

DWIN Android LCD Screen Development Guide (RK3566)

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1 Product Introduction

1.1 Product Feature

DWIN Android screen 32 series:

Sizes: 5~15.6 inches

CPU: RK3566, Quad-core ARM Cortex-A55, 1.8GHz

RAM: 2GB LPDDR4, Flash: 8GB eMMC5.0 (Can be customized: 4GB LPDDR4+32GB eMMC, 8GB LPDDR4+256GB eMMC)

Android Version: Android 11

There is also an optional Google Play Trial Version (with the model suffix ZOS-2)



(DMG10600C101_32WTC front)



(DMG10600C101_32WTC back)



1.1.1 Development Method

Java development, or downloading existing Android programs (APKs)

1.1.2 Documentation

Documents: https://www.dwin-global.com/development-guide/

Ar	ndroid		
	Android Development Guide RK3566	*	DOWNLOAD
	Android Development Guide RK3288	*	DOWNLOAD
H	DWIN Android Screen User Manual	*	DOWNLOAD
2	Android screen firmware modification tool instructions	*	DOWNLOAD
2	Android screen USB burning instructions	±	DOWNLOAD

Tool: https://www.dwin-global.com/tool-page/

Android	
Android 8.1 Firmware Modification Tool	DOWNLOAD
Android 11 Firmware modification tool	📥 DOWNLOAD
Universal Android Burning Tool's Driver	📥 DOWNLOAD
Android 11 USB Burning Tool	📥 DOWNLOAD
Android 8.1 USB Burning Tool	2 DOWNLOAD
Android SD Card Burning Tool	2 DOWNLOAD
DWIN Android Screen Toolkit	ż DOWNLOAD

Official Site Tutorial Link:

https://www.dwin-global.com/android/

Or YouTube Tutorial Link: https://

//youtube.com/playlist?list=PLKfWyFPPaoDr3Vq98-orVxJqKA5MDaliN&si=w-o0baCtnraeGOEF

1.1.3 Shipping List (for reference)

- screen ×1 piece
- antenna × 1 piece



1.1.4 Optional Accessories

• Speaker

DWIN material code B01851, cable length 180 mm, with socket 2PIN_1.25, 88 ± 3 dB, 8Ω , 0.8WDWIN material code B01279(louder volume), cable length 320 mm, with socket 2PIN_1.25, 8Ω , 2W.

• SD card

•4G module

China and India: LUAT Air780EI Europe: QUECTEL EC200A-EU Australia: QUECTEL EC200A-AU

(Note: The above 4G modules can be directly used on our screen. We suggest that customers purchase the relevant modules by themselves. If your country is not included in the list, you will need to provide us with a 4G module that is available locally for us to debug before it can be used normally)

• Camera

Support camera with USB interface

• 12V power adapter board

DWIN material code 08284: only for DMG80480T050_32WTC

1.2 Wiring

For definitions of peripheral interface and serial port, please refer to the relevant datasheet. The following image is a screenshot of the corresponding section.

Peripherals and Interfaces

Properties	Parameters	Description	
5	2-way RS232	UART5 & UART9	
СОМ	1-way RS485	UART8	
	1-way TTL/COMS	UART0	

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Definition	Pin#	10	Description
VCC	1	Р	Power Input
GND	2	Р	GND
485A	3	A	RS485+
485B	4	В	RS485-
RXO	5	Ι	UART O Input
TXO	6	0	UART O Output
RX5	7	I	UART 5 Input
TX5	8	0	UART 5 Output
RX9	9	I	UART 9 Input
TX9	10	0	UART 9 Output

1.2.1 Hardware Connection

GND: Ground, connect to GND pin of the user device.

TXD: Transmit, connect to TX pin of the user device.

RXD: Receive, connect to RX pin of the user device.





1.2.2 Serial Parameter Setting

The baud rate for serial port 2 is set to 1500000, whereas the remaining serial ports are set to 115200.



1.2.3 Other Tools

We suggest using a 12V DC regulated power supply for testing and an SD card with a capacity between 1GB and 16GB for flashing the project.

1.3 Precautions

1. The standard firmware does not support the simultaneous use of keyboard input and barcode scanners when the android screen is connected to barcode scanner via USB. To use them simultaneously, please contact our sales for a customized firmware.

2. To set a static IP address, please connect the device directly to the router using an Ethernet cable. Connecting the device to a computer for setup might lead to configuration failures.

3. Ethernet-related pages follow the RK3566 official configuration, defaulting to English and will not change with the system language. To display Chinese or other languages, please contact our sales for a customized firmware.



4. An error occurred while running the DWINAndroidLibraryDemo:



Reason: The latest version of the firmware has not been flashed.

Solution: Flashing the new version of the firmware from the sales.

5. The size of the APP post-downloading onto the screen does not match that in the code.

Reason: The UI has not been designed in accordance with the screen resolution.

Solution: Design the pixel (px) and density-independent pixel (dp) in a 1:1 proportion. In case the screen density is 160, both UI designers and Android engineers can perform calculations based on the ratio of px : dp = 1:1. However, if the screen density differs from 160, Android engineers are required to convert the length proportionally in line with the actual design drawing.

6. Throw an error:

Unable to find method "void org.gradle.api.internal.DefaultDomainObjectSet.<init>(java.lang.Class)"

'void org.gradle.api.internal.DefaultDomainObjectSet.<init>(java.lang.Class)'

Gradle's dependency cache may be corrupt (this sometimes occurs after a network connection timeout.)

Reason: The versions of the development tool and Gradle are also inconsistent.

Solution: The user can create a new project with their own tool and then copy the code (such as the source code, lib libraries, and dependent libraries) over.

2 Firmware Modification

Please refer to Chapter 7 which introduces the new firmware, to upgrade from an older firmware version, please contact the sales or technical support team to acquire the new firmware.

Firmware Notes:

Old firmware tool: FWFactoryTool_RK3566_v2.3

New firmware tool: FWFactoryTool_RK3566_v2.4

2.1 Tools/Resource

 The extracted contents of the FWFactoryTool_RK3566_v2.3 zip file, located in the Android resource directory, are displayed in the fig. below.

名称	修改日期	类型	大小
Bin	2023/5/6 11:46	文件夹	
FileContexts	2023/5/6 11:46	文件夹	
📙 imageformats	2023/5/6 14:01	文件夹	
Language	2023/12/18 13:30	文件夹	
Licenses	2023/5/6 14:41	文件夹	
platforms	2023/5/6 14:01	文件夹	
📙 Rockchip	2023/5/6 11:51	文件夹	
🗟 config.ini	2023/5/6 15:07	配置设置	1 KB
FWFactoryTool.exe	2023/12/18 13:29	应用程序	439 KB
icudt51.dll	2013/4/23 17:50	应用程序扩展	21,794 KB
icuin51.dll	2013/4/23 17:49	应用程序扩展	1,759 KB
icuuc51.dll	2013/4/23 17:49	应用程序扩展	1,305 KB
libegl.dll	2013/7/2 20:59	应用程序扩展	42 KB
libGLESv2.dll	2013/7/2 20:59	应用程序扩展	682 KB
msvcp110.dll	2012/11/6 2:20	应用程序扩展	523 KB
msvcr110.dll	2022/6/9 9:38	应用程序扩展	855 KB
Qt5Core.dll	2022/6/8 13:56	应用程序扩展	3,774 KB
🗟 Qt5Gui.dll	2013/7/2 21:05	应用程序扩展	2,981 KB
Qt5Widgets.dll	2013/7/2 21:08	应用程序扩展	4,197 KB

Log folder: Stores the log files created while the tool is running.

Temp folder: This folder contains files extracted from the unpacked firmware update.img. The subsequent operations of the tool involve editing the files in the Temp folder and then packaging them to generate a modified update.img file.

FWFactoryTool.exe: This is the application for firmware modification.

(2) update.img: Original firmware. Please request from the R&D team according to the model and manufacturing date to obtain this firmware. All the following operations are performed based on this firmware.

2.2 Overview of the Tool Interface

2.2.1 Start-up Interface

Firmware factory tool for RK3566		21 <u>—</u> 11		×
Firmware Info	Load Firmware			
Boot Animation	Firmware path:		Browse	
APK Management	Firmware info			
	Firmware version:			
Firmware Saving	Machine info:			

The image above shows the tool's startup interface. To select the update.img file, click the 'Browse' button located in the upper right corner. This firmware serves as the base image for device flashing and user modification.

While loading, the tool begins to unpack the firmware, extracting the corresponding images to the Temp folder in the tool's root directory.

Depending on the size of the firmware and the configuration of the computer, the unpacking time may vary. Generally, it takes about 5 minutes to complete the unpacking process.

It's important to note that since the tool invokes various third-party programs, some of which might not fully support directories with special characters, this could affect the unpacking process of the images. Therefore, it is recommended to place the entire firmware tool in a relatively simple path that does not include Chinese

characters (for example, D: \FWFactoryTool\) and then run the firmware modification tool program.

2.2.2 Firmware Loaded Successfully Interface

Firmware factory tool for RK3566		-		×
Firmware Info	Load Firmware			
Boot Animation	Firmware path:	/update_0808_v1.0/update.img	Browse.	
APK Management	Firmware info			
Firmware Saving	Firmware version: Wachine info:	11.0 *V5566 *		
	wachine info.	11/000[1		

Above is the interface after successfully extracting the update.img firmware.

While loading, the tool begins to unpack the firmware, extracting the corresponding image to the Temp folder in the tool's root directory. The unpacking time varies depending on the size of the firmware and the configuration of the computer; generally, it takes about 5 minutes to complete.

It is worth noting that due to the use of multiple third-party programs by the tool, some of these programs may not fully support directories with special characters, which can affect the unpacking process of the image. Therefore, it is recommended to place the entire firmware tool in a relatively simple path without Chinese characters (e.g., D: \FWFactoryTool) before running the firmware modification tool program.

2.3 Procedure for Replacing Boot Logo

Prepare an 8-bit BMP image for replacement in advance. It's recommended to convert it to the required format before use. User can do this by visiting the following link:

https://online-converting.com/image/convert2bmp/

Click on [Boot Animation] and select either the boot logo or kernel logo. Click [Replace...], then choose an image that meets the requirements (adjust the image as needed when switching from portrait to landscape

mode). Finally, click Save to complete the replacement process.



2.4 Boot Animation Replacement Process

2.4.1 Creating Boot Animation:

To start, determine the approximate size and quantity of the images based on the device specification and project requirement and create a photo set like below.

⇒ • ↑		资源 → FWFactory	/Tool_V5.50 → Temp	o → System → mee	dia → part1	5 ¥		搜索	
▶ 快速访问 ■ 桌面 ↓ 下戦	* *	CIOFCOD			CIOFEOR		Ç CIOFCOD	SIOFCOR	
📄 文档	1	001	002	003	004	005	006	007	008
 program 安卓开发引 安卓资源 客户项目 	删及		910-3912					9023012	
OneDrive - 此电脑 3D 对象	Pers				32	013	014	015	010
		017	018						
) 音乐									

Then, place these images into the "part1" folder and create a "desc.txt" file according to user's needs.

1080 1920 7 p 0 0 part1

In the example image, "1080" and "1920" represent the animation image resolution, and "7" denotes the frames per second for playback.

p 0 (repeat play) 0 (null command) part1 // indicates that the images in the 'part1' folder will be played on a loop. After these two lines of commands, press Enter to create a new line, don't input anything else, and save the file as "desc".

Compress the "part1" folder and "desc.txt" file into a "bootanimation.zip" file to complete the animation creation.

There is no need to put the desc and picture folders into the upper-level folder for compression. The correct example is as follows:

part1	an Aar Anne Anne Anne Anne Anne Anne Anne Ann	压缩后大小 Compressed Size	原始大小 Original Size	类型 Type
	desc.txt	0	0	文本文档 text doc.
select 0-store when con	mpressing.			
	Compression level:	0 - Store	~	

When the startup animation is too large, user can choose to handle the picture collection size.

2.4.2 Boot Animation Replacement:

Click on [Boot Animation], select the boot animation, and then click [Replace...]. Choose the previously created compressed package to replace the animation.

2.5 Pre-installed APK Installation Process

Choose [APK Management], then select either the System APK, pre-installed APK, or preinstall_del APK. Next, select a specific item and right-click to perform the add or delete operation. DWIN Technology Co., Ltd.

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ir nv are Info	Sy	stem APK Preinstall APK Preinstal	l_del APK	
oot Animation		File name	File size	File date
	1	BasicDreams. apk	52 K	2023-08-08
PK Management	2	Bluetooth. apk	7776 K	2023-08-08
irmware Saving	3	BluetoothMidiService.apk	24 K	2023-08-08
in the second	4	BookmarkProvider. apk	24 K	2023-08-08
	5	Camera2. apk	5093 K	2023-08-08
	6	CaptivePortalLogin.apk	474 K	2023-08-08
	7	CarrierDefaultApp.apk	140 K	2023-08-08
	8	CertInstaller.apk		2023-08-08
	9	CompanionDeviceManager.apk	Add AFK	2023-08-08
	10	CtsShimFrebuilt.apk	Delete Ark	2023-08-08
	11	EasterEgg. apk	4357 K	2023-08-08
	12	ExtShared. apk	12 K	2023-08-08
	13	HTMLViewer.apk	24 K	2023-08-08
	14	KeyChain. apk	140 K	2023-08-08
	15	LiveWallpapersFicker.apk	2815 K	2023-08-08
	16	NfcNci. apk	3499 K	2023-08-08
	17	PacProcessor. apk	16 K	2023-08-08
	18	PinZhengLauncher.apk	9145 K	2023-08-08
	19	PrintRecommendationService. apk	118 K	2023-08-08
	20	PrintSpooler. apk	1039 K	2023-08-08

2.6 Error Analysis and Resolution

- Unpacking the firmware with this tool will fail if the update.img is currently in use by another application.
- If an error occurs during the flashing process of the generated update.img package file, try updating the flashing software to the latest version and flashing again.

3 Firmware Update and Burning

3.1 SD Card Flashing (SDDiskTool)

3.1.1 Tools/Resource

(1) SDDiskTool - SD Card flashing software



(2) Firmware for upgrading (same as used for USB flashing)



3.1.2 SD Card Burning Procedure

Open the folder containing the flashing tool and double-click on "SD Firmware Tool.exe."

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irst Chaosa ramayabla disk	CDRoot:2 12
	~ SDB000.2.12
econd:Choose function mode	
Upgrade Firmware 🗌 PCBATest	SD Boot
hird:Choose firmware	Restore
D: \update.img	Firmware
ourth:Choose demo(Option)	
	Demo
ور بد به مراح هر مراح ای در ای مراح ای در ا	
	Create

Insert the SD card into a card reader and connect it to the computer. Follow these steps:

At the first step, choose user SD card's drive letter.

At the second step, select [Upgrade Firmware].

Click [Firmware] on the right side to choose the firmware. Locate the .img file of the firmware user want to burning.

Finally, click on " Create."

Note: Creating the burning card will format the SD card and erase all the existing files. Please make a backup before use.

Upon successful creation, will receive a prompt: " creating upgrade disk ok."

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First:Choose removable disk	SDBoot:2.12
Mass Storage Device USB Device 3.7G	~
Second:Choose function mode	
Upgrade Firmware PCBA Test	SD Boot
hird:Choos	Restore
	Firmware
ourth:Choo	
	Demo
确定	
	Create

Note: If the process fails, it's recommended to try the above steps again with a different SD card.

3.1.3 Burning Process

With the device powered off, insert the SD card into the device.

Power on the device to initiate the flashing process.

After the flashing process is complete, will receive a prompt to remove the SD card. Simply eject the SD card at this point.

3.2 USB Mass Production Flashing (FactoryTool)

If this is the first time to use the computer for flashing, user might need to install drivers. Please refer to the "USB Driver Installation Instructions" in the USB driver directory.

3.2.1 Tools/Resource

FactoryTool - USB mass production flashing software



Firmware for upgrading (same as used for SD card flashing).

3.2.2 USB Mass Production Burning Procedure

Open the FactoryTool.exe application for USB mass production burning.



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Once the software is opened, select the firmware that needs to be burned.

FactoryTool(Release Vesion) v1.7	2.2					- 0	×
			A .			-	
Kun Kun	Cupgrade Okest	ore Demo	Lang	uage 😽 Exit			
Firmware 9料\01-08 <mark>《统屏资料-</mark>	`\01 多 资源及	文档20230821\update_0808	v1.0\update	img Firmware Ver:b.0.00			
				Loader Ver: 1.01			
Demo				Chip: RK3568			
ID Fail ^	Device List	Device Type	ID	Upgrade Prompt	ID	Success	^
				^	25	0:43	
	E-RootHub20						
	WB Port[1]	Hub	2				
	Port[2]	11	2				
	- Port	2]					
		3]					
	Port[4]					
	Port[4]						
	Port[6]	Hub	6				
	- Port	1]					
		2]					
	Port[3]					
	Port	4]					
	Port[/]						
	<			>			~
5.To show successful device	on the right of gr	id and failed device	on the lef	t of grid.	10041.	00002	
🗊 打开							×
← → ◇ ↑ 🔒 > 此电脑 > 桌面 >	RK3288屏文档 > 烧录文档	> 固件			✓ ひ 搜索"固件	-	,p
组织▼新建文化夹						E • 🔲	0
Ubuntu Shat Language rk312x-pcba SD+标录 圆/4 OneDrive 此电脑 3 D 对象 圆 视频 圖 型片 瓷 文档 录 下载 〕 音乐 篇 桌面 " 本地磁盘 (C) a 本地磁盘 (C) a 本地磁盘 (D) a 本地磁盘 (D)	9						
_ 本地磁盘 (F:) ★ AndroidCode (★ code (\\10.0.0.)							
文件名(N):						e(*.img)/Loader(*.b	oir ~

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After complete selection, click on "Run" to proceed.

Run	Upgrade	Kestore	Demo	Langu	Exit		
ware 的 101-08 系统用分科	- \01 €	资源及文档20	230821\update_0808	_v1.0\update.	Loader Ver: 1.01		
:mo				0)	Chip: RK3568		
D Fail	De	vice List	Device Type	ID	Upgrade Prompt	ID	Success
	HUB O	Port[14]			^	25	0:43
	E-RC	Port[1]					
	HUB	Port[2]	Hub	2			
		- Port[1]					
		+ Port[2]					
		Port[3]					
		Port[4]					
	-4	Port[5]					
	Ė ^{NUB}	Port[6]	Hub	6			
		Port[1]					
		Port[3]					
		- Port[4]					
	~	Port[7]					
	~ ~	Port[8]			×		
	1						
To show successful de	rice on the right	ht of grid an	d failed device	on the left	of grid	rocar.	00002
To show successful dev toryTool(Release Vesion) Firm re ① Stop ware 图 101-05 美经展發表	vice on the right v1.72.2	ht of grid an O Restore 资源及文档20	d failed device	on the left	of grid.		-
To show successful dev toryTool(Release Vesion) Firm re ① Stop ware 图 100-08 系统用容别	v1.72.2	ht of grid an Restore	d failed device Demo Demo D230821\update_0808	on the left Langu	of grid.		
noc Finishing approximation of the second se	v1.72.2	ht of grid an Restore	d failed device Demo Demo Device Type	on the left	of grid. ase Exit Firmware Ver: b. 0.00 Loader Ver: 1.01 Chip: RK3568 Upgrade Prompt		
no contractions approximation of the second	v1.72.2	ht of grid an Restore 经确定文档20 vice List p Port[14] sotHub20	d failed device Demo Demo Device Type	on the left	of grid. age Exit Firmware Ver: b. 0. 00 Loader Ver: 1. 01 Chip: RK3568 Upgrade Prompt	ID 25	
noci finishing approximation of the second s	v1.72.2	ht of grid an Restore 登録及文書20 vice List Port[14] port[14]	d failed device Demo Demo Device Type	on the left Langu v1.0/update.	of grid. age Exit Firmware Ver: b. 0. 00 Loader Ver: 1. 01 Chip: RK3568 Upgrade Prompt	ID 25	
To show successful dev toryTool(Release Vesion) Firm re ① Stop ware 2 101-05 美绘用会社 mo	v1.72.2	ht of grid an Restore 密報及文書2 wice List Port[14] port[14] port[1] Port[1] Port[1]	d failed device Demo Demo Device Type Hub	on the left	of grid.	ID 25	
noci finishing approximation of the second s	v1.72.2	ht of grid an Restore 这部及文書20 wice List Port[14] port[14] port[1] Port[1] 令 Port[1] 令 Port[1]	d failed device Demo Demo Device Type Hub	on the left	of grid.	ID 25	
To show successful dev toryTool(Release Vesion) Firm re ① Stop ware 2401-08 美绘用会社 mo	v1.72.2	ht of grid an Restore 这德武文世纪 vice List Port[14] portHub2O Port[1] 令 Port[1] 令 Port[1] 令 Port[1]	d failed device Demo Demo Device Type Hub	on the left Langu v1. 0\update.	of grid.	ID 25	
To show successful dev toryTool(Release Vesion) Firm re ① Stop ware 2401-08 美绘用会社 mo	v1.72.2	ht of grid an Restore 这種及文書型 vice List Port[14] portHub2O Port[1] Port[2] 今 Port[1] 今 Port[2] 今 Port[3] 今 Port[4]	d failed device Demo Demo Device Type Hub	ID	of grid.	ID 25	
noci finishing approximation of the second s	v1.72.2	ht of grid an Restore 这個以文書20 vice List Port[14] port[14] port[1020 Port[1] 令 Port[1] 令 Port[1] 令 Port[2] 令 Port[2] 令 Port[3] 令 Port[4]	d failed device Demo Demo Device Type Hub	on the left Langu (1.0\update.	of grid.	ID 25	
no Fail	v1.72.2	ht of grid an Restore 密報及文書型 vice List Port[14] botHub20 Port[1] Port[2] 今 Port[1] 今 Port[3] Port[3] Port[4] Port[3]	d failed device	on the left	of grid.	ID 25	
no Fail	v1.72.2	ht of grid an	d failed device	ID	of grid.	ID 25	
no Fail	v1.72.2	ht of grid an Restore @@@\$\$\table\$ wice List Port[14] port[102] Port[2] Port[1] Port[3] Port[4] Port[4] Port[5] Port[6] Port[1]	d failed device Demo Demo Device Type Hub Hub Hub	ID 2 6	of grid.	ID 25	
noci finishing approximation of the second s	v1.72.2	ht of grid an Restore Restore Restore Restore Restore Port[14] port[10] Port[2] Port[1] Port[2] Port[3] Port[4] Port[3] Port[4] Port[5] Port[6] Port[7] Port[7] Port[7] Port[7] Port[7]	d failed device Demo Demo Demo Device Type Hub Hub Hub	ID 2 6	of grid.	ID 25	
no Fail	v1.72.2	ht of grid an Restore Restore Restore Restore Restore Port[14] port[1] Port[2] Port[3] Port[4] Port[3] Port[4] Port[5] Port[6] Port[7]	d failed device	ID 2 6	of grid.	ID 25	
To show successful dev toryTool(Release Vesion) Firm re ① Stop ware 和UI-06 美绘用会社	v1.72.2	ht of grid an Restore Restore Restore Restore Port[14] port[1] Port[2] Port[1] Port[3] Port[4] Port[3] Port[4] Port[5] Port[6] Port[7] Port[8] Port[9] Port[1] Port[1] Port[2] Port[1] Port[2] Port[1] Port[2] Port[1] Port[2] Port[1] Port[2] Port[3] Port[3] Port[3] Port[4] Port[4] Port[4]	d failed device	ID 2 6	of grid.	ID 25	- 0
To show successful dev toryTool(Release Vesion) Firm re ① Stop ware 2401-08 美绘再会社	v1.72.2	Att of grid an Restore Restore Restore Restore Restore Restore Port[14] Port[1] Port[2] Port[2] Port[3] Port[4] Port[4] Port[5] Port[6] Port[7] Port[7] Port[8]	d failed device	ID 2 6	of grid.	ID 25	- 0
no control for the second seco	v1.72.2	Restore Port[14] Port[2] Port[3] Port[4] Port[3] Port[4] Port[5] Port[6] Port[7] Port[8]	d failed device Demo Demo Demo Demo Demo Demo Device Type Hub Hub Hub	on the left	of grid.	ID 25	
ard:	v1.72.2 Upgrade Upg	Restore Restore Restore Restore Port[1] Port[2] Port[2] Port[3] Port[4] Port[2] Port[3] Port[4] Port[3] Port[4] Port[5] Port[6] Port[7] Port[8] Port[9] Port[1] Port[2] Port[3] Port[4] Port[5] Port[4] Port[5] Port[6] Port[7] Port[8] Port[9] Port[9]	d failed device	on the left	of grid.	ID 25 Success:	
ard: First use, Tag USB port	vice on the right	ht of grid an Restore Restore Restore Restore Restore Restore Port[14] Port[2] Port[2] Port[3] Port[3] Port[4] Port[3] Port[4] Port[6] Port[6] Port[6] Port[7] Port[7] Port[8] Port[8] Port[8] Port[10] Port[10] Port[10] Port[10] Port[2] Port[10] Por	d failed device	on the left	of grid.	ID 25 Success: Fail:	00002



At this point, burning has been initiated.

In a power-off state, press and hold the MASROM/RECOVERY key on the Android screen, connect the device to the PC using a USB cable and then access the power supply.



When connect the device to the computer as outlined in step 3, the burning process will start automatically. The software will display a list of devices.



Professional Creditable Successful

Firmwre	Stop) Upgrade	○ Restore	Demo	Lar	uguage 🔶 Exit				
nware 🛙 🚛	01-08 系统屏资料	<u>\01 </u> €	资源及文档20	230821\update_0808	v1.0\updat	E.ims Firmware Ver:b.(Loader Ver:1.01). 00			
	Fail	A Dev	vice List	Device Type	ID	Ungrade Prompt	r	ID	Succase	-
			Port[14]	Device Type		opgrade rrompt	~	10	JULLESS	_
		NVB RO	otHub20							
			Port[1]				- 1			
		HUB	Port[2]	Hub	2					
			+ Port[1]				- 1			
			- Pon(2)							
			Port[3]	Loader	25	Uploading firmware(2%)				
			C Dort[4]		57253					
			Port[3]				1			
			Port[4]							
			Port[5]							
		HVB	Port[6]	Hub	6					
			+ Port[1]							
			APort[2]							
			A Port[3]							
			+ Port[4]							
			Port[7]							
		~	Port[8]				~			
		~ <					>			
and										
aru.										
First use	e,Tag USB port:p	olug device in	n, record ID sh	owing on the to	ol.Tag al	1.		Success:	00002	
After nlı	uging device in.	connect anoth	ner until devi	ce is doing ung	rade.					
, , .				,				Fail:	00000	Ú.
led is gi	reen, plug device	e in:led is re	ed, do not plug	device in or o						
After fir	nishing upgrade,	green to show	v success, red	to show failure.				Total:	00002	6
	successful devic	re on the righ	+ of avid one	failed device .	on the let	ft of grid				

Each port corresponds to a USB port on the computer. Once the burning process is completed, the device will power on automatically. User can check the bottom right corner for a statistical summary of successful or failed burning.

3.3 USB Developer Flashing Tool (RKDevTool)

Note: If the computer being used is burning for the first time, drivers need to be installed first. Please refer to the "USB Driver Installation Instructions" in the USB driver directory.



Key Features:

.



3.3.1 Import Partition Configuration

花		Address	Name	Path			
1	Γ	0x00000000	Loader	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
2		0x00000000	Parameter	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
3	~	0x00002000	Uboot	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
4	1	0x00004000	trust	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
5	Г	0x00006000	Misc	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
6		0x00008000	Resource	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
7	V	0x00010000	Kernel	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
8	Г	0x00020000	Boot	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
9	Г	0x00030000	Recovery	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	Add Item
10		0x0018A000	System	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	P. Lu
11		0x00592000	Vendor	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	Del Item
12		0x00692000	Oem	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	Clear Items
2030	ler V	'er:2.40	Run	Switch	Dev Partition	Cle	Move Up Move Down Load Config

Often, the partition configuration provided with the new tool differs slightly from the project's configuration. User can right-click in the partition configuration area and choose "Import Configuration" to load a previously saved project partition configuration file. To load a specific configuration file upon tool startup, modify the DEFAULT IMAGE CONFIG entry in the Config.ini file.

🦳 config.ini - 记事本
文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)
LangPath=Language\
Lang1File=Chinese.ini Lang1FontName=宋体 Lang1FontSize=9
Lang2File=English.ini Lang2FontName=Arial Lang2FontSize=9
[System] #Msc设备VendorID和ProductID,值十六进制表示,例:MSC_VID=0x0BB4,MSC_PID=C MSC_VID=0x0bb4 MSC_PID=0x0c02
#指定是否支持全速usb设备,当SUPPORTLOWUSB=TRUE时,增加全速usb设备支持,默 备 SUPPORTLOWUSB=true
MSC_TIMEOUT=30 ROCKUSB_TIMEOUT=30 #指定启动时加载的镜像配置文件,默认为config.cfg DEFAULT_IMAGE_CONFIG=config.cfg #下载1mage镜像后是否进行设备重启 RESET_AFTER_DOWNLOAD=true #当设置FW_NOT_CHECK=TRUE时,固件加载时不进行完整性校验 FW_NOT_CHECK=true



3.3.2 Export Partition Configuration

花		Address	Name	Path			
1		0x00000000	Loader	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
2		0x00000000	Parameter	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
3		0x00002000	Uboot	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
4		0x00004000	trust	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
5		0x00006000	Misc	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
6	~	0x00008000	Resource	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
7	~	0x00010000	Kernel	E:\Rockchip	\3326安全工作\GPT-NA	MD_f	
8	Г	0x00020000	Boot	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	
9	Г	0x00030000	Recovery	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	Add Item
10		0x0018A000	System	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	P. Liv
11		0x00592000	Vendor	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	Del Item
12		0x00692000	Oem	E:\Rockchip	\3326安全工作\GPT-NA	ND_f	Clear Items
.0 9.0	ler V	er:2.40	Run	Switch	Dev Partition	Cle	Move Up Move Down Load Config Export Config

After configuring partitions, user can save their partition setup by exporting it. Click "Export Configuration" in the blank area of the partition configuration zone. Specify a file name and directory for saving. If replace the config.cfg file in the tool directory, the saved configuration will load when the tool starts.

3.3.3 Burning One or Multiple Partition Images

#		Address	Name	Path
1	Γ	0x00000000	Loader	E:\Rockchip\3326安全工作\GPT-NAND_f
2		0x00000000	Parameter	E:\Rockchip\3326安全工作\GPT-NAND_f
3	~	0x00002000	Uboot	E:\Rockchip\3326安全工作\GPT-NAND_f
4	~	0x00004000	trust	E:\Rockchip\3326安全工作\GPT-NAND_f
5		0x00006000	Misc	E:\Rockchip\3326安全工作\GPT-NAND_for_ly\mise
6	~	0x00008000	Resource	E:\Rockchip\3326安全工作\GPT-NAND_f
7	~	0x00010000	Kernel	E:\Rockchip\3326安全工作\GPT-NAND_f
8	Г	0x00020000	Boot	E:\Rockchip\3326安全工作\GPT-NAND_f
9	Г	0x00030000	Recovery	E:\Rockchip\3326安全工作\GPT-NAND_f
10		0x0018A000	System	E:\Rockchip\3326安全工作\GPT-NAND_f
11		0x00592000	Vendor	E:\Rockchip\3326安全工作\GPT-NAND_f
12		0x00692000	Oem	E:\Rockchip\3326安全工作\GPT-NAND_f
Loa	der V	/er:2.40	Run	Switch Dev Partition Clear



Steps:

- Connect the device to the PC in Loader or Maskrom mode. In Maskrom mode, select the "Loader" download option.

- Check the desired flashing items. Confirm that the addresses before the flashing items are correct. If an address is zero, load partition information from the "Parameter" partition table.

- Click "Execute."

3.3.4 Switching

When Found a MASKROM Device appears, execute "Switch" to enter Loader or Maskrom mode.

3.3.5 Device Partition Table

To use the device's current partition table for flashing, click " Dev Partition". At this point, the partition table is read from the device side. Partition information will be parsed and loaded.

3.3.6 Burning update.img

Fw Ver:	Loader Ver:	Chip Info:
Firmware:		

Note: Flashing update.img is only possible in loader and maskrom modes; other modes require switching first. The firmware can be an update.img firmware or a loader file.



3.3.7 Erase Flash

Executing the "Erase Flash" function erases all blocks of the Flash, including the system blocks before the firmware area. If repeated firmware upgrades fail, try performing "Erase Flash" before upgrading again.

3.3.8 Unpack update.img

Download Image	Upgrade Firmware	Advanced Function	
Boot:			 Download
Firmware			 Unpack

Unpacked files will be saved in the "output" directory under the tool's location.

3.3.9 Download Boot

Downloading the boot initiates DDR initialization and loads the usbplug code into DDR through the loader. User can perform this by the following two ways.

wnload Imag	e Upgrade Firmware	Advanced Function	25
Boot:	ry_git\windows\andro	oidTool\bin\RK322HBoot.bin	 Download
Firmware	ĺ.		 Unpack

Double-clicking "Loader" and selecting "LoaderToDDR" from the dropdown list.

#		Address	Name	Path
1		0x00000000	LoaderToDDR	算:\Rockchip\3326安全工作\GPT-NAND_f
2		0x00000000	Parameter	E:\Rockchip\3326安全工作\GPT-NAND_f
3	Г	0x00002000	Uboot	E:\Rockchip\3326安全工作\GPT-NAND_f
4	Г	0x00004000	trust	E:\Rockchip\3326安全工作\GPT-NAND_f
5	Г	0x00006000	Misc	E:\Rockchip\3326安全工作\GPT-NAND_f
6		0x00008000	Resource	E:\Rockchip\3326安全工作\GPT-NAND_f
7		0x00010000	Kernel	E:\Rockchip\3326安全工作\GPT-NAND_f
8	Г	0x00020000	Boot	E:\Rockchip\3326安全工作\GPT-NAND_f
9		0x00030000	Recovery	E:\Rockchip\3326安全工作\GPT-NAND_f
10		0x0018A000	System	E:\Rockchip\3326安全工作\GPT-NAND_f
11	Г	0x00592000	Vendor	E:\Rockchip\3326安全工作\GPT-NAND_f
12	Г	0x00692000	Oem	E:\Rockchip\3326安全工作\GPT-NAND_f



3.3.10 Download GPT

A GPT partition can be in the format of a parameter file or a partition_table.img file. If it's a parameter file,

note:

The parameter file should have the attribute "TYPE: GPT."

```
FIRMWARE_VER:7.1

MACHINE_MODEL:RK3126c

MACHINE_ID:007

MANUFACTURER:rk3126c

MAGIC: 0x5041524B

ATAG: 0x00200800

MACHINE: 3126c

CHECK_MASK: 0x80

PWR_HLD: 0,0,A,0,1

TYPE: GPT

CMDLINE:mtdparts=rk29xxnand:0x00002000@0x00004000(uboot),0x00002000@0x00006
```

6000 (atf), 0x00038000@0x00008000 (boot:bootable), -@0x0040000 (rootfs:grow)

The last partition should use the "grow" attribute to allocate any remaining space to that partition.

#		Address	Name	Path		
1	~	0x00000000	LoaderToDDR	E:\Rockchip	\3326安全工作\GPT-NA	ND_f
2		0x00000000	Parameter	E:\Rockchij	\3326安全工作\GPT-NA	ND_for_ly\gpt.txt
3		0x00004000	Woot	E:\Rockchip	\3326安全工作\GPT-NA	NTD_f
4		0x00006000	trust	E:\Rockchip	\3326安全工作\GPT-NA	ND_f
5		0x00008000	Misc	E:\Rockchip	\3326安全工作\GPT-NA	ND_f
6	Г	0x0000A000	Resource	E:\Rockchip	\3326安全工作\GPT-NA	NTD_f
7	Г	0x00012000	Kernel	E:\Rockchip	\3326安全工作\GPT-NAJ	ND_f
8	Г	0x00022000	Boot	E:\Rockchip	\3326安全工作\GPT-NA	NTD_f
9		0x00032000	Recovery	E:\Rockchip	\3326安全工作\GPT-NA	NTD_f
10		0x0018C000	System	E:\Rockchip	\3326安全工作\GPT-NA	NTD_f
11		0x00594000	Vendor	E:\Rockchip	\3326安全工作\GPT-NA	ND_f
12		0x00614000	Oem	E:\Rockchip	\3326安全工作\GPT-NA	ND_f
					17	
Loa	der: :	2. 40	Run	Switch	Dev Partition	Clear

3.3.11 Read Device Extended Functions

]		Download
][Unpack
ReadChipInfo	ReadCap	ability	1. FLASH 2. EMMC 3. SD
Go Maskrom	Switch St	orage	4. SD1 5. SPINOR 6. SPINAND 7. RAW
ExportComLog	t Selected	l Stora	8. USB 9. SATA 10. PCIE
EraseAll			

荻取Capability开始 Capability: 03 00 00 00 00 00 00 00 DirectLBA: Enable 荻取Capability成功

For GPT burning, the "DirectLBA" in the extended functions must be enabled; otherwise, the tool will prompt that the "current device doesn't support GPT."

3.3.12 Enter Maskrom

			Download
			Unpack
ReadFlashInfo	ReadChipInfo	ReadCapability	1. Flash 2. EMMC 3. SD
ResetDevice	Go Maskrom	Switch Storage	4. SD1 5. SPINOR 6. SPINAND 7. RAM
DetectSecure	ExportComLog	t Selected Stora	8. USB 9. SATA 10. PCIE
EraseLBA	EraseAll		
	ReadFlashInfo ResetDevice DetectSecure EraseLBA	ReadFlashInfoReadChipInfoResetDeviceGo MaskromDetectSecureExportComLogEraseLBAEraseAll	ReadFlashInfo ReadChipInfo ResetDevice Go Maskrom Switch Storage DetectSecure ExportComLog EraseLBA EraseAll

When the device is in Loader mode, can use this function to switch the device to Maskrom mode.

3.3.13 Clear Serial Number

If a serial number was written using a unified dynamic library tool, it can be cleared using this function.



Download Image	Upgrade Firmwar	e Advanced Function
----------------	-----------------	---------------------

Boot:					Download
Firmware					Unpack
ReadFlashID	ReadFlashInfo	ReadChipInfo	ReadCapab	ility 1. 2. 3.	Flash EMMC SD
TestDevice	ResetDevice	Go Maskrom	Switch Stora	ge 4. 5. 6. 7	SD1 SPINOR SPINAND RAM
ClearSn	DetectSecure	ExportComLog	t Selected St	ora 9. 10	USB SATA . PCIE
ExportImage	EraseLBA	EraseAll			
Start:					
Count:					

3.3.14 Common Issues:



(1) Missing Download Items

As shown in the image above, it indicates that the download item for the kernel partition doesn't exist.

(2) Failed to Load Firmware



Check the following issues:

- Whether the firmware is being used by other programs.

- Incorrect firmware format.
- Corrupted firmware.
- (3) ChIP Verification Failed

This indicates that the loader or firmware doesn't match the device.

Use the "Read ChIP Information" function to confirm the chIP identifier.

wnload Imag	e Upgrade Firmware Advanced Function		駅間ChipInfe开始 Chip Tag 33 32 48 Inage Chip Flag: -RB3822H TZBPC- いったまた
Boot	ry_git\windows\andreidTosl\bin\3832220Ecot.bin	Download	graficas pinto(0,4)
Firmware		Unpack	
ReadFlas	hID ReadFlashInfo ReadChipInfo ReadCapability	1. FLASH 2 EMMC	

Make sure that the chIP identifier is set the same as what's displayed in "Image ChIP Flag" when packaging firmware or loader.

📄 mkup	odate.bat - 记事本						
文件(F)	编辑(E) 格式(O)	查看(V)	帮助(H)				
Afptoo RKImag os_typ	l -pack ./ Im eMaker.exe -R e:androidos	age\upda K31 RK3:	ate.img 188Loader(L)_V2.13	3.bin	Image\update.img	update.img	50

(4) Failed to Download Boot

Check if DDR is properly soldered.

Ensure that the loader matches the device.

(5) Failed to Download Firmware or Partition Image

Update Rockusb driver or the burning tool.

Use a shielded USB cable and connect to rear USB ports.

Check if the flash is loose, damaged, or unsupported.

(6) Failed to Verify Firmware or Partition Image

Confirm that the sizes of partitions in the parameter file can accommodate the corresponding image files.

If there are issues with Flash software mapping, try erasing the flash first.



Check the stability of the DDR device.

(7) GPT Writing Not Supported

#		Address	Name	Path	
1		0x00000000	Loader	E:\Rockchip\3326安全工作\GPT-NAND_f	
2	1	0x0000000x0	Parameter	E:\Rockchip\3326安全工作\GPT-NAND_f	
3		0x00002000	Uboot	E:\Rockchip\3326安全工作\GPT-NAND_f	
4		0x00004000	trust	E:\Rockchip\3326安全工作\GPT-NAND_f	
5	Г	0x00006000	Misc	E:\Rockchip\3326安全工作\GPT-NAND_f	8
6	Г	0x00008000	Resource	E:\Rockchip\3326安全工作\GPT-NAND_f	1
7	Г	0x00010000	Kernel	E:\Rockchip\3326安全工作\GPT-NAND_f	
8		0x00020000	Boot	E:\Rockchip\3326安全工作\GPT-NAND_f	a) (
0		0~00030000	Regenerry	R. \Realashis \3326 + OT /E \CPT-NAND 6	

Use the "Read Capability" function to confirm if the current device supports DirectLBA functionality.

Writing GPT requires DirectLBA functionality to be enabled.

Important Notes:

- When using the tool in a non-Chinese operating system, ensure that the tool's directory path contains only English characters.

- On Windows 7 and Vista systems, right-click and run the program with administrator privileges.

- After modifying the Config.ini configuration file, need to restart the tool for the changes to take effect.

4 Setting Up and Using the Android Studio Development Environment

4.1 Tools/Resource



The installation programs can be downloaded from the following link: [https:

//developer.android.google.cn/studio/archive] (https://developer.android.google.cn/studio/archive) (Please download Android Studio 3.6 or later versions)

4.2 Software Installation

(1) Double-click the installation package to start the installation.





.....

DWIN Technology Co., Ltd.

	Configuration Settings	
2	Install Locations	
•	select the installa	tion directory as rea
ndroid Studio	Installation Location	/
The location Click Browse	specified must have at least 500MB of free to customize:	space.
C: Program	Files Android Android Studio	Browse

Choose whether to install AVD (Android Virtual Device) based on user's needs.

	Choose Components Choose which features of Android Studio you want to install.		
Check the compon nstall. Click Next t	ients you war to continue.	nt to install and uncheck th	ne components you don't want to
Select components	s to install:	Android Studio	Position your mouse over a component to see its description.
Space required: 1.	. 3GB		

For the first-time use of Android Studio, it's recommended not to import settings.

Professional	Creditable	Successful
110100010110	Creataole	Duccessiui

Previous version	C:\Users\lenovo\.AndroidStudio3.5\config	
Config or installat	tion folder:	
		1
De autimont au		

Select the installation type. Choose custom installation.

Android Studio Setup Wizard Install Type	
Choose the type of setup you want for Android Studio: Standard Android Studio will be installed with the most common settings and options. Recommended for most users.	
Custom You can customize installation settings and components installed.	
Previo Next	Cancel Finish

Select the location for SDK installation.
Professional Creditable Successful

DWIN	
ul partner for you	DWIN Technology Co., Ltd.

SDK Components Setup	
Android SDK - (389 MB)	A preconfigured and optimized Android Virtual Device
Android SDK Platform	for app testing on the emulator. (Recommended)
API 32 - (160 MB)	
Performance (Intel ® HAXM) – (500 KB)	
Android Virtual Device – (installed)	
Android SDK Location:	Total download size: 549 MB
E:\AndroidStudio\sdk	Disk space available on drive : 94.5 GB
Tryins electron park	
	Previo Next Cancel Finish

Wait for the installation to complete.

wnloading Components		
urces for Android 32 (revision: 1)" ready.		
Sources for Android 32 in F:\AndroidStudio\sdk\sources\android=32		
arces for Android 32 (revision: 1)" complete.		
arces for Android 32 (revision: 1)" finished.		
Install Android SDK Build-Tools 32.1-rc1 (revision: 32.1.0 rc1)".		
https://dl.google.com/android/repository/21014bc1a76d38d0dcb79b3b3f49f40ea5a53c10.bv	wild-tools_r32.1-rc1-windows.zip	
droid SDK Build-Tools 32.1-rc1 (revision: 32.1.0 rc1)" ready.		
Android SDK Build-Tools 32. 1-rc1 in F:\AndroidStudio\sdk\build-tools\32. 1. 0-rc1		
droid SDK Build-Tools 32.1-rc1 (revision: 32.1.0 rc1)" complete.		
droid SDK Build-Tools 32.1-rc1 (revision: 32.1.0 rc1)" finished.		
AndroidStudio\sdk\build-tools\32.0.0\package.xml		
AndroidStudio\sdk\build-tools\32.1.0-rc1\package.xml		
AndroidStudio\sdk\emulator\package.xml		
AndroidStudio\sdk\patcher\v4\package.xml		
androidStudio\sdk\platform=tools\package.xml		
AndroidStudio\sdk\platforms\android=32\package.xml		
AndroidStudio\sdk\sources\android=32\package.xml		
AndroidStudio\sdk\tools\package.xml		
is up to date.		

(2) Open the installed Android Studio and create a new project.

The first time to open it, might encounter an error as shown below. Choose [Cancel] to close it.





For the first use, Android Studio will perform downloads and automatic environment configuration. Just wait for the process to finish.

4.3 Creating a New Project

🤝 Welcome to Android Studio (Administrator)	
Android St Version 3.5.2	udio
+ Start a new Android Studio	project
➡ Open an existing Android S ↓ Check out project from Ver	Studio project rsion Control •
🔮 Profile or debug APK	
l≝ Import project (Gradle, Ecli	ipse ADT, etc.)
Import an Android code sa	ample
	💠 Configure 👻 Get Help 💌

- (1) Choose "Start a new Android Studio project."
- (2) Fill in the project name, package name, set the storage location, and select the programming language. In this case, we'll use Java and set the minimum compatible Android version to 5.0.



Configure your project	
	Name
	My Application
	Package name
÷	com.example.myapplication
	Save location
	C:\Users\lenovo\AndroidStudioProjects\MyApplication
	Language
	Java
	Minimum API level API 21: Android 5.0 (Lollipop)
Empty Activity	Your app will run on approximately 98.0% of devices. Help me choose
	This project will support instant apps
	✓ Use androidx.* artifacts
Creates a new empty activity	
	Previous Next Cancel Finish

(3) Build and Run the First Project

Make sure to connect the Android device to the PC before selecting debug and run.



As shown, connect the Android device to the computer via USB and power on the device. (The layout of

each Android screen may vary, the following image is for reference only.)

Click on the DWIN screen in the designated area, then click "Run." The example program will run as shown below.

🛎 Select Deployment Target	×
Connected Devices	
Dwin DMG12800T070-33WTC (Android 8.1.0, API 27)	
Create New Virtual Device	
Use same selection for future launches OK Cancel Help	
C etca My Application	
	0
Hello World!	0
	Δ

5 Using DWIN Android Screen Serial Port Tools

5.1 DWIN Android Tools Package Instruction

DWIN provides an Android testing software source code and a Java library file for serial communication. The provided files include:



- jniLibs: Pre-packaged shared object libraries (so files)
- android_serialport_api: Library utility classes for calling
- DwinTools: Complete project source code for Dwin tools
- DwinTest: Dwin test software

5.2 Importing Dwin Test Project Source Code into Android Studio

(1) In Android Studio, click on "File" in the top left corner, then click "Open." Choose the directory of the source code.



🕈 旦 👗 🔤 📭 🗙 🗟 😭	Hide path
C:\Users\lenovo\Desktop\DwinTest\DwinTest	+
AndroidStudioProjects	
Application Data	
Contacts	
🔻 📄 Desktop	
🗸 🖿 DwinTest	
🔻 满 DwinTest	
🕨 🚾 .gradle	
▶ 🖿 .idea	
🕨 🚈 app	
► m gradle	
a .gitignore	
🚽 activity_main.xml.bak	
(build.gradle	
DwinTest.iml	
gradle.properties	
Drag and drop a file into the space above to quickly locate it	in the tree
OK Cancel	Help

- (2) Power up the motherboard and connect the Android screen to the PC using a USB cable.
- (3) Select the appropriate Android screen, click "Run", and download DwinTest onto the Android screen.

DwinTest					7.4	
自动测试		手动测试			更多	
测试结果: - 测试结果:						
			•			
		一键测试				
	1	1	0	-	 1))	0

Click [More] -> [Instructions] to see how to use the software for basic testing.

5.3 Using Dwin Java Serial Libraries to Create a New Project

(1) Create a new project. In this example, the project is named "SerialTest, " saved in the path "F:

\AndroidStudio\SerialTest, " and the programming language is Java.

← Empty Activity Creates a new empty activity	Name SerialTest Package name com.example.serialtest Save location F:\AndroidStudio\SerialTest Language Java Minimum SDK API 21: Android 5.0 (Lollipop) Image the process Use legacy android.support libraries Image the logacy android.support libraries	
---	--	--

(2) Copy the "jniLibs" from the Dwin Android tools package to "F:

\AndroidStudio\SerialTest\app\src\main." Also, copy the "android_serialport_api" folder to "F: \AndroidStudio\SerialTest\app\src\main\java." Ensure that the directoy is named "android_serialport_api" and remains unchanged.

Professional Creditable Successful



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(3) After completing the steps, operate the serial port. Specific operations can be referenced in the activities within the DwinTools project source code at

"DwinTools\app\src\main\java\com\dwin\DwinTools\serial." Modify and use these according to the project.

DWIN

DWIN Technology Co., Ltd.

-Application.java: It integrates `android.app.Application` and is primarily used to generate SharedPreferences. The configuration of baud rate and serial port devices is completed using SharedPreferences. Generally, no modification is required.

-SerialPortActivity.java: Used to create input/output streams and threads for operating serial port read/write operations. Users can inherit the Activity class for reading and writing.

-SerialPortPreferences.java: This class scans available serial port devices like ttyS* and writes their configurations to SharedPreferences. Users can modify this class based on their own app's requirements.

-ConsoleActivity.java: It is integrated from `SerialPortActivity` and is used for character-based serial communication.

-HexConsoleActivity.java: It is integrated from `SerialPortActivity` and is used for hexadecimal-based serial communication.

-SerialMainMenu.java: This is the main menu activity that facilitates navigation to specific activities.

-Sending01010101Activity.java: This activity constantly sends the sequence "0101" to test the serial waveform.

-LoopbackActivity.java: This activity is used to test whether serial communication for loopback is functioning correctly.

-HexHelper.java: This is a series of utility classes used for converting between characters and hexadecimal representations.

Before using these classes, make sure to update the configuration in the `build.gradle (Module: app)` file as shown in the image.

compileSdkVersion 29

buildToolsVersion "29.0.3"

targetSdkVersion 29





5.4 Example of Using Common Functions of DWIN Android Screen

Most of the special functions of the DWIN Android screen are operated in the form of sending broadcasts.

5.4.1 Dynamic Restart

Just send broadcast android.intent.action.dwin_reboot

Intent sr = **new**

Intent ("android.intent.action.dwin_reboot");

sendBroadcast (sr);

5.4.2 Dynamic Return and the Implementation of Returning Home

Return to send broadcast android.intent.action.dwin_input_back_key

Intent sr = new Intent ("android.intent.action.dwin_input_back_key");

sendBroadcast (sr);

home send boardcast android.intent.action.dwin_input_home_key

Intent sr = new Intent ("android.intent.action.dwin_input_home_key");

sendBroadcast (sr);



5.4.3 Read chip_id

Use the getChipId () method in the tool class ChipUtil in the DwinTools source code to return, and the source code has been given.

5.4.4 Rotate the Screen Through the App

Use the form of sending broadcast to operate. The code is in the RotationActivity class in DwinTools. After the sending is successful, the system will restart and modify the screen rotation.

```
@Override
public void onClick(View v) {
    switch (v.getId()) {
        case R.id.btn rotation 0:
            setRotation("0");
            break;
        case R.id.btn rotation 90:
            setRotation("90");
            break;
        case R.id.btn rotation 180:
            setRotation("180");
            break;
        case R.id.btn rotation 270:
            setRotation("270");
            break;
}
```

```
/**
 * 通过发送广播,系统则会进行屏幕旋转 The system rotates the screen by
    sending Broadcast
 * @param value 旋转的值 the value of rotation
 */
private void setRotation(String value) {
    Log.v(TAG, msg: "Dwin test sendBroadcast!");
    Intent sr = new Intent(DWIN_ROTATION);
    sr.putExtra(name: "message", value);
    sendBroadcast(sr);
}
```

5.4.5 Permanently Hiding the Navigation Bar via App

To permanently hide the navigation bar using the app, user can utilize broadcast messages. The relevant code can be found in the 'NavigationBarActivity' class within the 'DwinTools' project.

When user send the broadcast successfully, the system will reboot, and the navigation bar status will be modified accordingly.

```
send 0 to show navigation bar, send 1 to hide navigation bar
//发送"0"则显示导航栏,发送"1"则隐藏导航栏
public static final String DWIN_NAVIGATION_BAR_SHOW_VALUE = "0";
public static final String DWIN_NAVIGATION_BAR_HIDE_VALUE = "1";
/**
* 通过发送广播,系统则会进行相应的隐藏\显示导航栏 The system hides/shows navigation bar
by sending Broadcast
* @param_value 是否显示导航栏的值
*/
private void setNavigationBar(String value) {
  Log.v(TAG, msg: "Dwin test sendBroadcast!");
  Intent sr = new Intent(DWIN_NAVIGATION_BAR);
  sr.putExtra(name: "message", value);
  sendBroadcast(sr);
}
```

5.4.6 Setting Up Auto Start on Boot

There are generally two ways to achieve auto-start on boot: one is by receiving the boot broadcast and starting the app, and the other is by setting the APK as the launcher. In the former method, the app starts after booting into the system desktop, while in the latter method, the app bypasses the system desktop and starts directly.

(1) Enter the program after booting the d android interface

When Android starts, it broadcasts a system message with the content `ACTION_BOOT_COMPLETED`, represented as `Android.intent.action.BOOT_COMPLETED`. By capturing this message in the app, user can trigger the app to start. This is typically done by implementing a BroadcastReceiver.

• Interface Activity, MainActivity .java document

public class MainActivity extendsActivity {

/** Called when the activity is first created. */

@Override

public void onCreate (Bundle savedInstanceState) {

super.onCreate (savedInstanceState);

// without title

requestWindowFeature (Window. FEATURE_NO_TITLE);

// full screen

getWindow ().setFlags (WindowManager.LayoutParams. FLAG_FULLSCREEN,

WindowManager.LayoutParams. FLAG_FULLSCREEN);

setContentView (R.layout. activity_main);

}

}

This code is very simple. When the Activity starts, the TextView will be displayed, use it to display the words user want to display.

• Receive broadcast messages

public class BootBroadcastReceiver extends BroadcastReceiver {

static final String action_boot = "android.intent.action.BOOT_COMPLETED";



@Override

```
public void onReceive (Context context, Intent intent) {
    if (intent.getAction ().equals ( action_boot )) {
        Intent ootStartIntent = new Intent (context, MainActivity. class);
        ootStartIntent.addFlags (Intent. FLAG_ACTIVITY_NEW_TASK );
        context.startActivity (ootStartIntent);
    }
```

}

}

This class inherits from BroadcastReceiver. In the overridden method onReceive, check whether the received Intent conforms to BOOT_COMPLETED. If so, start the MainActivity.

```
• Configuration file
```

AndroidManifest.xml :

```
<?xml version= "1.0" encoding= "utf-8" ?>
```

<manifest xmlns: android= "http://schemas.android.com/apk/res/android"

```
package= "com.ajie.bootstartdemo"
```

```
android: versionCode= "1"
```

```
android: versionName= "1.0" >
```

<uses-sdk

```
android: minSdkVersion= "8"
```

```
android: targetSdkVersion= "17" />
```

```
<application
```

android: allowBackup= "true"

```
android: icon= "@drawable/ic launcher"
android: label= "@string/app name"
android: theme= "@style/AppTheme" >
<activity
android: name= "com.dwin.bootstartdemo.MainActivity"
android: label= "@string/app name" >
<intent-filter>
<action android: name= "android.intent.action.MAIN" />
<category android: name= "android.intent.category.LAUNCHER" />
</intent-filter>
</activity>
<receiver android: name= "com.dwin.bootstartdemo.BootBroadcastReceiver" >
<intent-filter>
<action android: name= "android.intent.action.BOOT COMPLETED" />
<category android: name= "android.intent.category.HOME" />
</intent-filter>
</receiver>
</application>
<uses-permission android: name= "android.permission.RECEIVE BOOT COMPLETED" >
</uses-permission>
```

</manifest>

Please note the part highlighted in red. This section registers a receiver with the system. The sub-node intent-filter indicates that it is set to receive the android.intent.action.BOOT_COMPLETED message.

Additionally, the android.permission.RECEIVE_BOOT_COMPLETED permission must be configured.

After completion, compile the apk package and install it on the Android screen. Shut down and restart, and the page displayed by the MainActivity will be displayed. DWIN Android broadcast receiving is operated by the default interface of the Android system, and uses the standard Android API function library. For specific usage methods, please refer to the Android official website API Guides.

(2) Boot to user-selected android interface or application

To achieve boot self-starting is mainly to modify the application program to have the authority of laucher.

Replace the <intent-filter> of the first started activity in the configuration file

AndroidManifest.xml:

```
<?xml version= "1.0" encoding= "utf-8" ?>
```

<manifest xmlns: android= "http://schemas.android.com/apk/res/android"

package= "com.ajie.bootstartdemo"

android: versionCode= "1"

```
android: versionName= "1.0" >
```

<uses-sdk

android: minSdkVersion= "8"

android: targetSdkVersion= "17" />

<application

android: allowBackup= "true"

android: icon= "@drawable/ic launcher"

android: label= "@string/app_name"

android: theme= "@style/AppTheme" >

<activity

```
android: name= "com.dwin.bootstartdemo.MainActivity"
```

android: label= "@string/app_name" >

<intent-filter>

```
<action android: name= "android.intent.action.MAIN" />
```

<category android: name= "android.intent.category.HOME" />

<category android: name= "android.intent.category.DEFAULT" />

<category android: name= "android.intent.category.MONKEY" />

</intent-filter>

</activity>

</application>

</manifest>

After running the program, click on the Home button. A Launcher selection box will pop up. Select user developed APK and click "Always."



6 ADB Installation and Usage

6.1 Installation on PC

Download the platform-tools adb version tool.

User can obtain the latest version of adb from this website: https:

//developer.android.google.cn/studio/releases/platform-tools?hl=zh-cn.

Once downloaded, extract it to the local directory.

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组织 ▼ 包含到库中 ▼	共享 新建文件夹				1≡ ▼	
☆ 收藏夹	名称	修改日期	类型	大小		
▶ 下载	🔲 adb	2023/7/14 星期	应用程序	5,778 KB		
■ 卓面	AdbWinApi.dll	2023/7/14 星期	应用程序扩展	106 KB		
1 最近访问的位置	AdbWinUsbApi.dll	2023/7/14 星期	应用程序扩展	72 KB		
	💷 dmtracedump	2023/7/14 星期	应用程序	247 KB		
	etc1tool	2023/7/14 星期	应用程序	431 KB		
C) WPSMM	🗾 fastboot	2023/7/14 星期	应用程序	1,801 KB		
	💷 hprof-conv	2023/7/14 星期	应用程序	54 KB		
冯 库	libwinpthread-1.dll	2023/7/14 星期	应用程序扩展	237 KB		
📕 视频	📧 make_f2fs	2023/7/14 星期	应用程序	467 KB		
■ 图片	make_f2fs_casefold	2023/7/14 星期	应用程序	467 KB		
🖹 文档	mke2fs.conf	2023/7/14 星期	CONF 文件	2 KB		
👌 音乐	💷 mke2fs	2023/7/14 星期	应用程序	739 KB		
	NOTICE	2023/7/14 星期	文本文档	1,049 KB		
🌉 计算机	source.properties	2023/7/14 星期	PROPERTIES 文件	1 KB		
🏭 系统 (C:)	sqlite3	2023/7/14 星期	应用程序	1,310 KB		
软件 (D:)						
文档 (E:)						
👊 网络						
1 5095-RORAM57A5N						
AUTOBVT-SSOR3D8						

Then, open the Run dialog (Win+R), type "cmd, " and press Enter. Use commands to perform operations. Input "adb version" to check the adb version and confirm if the installation was successful.





6.2 Debugging Using Android Studio

Add Environment Variable:

- Open [My Computer] \rightarrow Click on [Properties] \rightarrow Select [Advanced system settings] \rightarrow Click on [Environment Variables].

- Edit the system variable "Path" and Add the adb installation path after the variable value as shown in the image below:

File Edit View Tools Help		
Control Panel Home Device Manager Remote settings System protection Advanced system settings	System Properties System Properties System Properties Computer Name Hardware Advanced System Protection Premote You must be logged on as an Administrator to make most of these changes. Performance Vasual effects, processor scheduling, memory usage, and vitual memory Usaul effects, processor scheduling, memory usage, and vitual memory Usaul effects, processor scheduling, memory usage, and vitual memory Usaul effects, processor scheduling, memory usage, and vitual memory Usaul effects, processor scheduling, memory usage, and vitual memory Usaul effects, processor scheduling, memory usage, and vitual memory Usaul effects, processor scheduling, memory usage, and vitual memory Settings Statup and Recovery System startup, system failure, and debugging infomation 2 Extings 2 Extings	Environment Variables User variables Variable Variable Variable Value TEMP %USERROFILE%VApoData_Local/Temp TMP %USERROFILE%VApoData_Local/Temp %USERROFILE%VApoData_Lo
See also Action Center Windows Update Performance Information and Tools	OK Cancel Apply Support hours: 7°24 Website: Online support Computer name, domain, and workgroup settings	Edit System Variable

This will enable user to use the adb command for debugging within the Android Studio Terminal.

7 New Firmware

The 32 series' firmware underwent a unified functional upgrade on September 4, 2024, providing a series of SDKs and interfaces that facilitate secondary development for customers. These interfaces cannot be called in old firmware. If you need to update to the new firmware, please contact your sales person for assistance.

There are several ways to check your firmware version: 1. Check the product model label. Products with a production date after September 4, 2024 are equipped with new firmware products; 2. Check the firmware compilation date in the software. The firmware with a compilation date of 20240902 is the new version firmware.

This chapter will introduce the content of the new firmware.

Firmware Update Records				
Firmware Name	Release Date	Content		
Update.img	Before 2024.9.4	Include some simple example such as how to hide the navigation bar		
Update.img	2024.9.4	Include common Android functions such as: example app, GPIO, how to use API etc.		
Update.img	2024.11.3-2024.11.13	Update DWINTEST and resolve the problem of boot animation stuttering		

7.1 SDK

The following development can refer to the DEMO named DWAndroidLibraryDemo. Please contact the salaes or technical support team to obtain it.

7.1.1 Boot Logo

The boot logos are divided into ubootlogo and kernellogo. Generally, they are replaced simultaneously. The image format is BMP. Please note the following two points:

-When replacing and compiling the boot logo in the system source code or replacing it using API interface, the image resolution should not exceed the screen resolution, and it should be controlled within 2M as much as possible.

-When using FWFactoryTool to modify the firmware package to replace the boot logo, the image resolution should not exceed 600*600 pixels, and the quality should be less than 1MB.

```
* @param path Logo path
* @return Return value of interface calling. Refer to DWErrorCode
*/
int setBootLogo (String path);
```

Note: Re-burning firmware or restoring factory settings will not delete the logo. If you need to delete the logo during burning, please use the "erase" function of the burning tool first.

```
/**
 * Delete boot logo
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int deleteBootLogo ();
```

7.1.2 Boot Animation (Multiple pictures)

```
* @param path Boot animation path
* @return Return value of interface calling. Refer to DWErrorCode
*/
int setBootAnimation (String path);
```

7.1.2.1 Create Bootanimation.zip

Bootanimation.zIP contains part0 folder and desc.txt, or also can contain 2 folders as part0, part1, here we only take part0 as example.

here a sheet - h thank - a th	SHITH MALINE	ille intervention of the	ootanimation
名称 ^	修改日期	类型	大小
part0	2024/9/5 11:06	文件夹	
desc.txt	2024/9/5 11:03	文本文档	1 KB

Create a new folder and name it as part0, put the animation pictures in it (.png format), naming pictures with 000.png, 0001.png, 0002.png and so on. Please note that the image resolution should not exceed the screen resolution, and the memory for a single image should be controlled within 2M. If the images are too large or too many, it may cause the startup animation to be unsmoothly or freezed.





Create a new txt document and name it as desic.txt, Manually input the following content. Please note that after the last line, enter a blank line and save the file. Otherwise, the device will not be able to parse it.

```
*desc.txt - 记事本
文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)
1024 600 9
p 0 0 part0
```

First line: 1024 600 9: 1024 and 600 means resolution is 1024*600p, 9 represent display 9 pictures every second;

Second line: pis a fixed starting point, The first number represent repeated times, 0 is infinite playback (if 3, it will play three times); The second 0 represents the interval time/frame rate between the two frames ; The last part0 represents the animation folder.

Add part0 and desc.txt together to the compressed file", compressed file format"zip", compression method select "Storage". After compression is complete, please re-open it and ensure there is no bootanimation folder inside.

添加到压缩包			×
压缩包(A) boota	nimation.zip	bootanii	mation\
压缩格式(F):	zip 🗸	更新方式(U):	添加并替换文件 🛛 🗸
压缩等级(L):	0-仅存储 ~	路径模式	相对路径 ~
压缩方法(M):	~	选项	

7.1.2.2 Delete Bootanimation

Note: Re-burning firmware or restoring factory settings will not delete the boot animation. If you need to delete the bootanimaton during burning, please use the "erase" function of the burning tool first.

/**

^{*} Delete bootanimation (multiple pictures)



```
*
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int deleteBootAnimation ();
```

7.1.3 Startup Video

Boot Video Format: Change the file extension of the video to .ts. The video could be approximately ten seconds long.

If both a boot animation (multiple images) and a start-up video are present, the system will preferentially display the boot video.

```
* @param path Startup video path
* @return Return value of interface calling. Refer to DWErrorCode
*/
int setBootVideo (String path);
```

Delete the startup video as follows:

```
* Delete the startup video
*
* @return Return value of interface calling. Refer to DWErrorCode
*/
int deleteBootVideo ();
```

7.1.4 Monitoring and Reception of Boot Broadcast

Regarding boot monitoring, the broadcast is used to monitor self-starting apps.



```
Intent i = new Intent(context, MainActivity.class);
i.addFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
context.startActivity(i);
}
```

Please refer to the following code for broadcast settings and permission configurations:

```
/lainActivity.java 🛛 🏭 AndroidManifest.xml 🔧 💿 SelfStartReceiver.java 🖄
   <?xml version="1.0" encoding="utf-8"?>
  d<manifest xmlns:android="http://schemas.android.com/apk/res/android"</pre>
       package="com.dwin.selfstartdemo">
       <uses-permission android:name="android.permission.RECEIVE_BOOT_COMPLETED" />
        <uses-permission android:name="android.permission.SYSTEM_ALERT_WINDOW"/>
        <application
            android:allowBackup="true"
3
            android:icon="@mipmap/ic_launcher"
            android:label="@string/app_name"
            android:roundIcon="@mipmap/ic_launcher_round"
2
            android:supportsRtl="true"
            android:theme="@style/Theme.SelfStartDemo">
            <activity android:name=".MainActivity">
                <intent-filter>
                    <action android:name="android.intent.action.MAIN" />
                    <category android:name="android.intent.category.LAUNCHER" />
                </intent-filter>
            </activity>
            <receiver
                android:name=".SelfStartReceiver"
                android:enabled="true"
                android:exported="true">
                <intent-filter android:priority="100">
                    <action android:name="android.intent.action.BOOT_COMPLETED" />
                </intent-filter>
            </receiver>
        </application>
```

</manifest>

}



7.1.5 Top Status Bar

Can display or hide the top status bar, read the status of the top status bar.

```
/**
 * Display the top status bar
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int showStatusBar ();
/**
 * Hide the top status bar
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int hideStatusBar ();
/**
 * Read the status of the top status bar, display or hide
 * @return Return value of interface calling.1: display, 0: hide
 */
int isStatusBarShow ();
```

7.1.6 Bottom Navigation Bar

Allows for showing, hiding and status checking of bottom navigation bar and the integrated screenshot button.

/**
 * Display bottom navigation bar
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
 int showNavigationBar ();
 /**
 * Hide bottom navigation bar
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
 int hideNavigationBar ();
 /**
 * read the status of the bottom navigation bar, display or hide



```
*
* @return Return value of interface calling.1: display, 0: hide
*/
int isNavigationBarShow ();
/**
* Display the screenshot button in the bottom navigation bar
*
* @return Return value of interface calling. Refer to DWErrorCode
*/
int showScreenShotButton ();
/**
\ast Hide the screenshot button in the bottom navigation bar
* @return Return value of interface calling. Refer to DWErrorCode
/**
int hideScreenShotButton ();
/**
 * Read the status of the bottom navigation bar, display or hide
 *
 * @return Return value of interface calling.1: display, 0: hide
 */
    int isScreenShotShow ();
```

7.1.7 Top Dropdown Box

Display or hide the top dropdown box, read the status of the top dropdown box.

```
/**
 * Display the top dropdown box
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int showDropDownMenu ();
/**
 * Hide the top dropdown box
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int hideDropDownMenu ();
/**
 * Read the status of top dropdown box, display or hide
```



```
*
 * @return Return value of interface calling. 1: display, 0: hide
 */
int isDropDownMenuShow ();
```

7.1.8 Install APK Silently



7.1.9 Read External Storage Path

```
/**
 * Read external storage path
 *
 * @return Return path collection
 */
ArrayList<StorageBean> readExternalStoragePath ();
```

7.1.10 Set System Language

```
/**
 * Set system language
 *
 * @param locale Language format Locale.SIMPLIFIED_CHINESE, Locale.ENGLISH etc.
 * @return Return value of interface calling. Refer to DWErrorCode
 */
 int setLanguage (Locale locale);
```

7.1.11 Set System Time

```
/**
 * Set system time
 *
 * @param hour Hour
 * @param minute Minute
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int setTime (int hour, int minute);
/**
 * Set system time
 * @param year Year
 * @param month Month
 * @param day Day
 * @param hour Hour
 * @param minute Minute
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int setTime (int year, int month, int day, int hour, int minute);
/**
 * Enable automatic synchronization of time
 *
 * @param auto 1: Automatically synchronizing time, 0: Not automatically synchronizing time
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int setTimeAuto (int auto);
```

7.1.12 Set System Date

```
/**
 * Set system date
 *
 * @param year Year
 * @param month Month
 * @param day Day
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int setDate (int year, int month, int day);
```

7.1.13 Time Zone and Time Setting

Set time zone, enable automatic time zone synchronization, check if automatic synchronization function is enabled, set 12 or 24-hour clock.

```
/**
 * Set time zone
 *
 * @param timeZone Time Zone Name, such as Asia/Shanghai
 */
void setTimeZone (String timeZone);
/**
 * Enable automatic time zone synchronization
 *
 * @param auto 1: Automatically synchronize time zones, 0: Not automatically synchronize time zones
 * @return Return value of interface calling. Refer to DWErrorCode
 */
   int setTimeZoneAuto (int auto);
/**
 * Check if automatic time zone synchronization is enabled
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int checkTimeZoneAuto ();
/**
 * Set "12" or "24" hour clock
 *
 * @param value "12" or "24"
* @return Return value of interface calling. Refer to DWErrorCode
*/
int setTime_12_24 (String value);
```

7.1.14 Set Ethernet MATIC Network Parameters and DHCP

```
/**
 * Set ethernet MATIC network parameters
 *
 * @param address IP
 * @param mask Subnet mask code
 * @param gateway Gateway
 * @param dns1 DNS1
```

```
* @param dns2 DNS2
```

```
* @return Return value of interface calling. Refer to DWErrorCode
*/
int setEthernetStaticConfig (String address, String mask, String gateway, String dns1, String dns2);
/**
 * Set Ethernet DHCP
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
int setEthernetDynamicConfig ();
```

7.1.15 Set Wi-Fi STATIC Network Parameters and DHCP

```
/**
 * Set WiFi STATIC parameters
*
* @param address IP
* @param mask Mask
 * @param gateway Gateway
* @param dns1 DNS1
* @param dns2 DNS2
 * @return Return value of interface calling. Refer to DWErrorCode
*/
int setWiFiStaticConfig (String address, String mask, String gateway, String dns1, String dns2);
/**
* Set WiFi DHCP
 *
* @return Return value of interface calling. Refer to DWErrorCode
*/
int setWiFiDynamicConfig ();
```

7.1.16 Get IP, Gateway, DNS, Network Mask

```
/**
 * Get IP
 *
 * @return Return to IP collection
 */
ArrayList<String> getNetWorkIP ();
/**
 * Get gateway
 *
```

```
* @return Return to gateway collection
*/
ArrayList<String> getNetWorkGateway ();
/**
 * Get DNS
 *
 * @return Return to DNScollection
 */
ArrayList<String> getNetWorkDns ();
/**
 * Get Network Mask
 *
 * @return Return to Network Mask collection
 */
ArrayList<String> getNetWorkMask ();
```

7.1.17 Reboot System

```
/**
 * Reboot System
 *
 * @return Return value of interface calling. Refer to DWErrorCode
 */
 int rebootSystem ();
```

7.1.18 Return Value of Interface Calling

Interface calling return value reference: DWErrorCode, only for Android SDK.

```
/**
 * Interface calling return code
 */
public class DWErrorCode {
 /**
 * Succeed
 */
public final static int DW_COMMON_SUCCESS = 0;
 /**
 * unknown error
 */
public final static int DW_COMMON_ERROR_UNKNOUN = -1;
```



```
public final static int DW_COMMON_ERROR_SDK_NOT_SUPPORT = -2;
public final static int DW_COMMON_ERROR_SET_SETTINGS_GLOBAL = -3;
public final static int DW_COMMON_ERROR_GET_SETTINGS_GLOBAL = -4;
public final static int DW_COMMON_ERROR_SET_SETTINGS_SYSTEM = -5;
public final static int DW_COMMON_ERROR_GET_SETTINGS_SYSTEM = -6;
public final static int DW_COMMON_ERROR_PATH_INVALID = -7;
public final static int DW_COMMON_ERROR_PATH_NOT_EXIST = -8;
public final static int DW_COMMON_ERROR_COPY_FILE = -9;
public final static int DW_COMMON_ERROR_DELETE_FILE = -10;
```



```
public final static int DW_BOOT_LOGO_ERROR_NOT_BMP_FILE = -100;
public final static int DW_BOOT_ANIMATION_ERROR_NOT_ZIP_OR_TS_FILE = -101;
public final static int DW_INSTALL_APP_ERROR_NOT_APK_FILE = -200;
public final static int DW_INSTALL_APP_ERROR = -201;
public final static int DW_EXTERNAL_STORAGE_READ_ERROR = -300;
public final static int DW_LANGUAGE_SET_ERROR = -400;
public final static int DW_TIME_OR_DATE_SET_ERROR = -500;
public final static int DW_ETHERNET_STATIC_SET_ERROR = -600;
* Failed to configure Ethernet DHCP network
public final static int DW_ETHERNET_DYNAMIC_SET_ERROR = -601;
```

DWIN



7.2 SerialPort

Serial port calling method: SerialManage.getInstance ().xxx, such as SerialManage.getInstance ().init

7.2.1 Serial Port Initialization

```
/**
 *Serial port initialization
 *
 * @param serialInter Serial callback
 */
 public void init (SerialInter serialInter)
```

7.2.2 Open Serial Port

/**	
* Open serial port	
*	
<pre>* @param devicesPath</pre>	Serial port address
<pre>* @param isReadLoop</pre>	Whether to continuously monitor the data returned by the serial port
* @param baudrate	Baud-rate
* @param dataBits	Data Bits
* @param stopBits	Stop Bits
* @param parity	Parity
<pre>* @param readTimePeriod</pre>	ReadTimePeriod
* @return	Open successfully or not
*/	



public void open (String devicesPath, boolean isReadLoop, int baudrate, int dataBits, int stopBits, int parity, long readTimePeriod)

7.2.3 Send Serial Port Data



7.2.4 Close Serial Port

```
/**
 * Close serial port
 */
  public void close ()
```

7.2.5 Release Resources

```
/**
 * Release resources
 */
public void release ()
```

7.2.6 Obtain Supported Serial Ports

```
/**
 * Obtain supported serial ports
 *
 * @return Return to serial port collection
 */
public String[] getDriverList ()
```

7.2.7 Serial callback

```
/**
 * Serial callback
 */
public interface SerialInter {
 /**
 * Connection result callback
```



```
* @param path Serial port address ( (when multiple serial ports need to be processed uniformly, addresses can be used
to distinguish them)
 * @param isSuccess Connection successful or not
 */
void connectMsg (String path,boolean isSuccess);
 /**
 * Loop read, callback the data read
 * @param path Serial port address ( (when multiple serial ports need to be processed uniformly, addresses can be used
to distinguish them)
 * @param bytes Read data
 * @param size Data Length
 */
void readData (String path, byte[] bytes, int size);
```

7.3 GPIO

Gpio interface calling method: Gpio.xxxx, such as Gpio.initGpio

7.3.1 Initialize GPIO

```
/**
 * Initialize GPIO
 *
 * @param gpioArr GPIO port that needs to be configured, just a numerical number is enough
 * @param value 0:low, 1:high
 * @param direction In:input, out:output
 * @param context Above and follow context
 * @param gpioInitCallBack Initialize callback interface
 */
 public static void initGpio (int[] gpioArr, int value, String direction, Context context, GpioInitCallBack
gpioInitCallBack)
```

7.3.2 Set Value of GPIO

```
/**
 * Set value of GPIO
 *
 * @param gpio GPIO port, such as gpio100, value is 100
 * @param value Set the voltage level, 0: low, 1: high
 * @return Return value, 0: success, <0:fail
 */
public static native int setGpioValue (int gpio, int value);</pre>
```


7.3.3 Set GPIO Direction

```
/**
 * Set GPIO direction
 *
 * @param gpio GPIO port, such as gpio100, value is 100
 * @param direction Set gpiodirection, 0:in; 1:out
 * @return Return value, 0: success, <0:fail
 */
private static native int setGpioDirection (int gpio, int direction);</pre>
```

7.3.4 Read GPIO Direction

```
/**
 * Read GPIO directio
 *
 * @param gpio GPIO port, such as gpio100, value is 100
 * @return Return value GPIO direction (in/out)
 */
private static native int getGpioDirections (int gpio);
```

7.3.5 Read GPIO Value

```
/**
 * Read GPIO value
 *
 * @param gpio GPIO port, such as gpio100, value is 100
 * @return Return value
 */
public static native int getGpioValue (int gpio);
```

7.3.6 Initialization CallBack

```
public interface GpioInitCallBack {
    /**
    * Initialization callBack method
    *
    * @param success Initialization succeed
    * @param gpio Collection of successfully initialized GPIO ports
    */
    void initState (boolean success, List<Integer> gpio);
}
```