DATASHEET

DM23N

Change Log

Ver.	Description	Edit	Review	Date
V1.0	Initial version			2023.09.21

CATALOGUE

Chapter 1 Overview

1.1 Scope of Application

DM23N is an intelligent box specifically designed for wireless presentations and collaboration systems. It can be connected to various peripherals depending on different usage scenarios, such as USB cameras, USB microphones, audio devices, wireless display stands, and more. Powered by the advanced 8nm RK3588 chip, DM23N features an octa-core 64-bit processor (4×Cortex-A76 + 4×Cortex-A55) with a high frequency of up to 2.4GHz, delivering both low power consumption and high performance.
It is widely applicable to smart display terminals, video terminals, industrial automation terminals, and computing terminal products. Furthermore, it supports multiple operating systems including Android, Ubuntu, Debian, Buildroot, and RTLinux.

1.2 Chip Introduction

- The RK3588 chip integrated in the DM25N board features powerful embedded hardware engines, providing excellent performance for high-end applications. It supports H.265 and VP9 decoders for 8K@60fps, H.264 decoder for 8K@30fps, and AV1 decoder for 4K@60fps. It also supports H.264 and H.265 encoders for 8K@30fps, high-quality JPEG codec, dedicated image preprocessor and postprocessor.

- RK3588 introduces a new generation totally hardware-based maximum 48-Megapixel ISP (image signal processor). It implements a lot of algorithm accelerators, such as HDR, 3A, LSC, 3DNR, 2DNR, sharpening, dehaze, fisheye correction, gamma correction and so on.

- The embedded NPU supports INT4/INT8/INT16/FP16 mixed algorithm with a computing power of up to **6TOPs**. In addition, with its strong compatibility, it can easily convert network models based on frameworks like TensorFlow / MXNet / PyTorch / Caffe.

- RK3588 has a high-performance 4-channel external memory interface (LPDDR4/LPDDR4X/ LPDDR5) that can support demanding memory bandwidth. It also provides a complete set of peripheral interfaces to support highly flexible applications.

1.3 Using Scenes

<table>
<tr><td> 
Smart Class</td><td> 
Seminar</td></tr>
<tr><td> 
Training Demo</td><td> 
BYOM</td></tr>
</table>

Chapter 2 Datasheet

PARAMETER		
SoC	RockChip RK3588 octa-core（4×Cortex-A76+4×Cortex-A55）up to 2.4GHz	
GPU	ARM Mali-G610 MP4 quad-core support OpenGL ES3.2 / OpenCL 2.2 / Vulkan1.1, 450 GFLOPS	
NPU	6 TOPs, supporting mixed algorithm of INT4/INT8/INT16, enabling network model conversion based on TensorFlow / MXNet / PyTorch / Caffe and other frameworks.	
SYSTEM		
OS	Android	12 or above
	Linux	Ubuntu Desktop、Ubuntu Server、Debian11、Buildroot、RTLinux
		* Support UEFI booting
VIDEO DECODER & ENCODER		
Decode	8K@60fps H.265/VP9/AVS2 、8K@30fps H.264 AVC/MVC 、4K@60fps AV1、1080P@60fps MPEG-2/-1/VC-1/VP8	
Encode	8K@30fps H.265 / H.264	
	* Simultaneously implement **1080P@30fps x 32 lanes decoding** & **1080P@30fps x 16 lanes encoding**	
HARDWARE & I/O		
Storage	DDR	4GB/8GB/16GB/32GB 64bit LPDDR4/LPDDR4x/LPDDR5
	eMMC	16GB/32GB/64GB/128GB
Network	LAN	1 × 1000M Ethernet(RJ45 ）， supports Power over Ethernet
	WiFi	1 × 2.4GHz/5GHz Dual band WiFi6，BT 5.0
Input/Output	Video	1 × HDMI output2.0（8K@60fps），1 x HDMI 2.0 input（4K@60fps）
	Audio	1 × HDMI audio output
External Storage	USB interface	1 × Type-C（DP1.4 8K@30fps），1 × USB 2.0 (OTG)，1 × USB 2.0
	TF card	1 × TF Card (optional)
	RTC	1 × RTC (optional)
	Extension	1 × Debug
Power Supply	Power	DC12V (5.5*2.1mm，9V~18V is optional，voltage deviation ±5%)
	POE	Power over Ethernet（Output power is 30W）
Consumption	Standby	0.3W (12V/110mA)
	Average	4.8W (12V/400mA)
	Maximum	7W (12V/1700mA)
Environment	Working temp.	-20℃- 60℃
	Stored temp.	-20℃- 70℃
	Stored humidity	10%～90 %

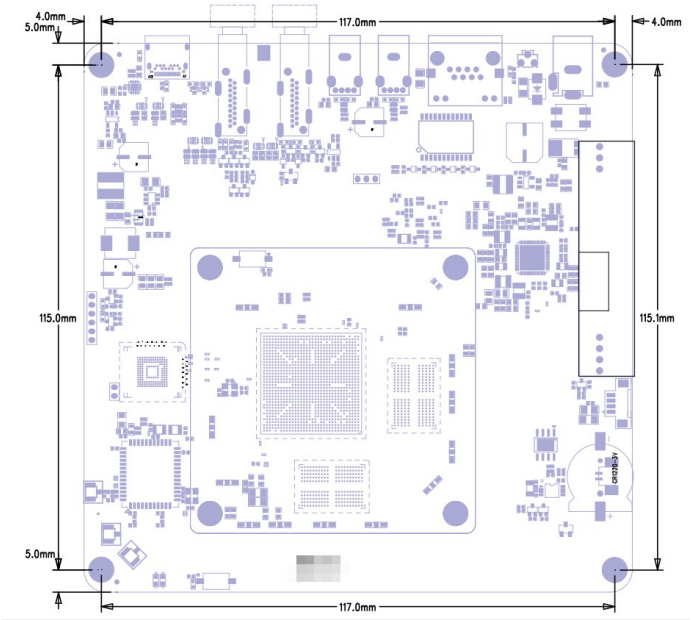
Chapter 3 Product Photo

Chapter 4 PCBA Description

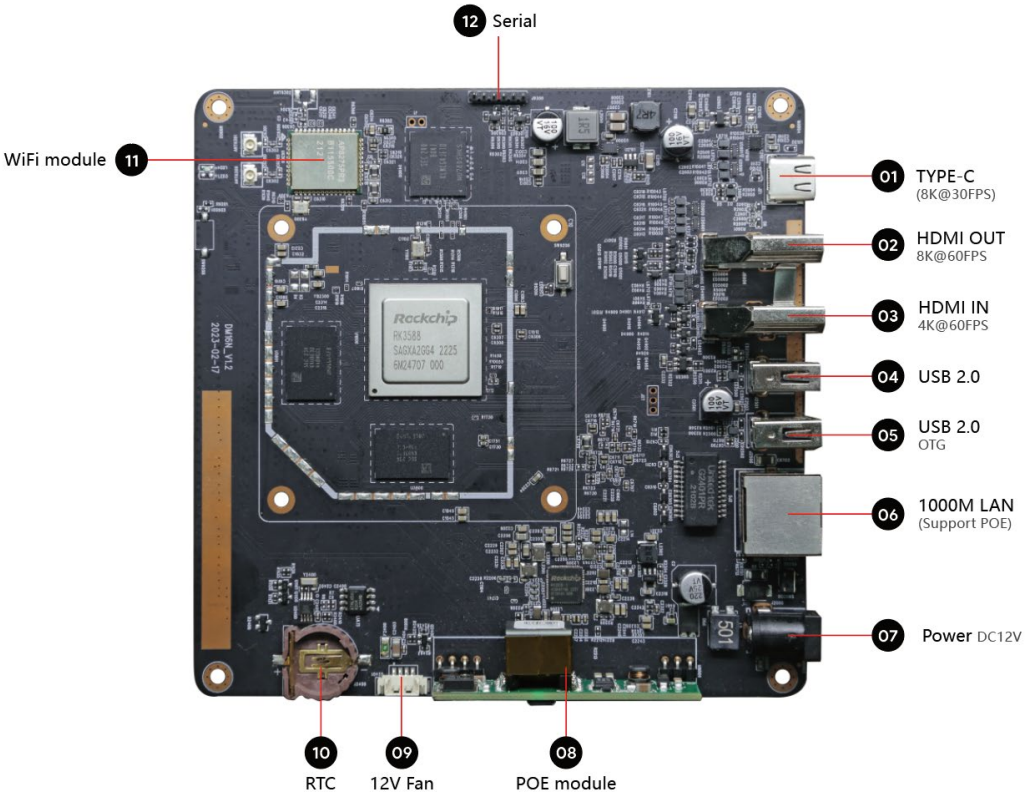
3.1 PCB Diagram

PCB：6 layers，thickness=1.2mm

PCBA：L * W=117mm * 115mm



3.2 Interface Overview

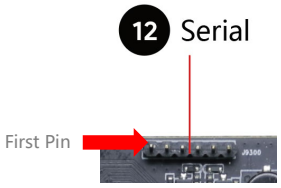


Declaration

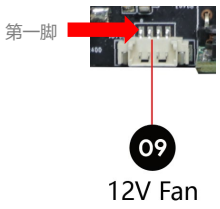
The above photos are selected from a batch of boards produced by our company. Due to the continuous maintenance of the products, the boards actually shipped may not be consistent with the photos.

3.3 Interfaces Definition

01-Serial Connector（6pin/2mm）

序号	定义	电平/V	描述
1	GND		
2	空		
3	空		
4	UART_RX		
5	UART_TX		
6	空	空	

02-12V Fan（4pin/1.25mm）

序号	定义	电平/V	描述
1	GND		
2	12V	12V	
3	空		
4	PWM		