2*RS232，1*RS485
Net work	1*10/100/1000Mbps Ethernet
	Wi-Fi 2.4GHz/5GHz,802.11a/b/g/n/ac;
	BT V5.0 with BLE supported
Camera Interface	5*AHD input up to 1920*1080@30fps per channel

Other Parameters

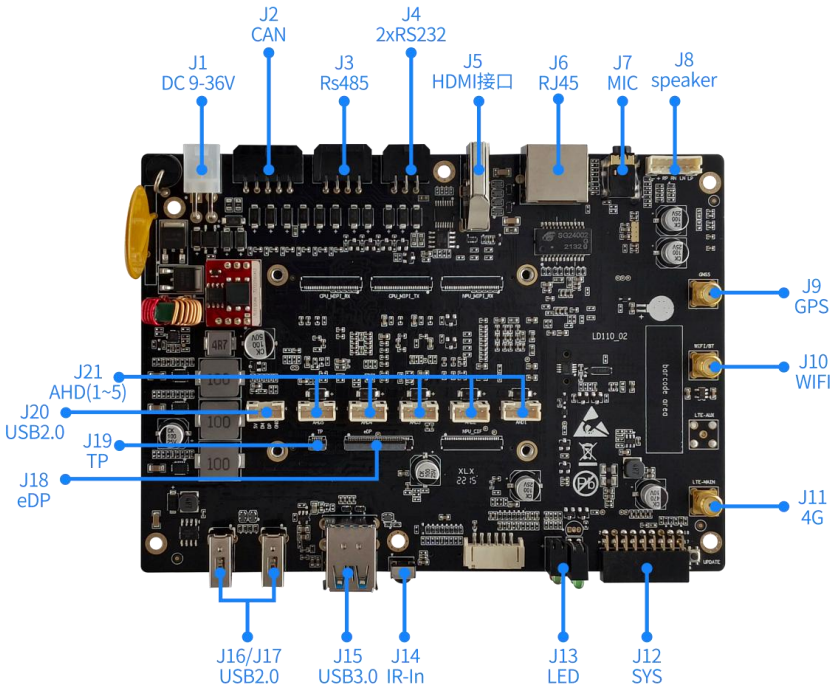
Dimensions	Length * Width * Height (mm) 160*115*36
Operating Temperature	-10 ~ 70℃
Weight	Approximately 183.9 g (excluding peripherals)

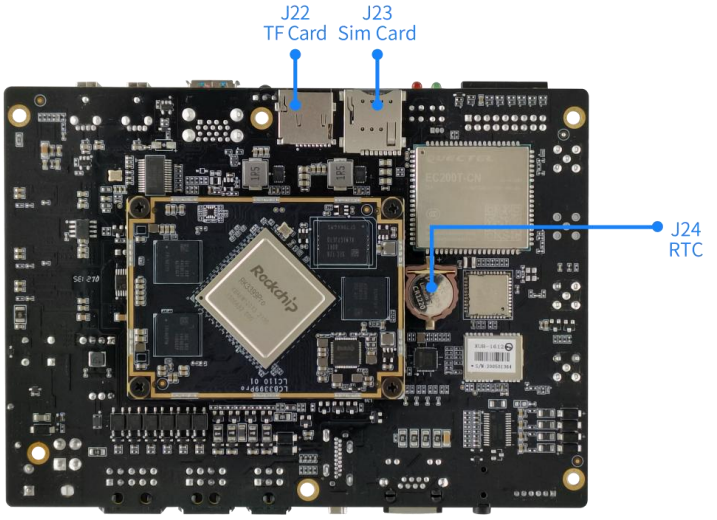
4. Appearance and Dimensions

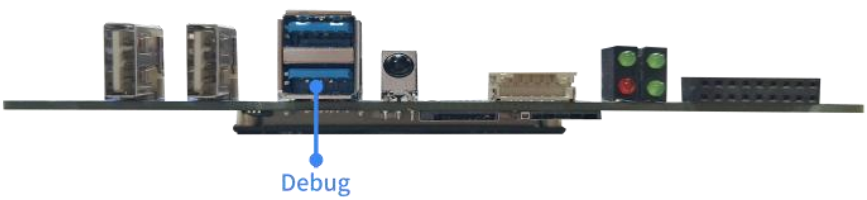
4.1 Appearance



5.Interface Definition







Part reference	Part Name	Part Description
J1	**DC 9-36V**	Power input and high/low level detection, supports 9V to 36V operating voltage; Automotive connector, 4.2mm pitch, 4Pin right-angled double row, Molex, 5569-04A2;
J2	**CAN**	CAN bus and 6-channel input signal detection, 3kV isolation design, can withstand ±36V voltage; Automotive connector, 3.0mm pitch, 10Pin right-angled double row, Molex, 43045-1000;
J3	**RS485**	RS485 bus and 4-channel 12V voltage signal output, ±15kV ESD protection; Automotive connector, 3.0mm pitch, 8Pin right-angled double row, Molex, 43045-0800;
J4	**2*RS232**	Two RS232 buses, ±15kV ESD protection; Automotive connector, 3.0mm pitch, 6Pin right-angled double row, Molex, 43045-0600;
J5	**HDMI**	HDMI 2.0a supporting 4K 60Hz display, supports HDCP 1.4/2.2; Type-A female socket;
J6	**RJ45**	Gigabit 1000M Ethernet; RJ45 socket;
J7	**MIC**	Left and right channel output, microphone input, national standard; φ3.5mm headphone jack, four-section;
J8	**Speaker**	Dual-channel stereo output and analog microphone input, 10W/8 惟 2CH; Aviation plug male head, GX12-6 core;
J9	**GPS**	Navigation and positioning antenna, supports GPS and Beidou dual-mode positioning; SMA socket, external thread internal hole;

J10	**WIFI**	WIFI/Bluetooth antenna;
J11	**4G**	4G antenna, supports full network, SMA socket, external thread internal hole;
J12	**SYS-CTL**	System control or debugging;
J13	**LED**	Power indicator light; 4G network status indicator light; Custom status indicator light, GPIO controlled;
J14	**IR-IN**	Sensor interface;
J15	**USB3.0**	USB3.0, type-A female socket, double layer;
J16/17	**USB2.0**	USB2.0, type-A female socket;
J18	**eDP**	eDP interface;
J19	**TP**	TP interface;
J20	**USB2.0**	USB2.0，4pin
J21	**AHD1-AHD5**	Analog high-definition video signal input, supports all formats and resolutions of AHD signals;
J22	**SD card**	Compatible with SDIO 3.0 protocol, supports system boot;
J23	**SIM card**	Micro sim card slot for Mini-PCIe 4G LTE module;
J24	**RTC**	RTC battery compartment.

6. Pin Definition

AHD1-AHD5

Pin number	Pin name	Pin description
1	VCC12V_AHD	AHD Camera Power Supply Positive Terminal, 12V-0.5A
2	GND	AHD Camera Ground (GND)
3	NC	No Connection (NC)
4	AHD_video	AHD Camera Video Input

SPEAKER

Pin number	Pin name	Pin description
1	SPK_LP	Speaker Left Channel Positive Terminal
2	SPK_LN	Speaker Left Channel Negative Terminal
3	SPK_RN	Speaker Right Channel Negative Terminal
4	SPK_RP	Speaker Right Channel Positive Terminal
5	Mic_P	Analog Microphone Positive Terminal
6	Mic_N	Analog Microphone Negative Terminal

CAN/INPUT

Pin number	Pin name	Pin description
1	CAN_H	CAN Bus High-Level Signal, with electrical isolation of more than 3KV.
2	GND	Reference Ground for Input Detection Signal.

3	GPIO_IN1	Input Detection Signal, with electrical isolation of more than 3KV, supports 0~36V
4	GPIO_IN3	Input Detection Signal, with electrical isolation of more than 3KV, supports 0~36V
5	GPIO_IN5	Input Detection Signal, with electrical isolation of more than 3KV, supports 0~36V
6	CAN_L	CAN Bus Low-Level Signal, with electrical isolation of more than 3KV.
7	GND	Reference Ground for Input Detection Signal.
8	GPIO_IN2	Input Detection Signal, with electrical isolation of more than 3KV, supports 0~36V.
9	GPIO_IN4	Input Detection Signal, with electrical isolation of more than 3KV, supports 0~36V.
10	GPIO_IN6	Input Detection Signal, with electrical isolation of more than 3KV, supports 0~36V.

RS485/OUTPUT

Pin number	Pin name	Pin description
1	OUTPUT1	Output Control Signal
2	OUTPUT3	Output Control Signal
3	GND	Reference Ground for Output Control Signal
4	RS485_A	RS485 Bus A Output Signal

5	OUTPUT2	Output Control Signal
6	OUTPUT4	Output Control Signal
7	GND	Reference Ground for Output Control Signal
8	RS485_B	RS485 Bus B Output Signal

RS232

Pin number	Pin name	Pin description
1	RS232_TX1	Transmission for the first RS232 bus.
2	GND	Reference Ground for the RS232 bus.
3	RS232_TX2	Transmission for the second RS232 bus.
4	RS232_RX1	Reception for the first RS232 bus.
5	GND	Reference Ground for the RS232 bus.
6	RS232_RX2	Reception for the second RS232 bus.

7.Application Scenarios

AI

Machine Vision

Industrial Control

Energy and Power

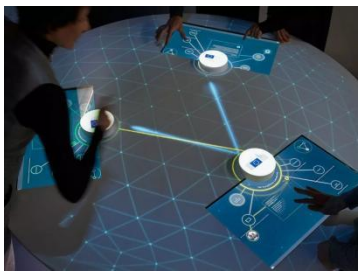
Smart Tablet

VR

Smart Logistics

New

Smart Commercial



Object Recognition

Vehicle terminal

Security Surveillance

8.Ordering Model

Product Model	Status	CPU	DDR	eMMC	Operating Temperature
LP11031600	ACTIVE	RK3399Pro	3GB	16GB	-10℃ - 70℃
LP11061600	ACTIVE	RK3399Pro	6GB	16GB	-10℃ - 70℃
LP11066400	ACTIVE	RK3399Pro	6GB	64GB	-10℃ - 70℃

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

9.About Neardi

Shanghai Neardi Technology Co., Ltd., established in 2014, is a national-level high-tech enterprise, a strategic partner of Rockchip, and an authorized agent for Black Sesame Technologies. We focus on the research and development and production of enterprise-level open-source hardware platforms, offering customers core modules, industry-specific boards, development boards, touch panels, and industrial control hosts. Adhering to the core philosophy of technological innovation and professional service, leveraging Neardi Technology's technical strengths and industry experience, we assist our partners in achieving rapid mass production of their products.

Company Advantages

Software Design / Custom OS / Product ODM / Bulk Delivery

Products

Rockchip

System On Module


LCB3588/J


LCB3568/J


LCB3566


LCB3399Pro


LCB3399

Development Board


LKD3588/J


LKD3568/J


LKD3566


LKD3399Pro


LKD3399

Embedded Computer


LPB3588


LPM3588


LPC3588


LPB3568


LPB3399Pro

Black Sesame Technologies


SOM-A-A1000


SOM-π-A1000


SOM-B-A1000


SOM-A1000 Development kit

Vehicle Terminal


LPA3588


LPA3568


LPA3399Pro


LPS3399Pro

WIFI Module

FD7352S

FD7352P

FD7352M

FD7155U

FD7256S