

neardi

LPB3568 Embedded Computer

Datasheet

V1.0



Shanghai Neardi Technology Co., Ltd.

www.neardi.com

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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	2023/7/31	Initial version

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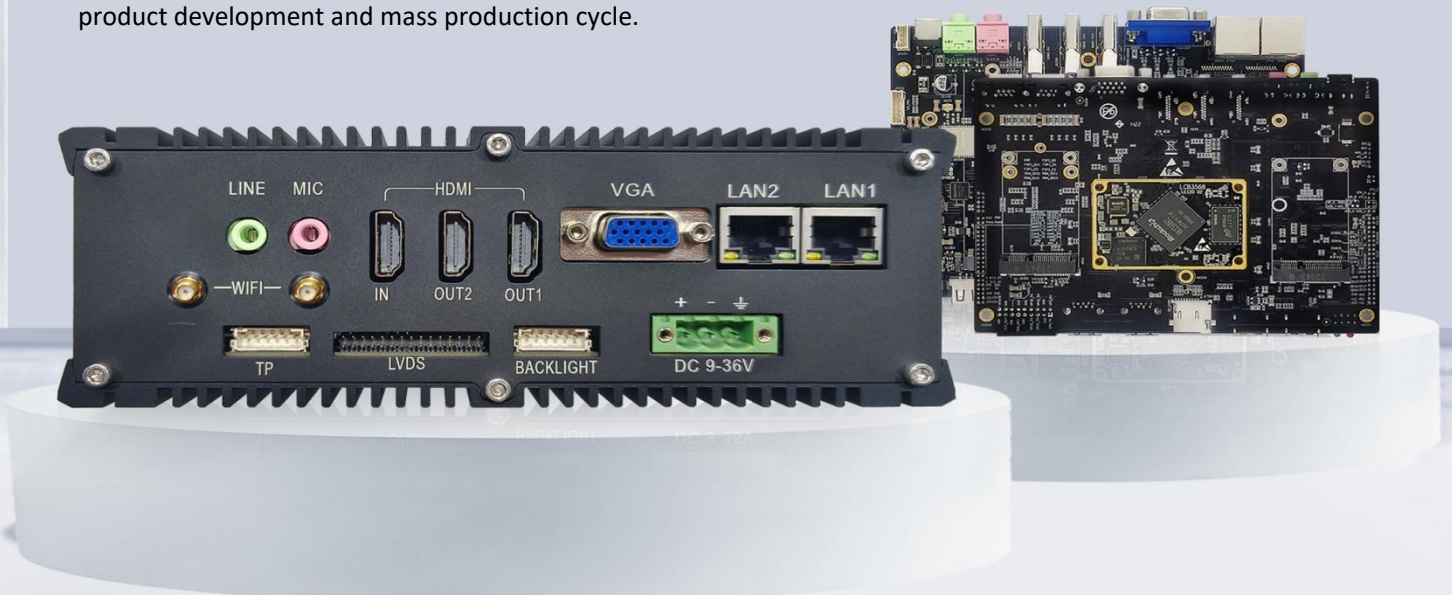
1.Product Introduction

The LPB3568 intelligent master unit is an exquisitely designed smart host based on the Rockchip RK3568 chip platform; the body is made of full aluminum material with a fanless design. Inside the casing, an innovative structural combination allows key heat-generating components such as the CPU and PMU to directly conduct heat to the external aluminum casing. This design enables the entire casing to act as a heat dissipation material, tolerating harsher working environments and being widely applicable to various industrial scenarios.

The LPB3568 intelligent host comes with 1*USB 3.0 HOST, 1*USB 3.0 OTG, and 2*USB 2.0 HOST interfaces, capable of connecting multiple USB cameras externally; it has 3*mini-PCIe interfaces onboard, supporting the expansion of NPU computing cards with mini-PCIe interfaces, combined with multiple cameras to form an artificial intelligence vision computing host that supports up to 10TOPS computing power. It supports dual-frequency WIFI 6, BT5.0, 2*Gigabit Ethernet ports, and is expandable with 4G or 5G modules; it supports 2*high-speed UARTs, 4*RS232s, 1*RS485, 2*CANBUS, and other commonly used communication interfaces. It supports 2*HDMI outputs, 1*VGA output, 1*dual-channel LVDS interface, backlight control, and touch screen interface, supports 1*HDMI input, supports audio input and output, can be connected to 10W@8Ω stereo speakers, and has a built-in M.2 solid-state drive interface for external connection to various displays and supports multi-screen independent display.

The LPB3568 intelligent host supports 4-relay control, including 4 groups of normally open, normally closed, and COM ports; supports 4 switch inputs, each with optocoupler isolation, supporting active inputs (up to 36V) or passive inputs; supports 4 analog inputs, which can support 0~16V voltage detection or 4~20mA current detection, and can be connected to various industrial transmitters externally.

The LPB3568 intelligent host supports Android, buildroot, Debian, and Ubuntu systems, with advantages of high performance, high reliability, and high expandability, and opens up the system source code to users. Users can develop and customize based on this product, and our company provides full technical support for developers and enterprise users, enabling them to efficiently complete research and development work and greatly shorten the product development and mass production cycle.



2. Function Overview



High-Performance Processor

CPU	RK3568, 22nm process, quad-core 64-bit Cortex-A55, with a maximum clock speed of up to 2.0GHz.
GPU	ARM G52 2EE, with integrated high-performance 2D acceleration hardware
NPU	1TOPS
VPU	4K video decoding, 1080P video encoding
DDR	LPDDR4 memory, with options for 1GB, 1GB, 4GB or 8GB capacities.
eMMC	eMMC 5.1 storage, with options for 8GB,16GB,32GB,64GB,or128GB capacities.



Rich Interfaces

9-36V Wide Voltage Input, with Overvoltage, Overcurrent, Surge Protection, and Reverse Polarity Protection

1 Type-A USB 3.0 HOST, 1 Type-C USB 3.1 OTG, 2 USB 2.0 Interfaces

1 VGA, 3 HDMI, 1 Dual-Channel LVDS, supporting multi-screen independent display

2 Gigabit Ethernet Ports, Dual-Band WIFI 6; Mini-PCIe interface reserved internally for 4G/5G module expansion

2 CANBUSES; 1 RS485, 4 RS232s, 2 UARTs

1 M.2 M-Key, supporting external NVMe protocol SSD or NPU computing card



Scalable NPU Computing Power

NPU computational power can be expanded to 10 TOPS; capable of external connection to three 3 TOPS computational power cards.

Demo programs are provided.



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 Datasheet

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	RK3568, 22nm process, quad-core 64-bit Cortex-A55, with a maximum clock speed of 2.0GHz.
GPU	ARM G52 2EE, supports OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1, and has a high-quality 2D graphics engine built-in..
NPU	Offers up to 1 TOPS of computational power; supports hybrid operations of INT8/INT16/FP16/BFP16 MAC; compatible with deep-learning frameworks such as TensorFlow, TF-lite, Pytorch, Caffe, ONNX, MXNet, Keras, and Darknet.
VPU	Capable of 4K VP9 and 4K H265 video decoding at up to 60fps. Capable of 1080P H265/H264 video encoding at up to 100fps. Equipped with an 8M ISP with HDR capabilities.
DDR	LPDDR4 RAM, with options for 1GB/2GB/4GB/8GB (Optional).
eMMC	eMMC 5.1 storage, with options for 8GB/16GB/32GB/64GB/128GB (Optional).
PMU	RK806
OS	Android / Ubuntu / Buildroot / Debian

Hardware Specifications

Power	DC 9V - 36V
USB	1*Type-A USB3.0 HOST, 1*Type-A USB3.0 OTG, 2*Type-A USB2.0 HOST
Display output	2*Type-A HDMI 2.0, 1*VGA, 1*Duel channel LVDS

Audio	1*φ3.5mm audio out, 1*φ3.5mm microphone, 2*Speaker output with 10W@8Ω
Display input	HDMI Input interface
PCIe	1* mini PCIe for 2G/3G/4G/5G LTE module, 2*mini PCIe for AI cards
M.2	M.2 NGFF (M-KEY) PCIE V2.1 x4 with NVMe SSD supported
SD card	Compatible with SDIO 3.0 protocol, system boot up supported
SIM card	Micro sim slot for Mini-PCIe 4G LTE module
RJ-45	2*10/100/1000 Ethernet
Connectivity	2*Uart, 2*CAN BUS, 4*RS232, 1*RS485
Input/output	4*Relays, 4*digital input, 4*analog input

Other Parameters

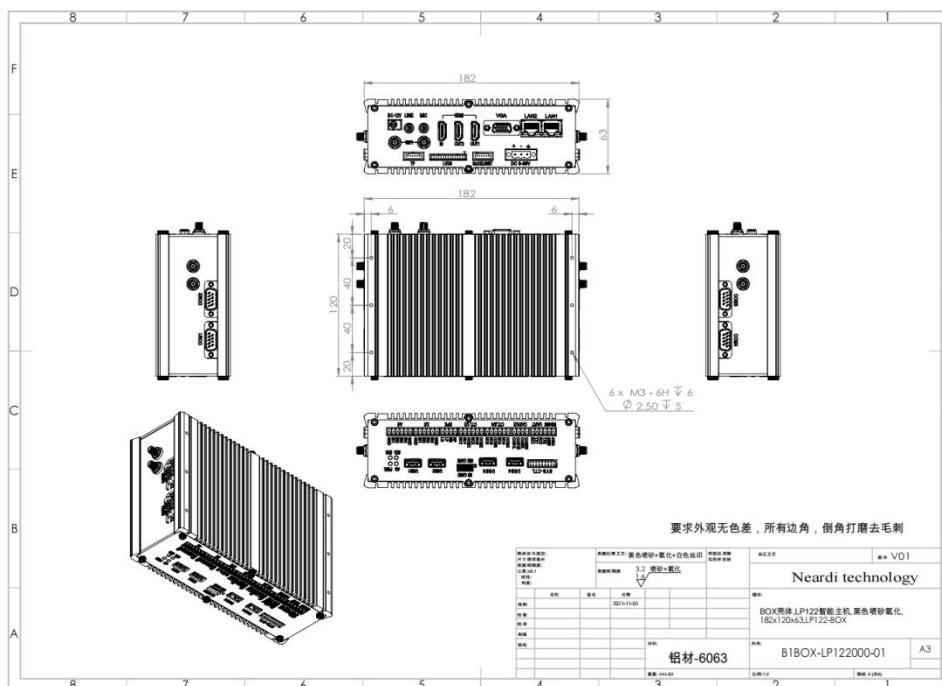
Dimensions	Length * Width * Height (mm) 182*120*63
Operating Temperature	-10 ~ 70°C
Weight	Approximately 1070 g (excluding peripherals)

4. Appearance and Dimensions

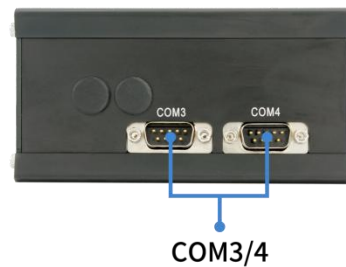
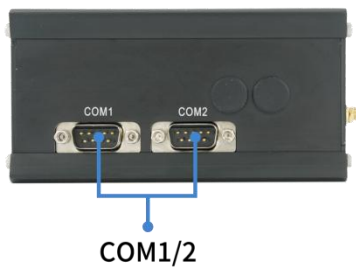
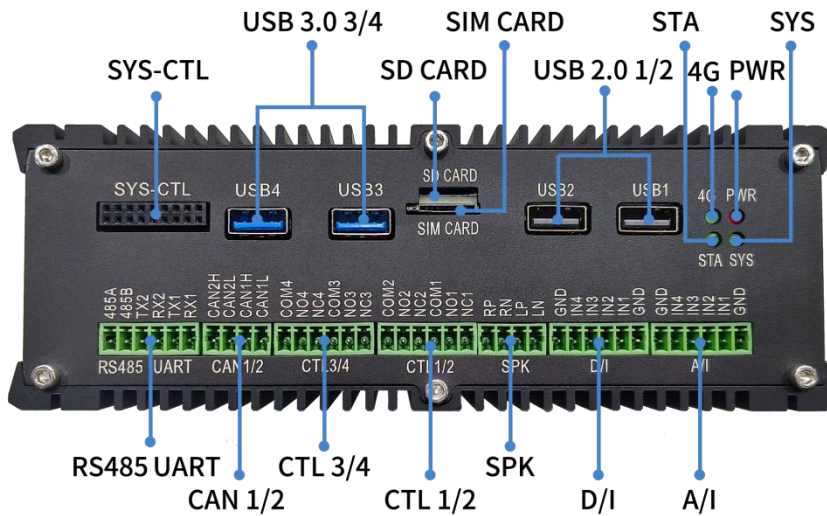
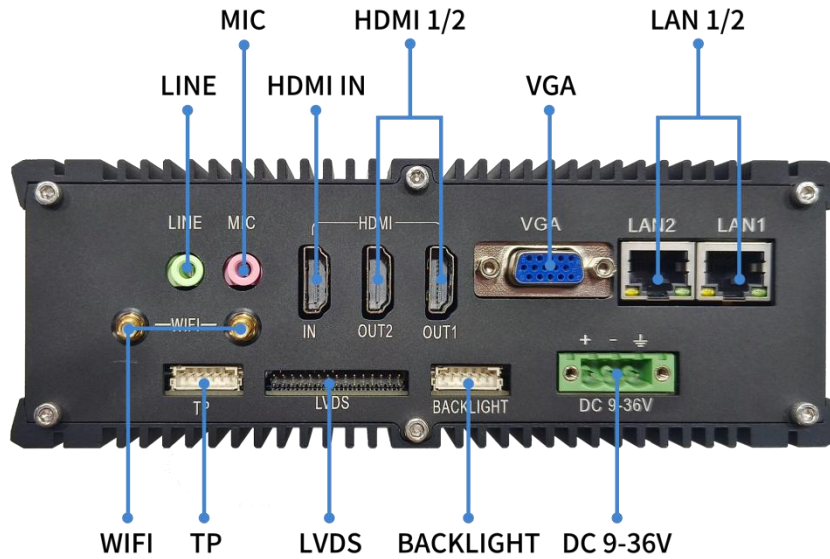
4.1 Appearance



4.2 Dimensions



5.Interface Definition



Name	Function	Specifications	Notes
LINE	Audio output	φ3.5mm 3-L Jack	L/R audio channel
MIC	Microphone input	φ3.5mm 3-L Jack	Micphone In
HDMI IN	HDMI2.0 input	Type-A HDMI 2.0	HDMI 2.0 input up to 4K@30HZ
HDMI OUT2	HDMI output	Type-A HDMI 2.0	HDMI 2.0 output up to 4K@30HZ
HDMI OUT1	HDMI output	Type-A HDMI 2.0	HDMI 2.0 output up to 4K@60HZ
VGA	VGA output	VGA output	VGA Output up to 1920*1080@60HZ
LAN1	RJ45	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
LAN2	RJ45	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
TP	Capacitive touch panel	PH2.0mm 6pin wafer	I2C signal with RST and EN
LVDS	Lvds LCM	PH2.0mm 2x15pin header	Dual channel 24bit LVDS output
BACKLIGHT	Backlight for LCM	PH2.0mm 2x20pin header	LCD backlight control
DC 9-36V	9V-36V power input	KF2EDGRM-5.08-3P	Can used with DC-12V simultaneously
SYS-CTL	System control or debug	A2541HWR-2x9P	2.54MMpitch,2*9PIN,A2541HWR-2x9P
USB4	USB3.0 otg	Type-A USB3.0 OTG	USB3.0 OTG, firmware download
USB3	USB3.0 HOST	Type-A USB3.0 host	USB3.0 host
SIM CARD	Micro Sim card slot	Micro push-to-push sim card	Micro Sim card slot
SD CARD	T-flash card	Push-Push TF socket	SDIO3.0
USB1	USB2.0 HOST	Type-A USB2.0 host	The first USB2.0 host for external devices
USB2	USB2.0 HOST	Type-A USB2.0 host	The second USB2.0 host for external devices
RS485 UART	RS485 and UART bus	KF2EDGR-3.5-6P	RS485 signal, UART 3.3V TTL signal
CAN1/2	CAN bus	KF2EDGR-3.5-4P	CAN bus signal
CTL1/2	Relays control	KF2EDGR-3.5-6P	Relays control
CTL3/4	Relays control	KF2EDGR-3.5-6P	Relays control
SPK	Speaker L/R output	KF2EDGR-3.5-4P	L/R output with 10W@8Ω
D/I	Digital input	KF2EDGR-3.5-6P	Photocoupler isolation, up to 36V, active or passive
A/I	Analog input	KF2EDGR-3.5-6P	0-16V voltage detect or 4-20mA current detect
COM1	Serial COM port	DB-9 male connector	RS232 signal
COM2	Serial COM port	DB-9 male connector	RS232 signal
COM3	Serial COM port	DB-9 male connector	RS232 signal
COM4	Serial COM port	DB-9 male connector	RS232 signal

6.Application Scenarios



AI



Machine Vision



Industrial Control



Energy and Power



Smart Tablet



VR



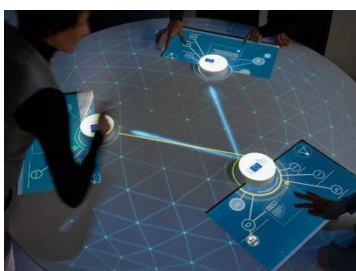
Smart Logistics



New



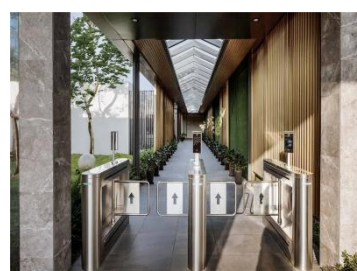
Smart Commercial



Object Recognition



Vehicle terminal



Security Surveillance

7. Ordering Model

Product Model	Status	CPU	DDR	eMMC	Operating Temperature
LP12221600	ACTIVE	RK3568	2GB	16GB	-10°C - 70°C
LP12241600	ACTIVE	RK3568	4GB	16GB	-10°C - 70°C
LP12243200	ACTIVE	RK3568	4GB	32GB	-10°C - 70°C

*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
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Vehicle Terminal

 LPA3588	 LPA3568	 LPA3399Pro	 LPS3399Pro
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WIFI Module

 FD7352S	 FD7352P	 FD7352M	 FD7155U	 FD7256S
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