neardi

LPM3588 Embedded Computer

Datasheet

V1.0

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:

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Version History

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

Contents

1.Product Introduction

The LPM3588 intelligent computer is a product meticulously designed based on the Rockchip RK3588 chip. The body is made of full aluminum material with a fanless design and an innovative internal structural combination, allowing key heat-generating components such as the CPU and PMU to efficiently conduct heat to the external aluminum casing, using the entire body casing as a heat dissipation material. This design not only enables the LPM3588 to perform excellently in more severe working environments but also allows it to be widely applied in various industrial scenarios.

The LPM3588 has a variety of interfaces, including 2 Type-A USB 3.0 HOSTs, suitable for connecting multiple USB cameras. It has 1 onboard mini-PCIe interface that can be expanded to connect a 4G module or an NPU computing card with a mini-PCIe interface based on RK1808. In addition, the LPM3588 supports dual-band WIFI 6, BT5.0, 5 Gigabit Ethernet, CANBUS, RS485, and other communication module interfaces. It provides multiple display interfaces such as 2 HDMI outputs, 1 HDMI 2.0 interface input, and 1 DP interface output, and supports multi-screen independent display.

The LPM3588 supports multiple operating systems such as Android, buildroot, Debian, and Ubuntu, offering excellent high performance, high reliability, and high scalability. The system source code is open to users, providing open-source support for secondary development and customization. We are committed to providing developers and enterprise users with comprehensive technical services to assist users in efficiently completing research and development work and helping customers quickly bring products to market.
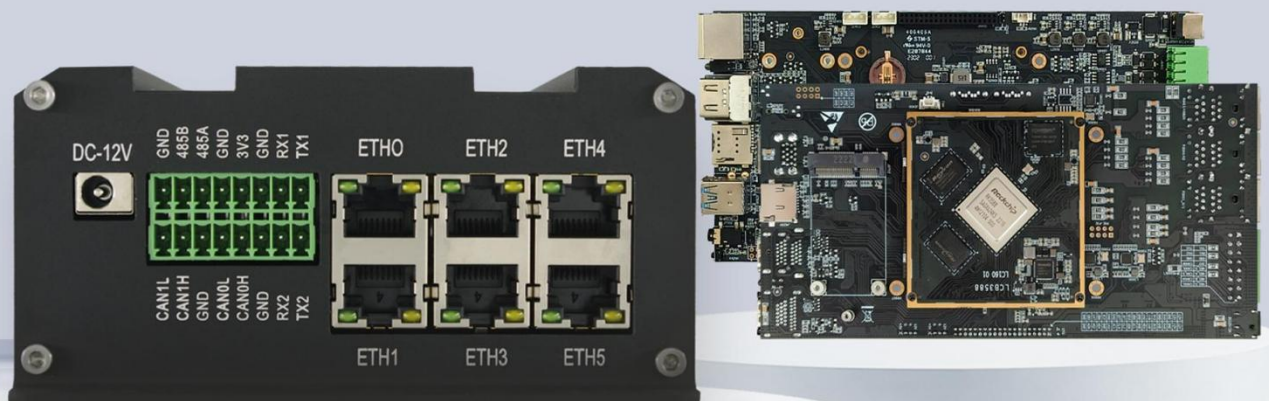
2. Function Overview

High-Performance Processor

CPU	8nm advanced process technology with an 8-core 64-bit architecture (4A76 + 4A55), offering high performance with low power consumption.
GPU	ARM Mali-G610 MC4 GPU, featuring a dedicated 2D graphics acceleration module.
NPU	6TOPS computing power for AI-related tasks.
VPU	Capable of 8K video encoding and decoding, as well as 8K display output.
DDR	LPDDR4 memory, with options for 4GB, 8GB, or 16GB capacities.
eMMC	eMMC 5.1 storage, with options for 32GB, 64GB, or 128GB capacities.

Rich Interfaces

2 HDMI outputs, 1 DP interface output, 1 HDMI input

5 Gigabit Ethernet ports, 1 Fast Ethernet port (100 Mbps), dual-band WIFI 6; expandable with 4G/5G modules

2 Type-A USB 3.0 HOSTs

2 CANBUS; 1 RS485; 2 UART

Operating System

Android

Linux　(Buildroot / Debian / Ubuntu)

Kylin

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

Product 2D/3D Drawings

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	RK3588 8nm; 8-core 64-bit processor architecture (4A76 + 4A55).
GPU	ARM Mali-G610 MC4; Supports OpenGL ES 1.1/2.0/3.1/3.2; Vulkan 1.1/1.2; OpenCL 1.1/1.23/2.0; High-performance 2D image acceleration module.
NPU	6TOPS computing power / 3-core architecture; Supports int4/int8/int16/FP16/BF16/TF32.
VPU	Supports H.265/H.264/AV1/VP9/AVS2 video decoding, up to 8K60FPS; Supports H.264/H.265 video encoding, up to 8K30FPS.
DDR	LPDDR4, with options for 4GB/8GB/16GB.
eMMC	eMMC 5.1, with options for 32GB/64GB/128GB.
PMU	RK806
OS	Android / Ubuntu / Buildroot / Debian

Hardware Specifications

Power	DC12V - 3A (DC Jack 5.5*2.1mm / PH2.0 wafer connector)
USB	2*Type-A USB3.0 HOST
Display out	2*Type-A HDMI 2.1 up to 8K@60fps or 4K@120fps
	1* DP1.2 2Lane Output
Display in	1* HDMI-IN（4K@60fps），Supports HDCP 2.3
Audio	φ3.5mm earphone Jack with Mic in L/R audio out

Net work	5* 10/100/1000Mbps Ethernet；1* 10/100Mbps Ethernet

Other Parameters

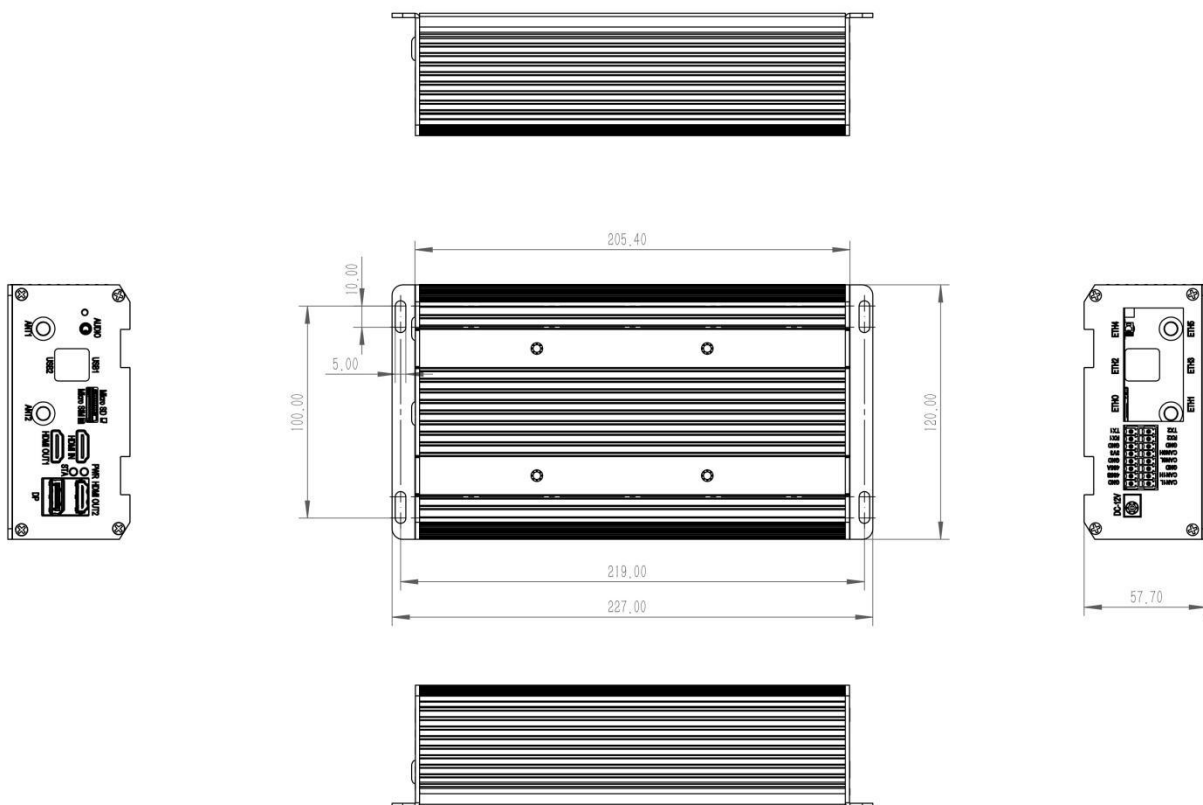| Dimensions	L*W*H(mm) 205*120.5*57.7
Operating Temperature	-10 ~ 70℃
Weight	Approximately 1083gg (excluding peripherals)

4. Appearance and Dimensions

4.1 Appearance

4.2 Dimensions

5.Interface Definition
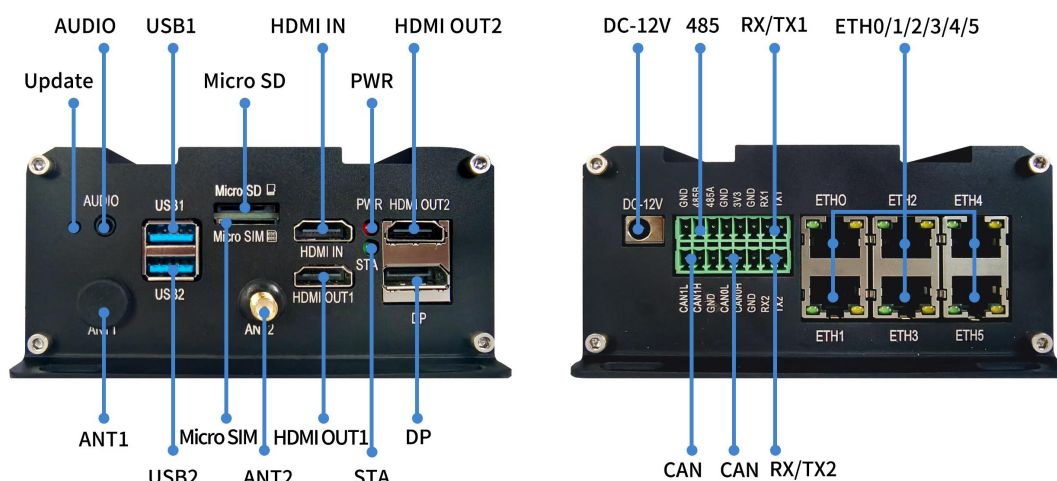
Part Name	Part Specifications	Part Description
Reset	push-button	Key for system reset
Audio	φ3.5mm 3-L Jack	L/R audio channel; Audio inputo/utput
USB1	Type-A USB3.0 HOST	USB3.0 HOST
USB2	Type-A USB3.0 OTG	USB3.0 OTG
Micro SD	Push-Push TF socket	TF Card
Micro SIM	Push-Push Micro SIM Socket	For Micro SIM Card (1.8/3.3V)
HDMI IN	Type-A HDMI 2.0	HDMI 2.0 inputup to 4K@30HZ
HDMI OUT1	Type-A HDMI 2.1	HDMI 2.0 outputup to 4K@60HZ
HDMI OUT2	Type-A HDMI 2.1	HDMI 2.0 outputup to 4K@60HZ
PWR	Green LED	Power status indicate
STA	Green LED	Work status Indicator

DP	DisplayPort Socket	DP 2-Lane
ANT1	WIFI/BT antenna	SMA connector，2.4G/5.8G frequency
ANT2	WIFI/BT antenna	SMA connector，2.4G/5.8G frequency
DC-12V	DC 5.5*2.1mm	Main power supply, DC12V – 5A
CAN0H/CAN0L		The first channel CAN bus signal
CAN1H/CAN1L		The second channel CAN bus signal
TX1/RX1		The first channel UART bus signal (3.3V)
TX2/RX2	KF2EDGKRH-3.5-2X8P	The second channel UART bus signal (3.3V)
485A/485B		RS485 bus signal
3V3		3.3V/1A power output
GND		GND
ETH0	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
ETH1	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
ETH2	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
ETH3	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
ETH4	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
ETH5	Gigabit Ethernet	10/100-Mbps data transfer rates

6.Application Scenarios

AI

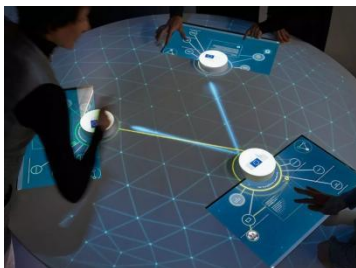**Machine Vision**

Industrial Control

Energy and Power

Smart Tablet

VR

Smart Logistics

New

Smart Commercial

Object Recognition

Vehicle terminal

Security Surveillance

7.Ordering Model

Product Model	Status	CPU	DDR	eMMC	Operating Temperature
LP16543200	ACTIVE	RK3588	4GB	32GB	-10℃ - 70℃
LP16586400	ACTIVE	RK3588	8GB	64GB	-10℃ - 70℃
LP1659A800	ACTIVE	RK3588	16GB	128GB	-10℃ - 70℃

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

8.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 开发者套件 |

Vehicle Terminal

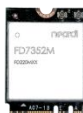| LPA3588 | LPA3568 | LPA3399Pro | LPS3399Pro |

WIFI Module

| FD7352S | FD7352P | FD7352M | FD7155U | FD7256S |