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目录 Contents

1　概述 Overview

媒体中心是一个集内部存储、SD 卡、U 盘、移动硬盘、Samba 存储、NFS 存储、DLNA 服务 UPNP 等设备的扫描发现，文件浏览，视频播放，音乐播放，图片浏览，APK 安装于一体的 Box TV 应用。该应用适配 RK 系列芯片平台，支持 Android 7.0 及以上版本的系统，适配 [size:1280x720　density:160]， [size:1280x720　density:213]， [size:1920x1080　density:213]， [size:1920x1080 density:320]分辨率下的横屏显示。

Media center is a Box TV application that integrates internal storage, SD card, USB flash drive, mobile hard disk, Samba storage, NFS storage, DLNA service UPNP and other devices, including file browsing, video playing, music playing, picture browsing and APK installation. This application is adapt to RK series chip platform, supports Android7.0 and above system, supports horizontal screen display under resolution of [size:1280x720　density:160], [size:1280x720　density:213], [size:1920x1080　density:213], [size:1920x1080 density:320].

说明：不平台对应的源码不同，源码请通过 redmine 联系 fae 申请获取。

Note: the corresponding source code for different platform is different, please contact FAE through redmine to apply for the source code.

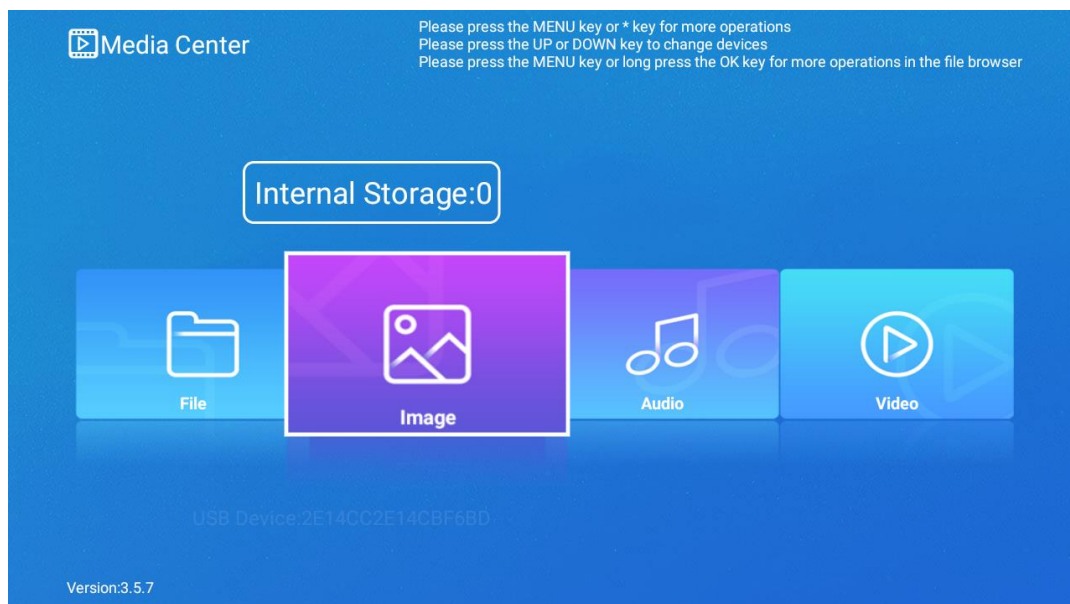## 1.1　主界面介绍及基本操作说明 Home Screen Introduction and Basic Operation Instruction

Figure 1 媒体中心主界面 Media Center Home Screen

媒体中心主页面，显示包含本地存储设备（内部存储，SD 卡，U 盘，移动硬盘），用户添加的 Samba、NFS 以及应用在局域网下扫描到的网络 DLNA UPNP 的设备列表。各个设备中包含的的媒体类型有文件，视频，音乐，图片以及其他。

Media Center home screen displays file lists of local storage device(internal storage, SD Card, U Disk and Mobile Hard Disk), Samba and NFS added by users, and network DLNA UPNP devices scanned by the application under local area network. Each kind of device includes media file type such as file, video, music, picture and others.

在媒体中心主页面的操作说明如下（同时支持鼠标上下左右拖动操作）：

Operation instruction of Media Center home screen is shown below(mouse up and down left and right drag operations are also supported)

1) 按上下键可以切换当前选中设备。

   Press up and down button to switch current selected device.

2) 按左右键切换当前选中设备的媒体类型，按确定键可以进入对应媒体类型页面

   Press left and right button to switch media type of current selected device, press confirm button to enter corresponding media type page.

3) 按菜单键，则弹出如 Figure 2 所示对话框，它用于添加 NFS 设备和 Samba 设备，用于刷新网络（DLNA）设备和所有设备，以及 DLNA 相关设置，如 DLNA 显示名称、DLNA 使能等。

   Press menu button, the dialog box like Figure 2 pops up, it is used to add NFS devices and Samba devices, refresh network (DLNA) devices and all devices, and configure DLNA related Settings such as DLNA display name, DLNA enable, and so on.
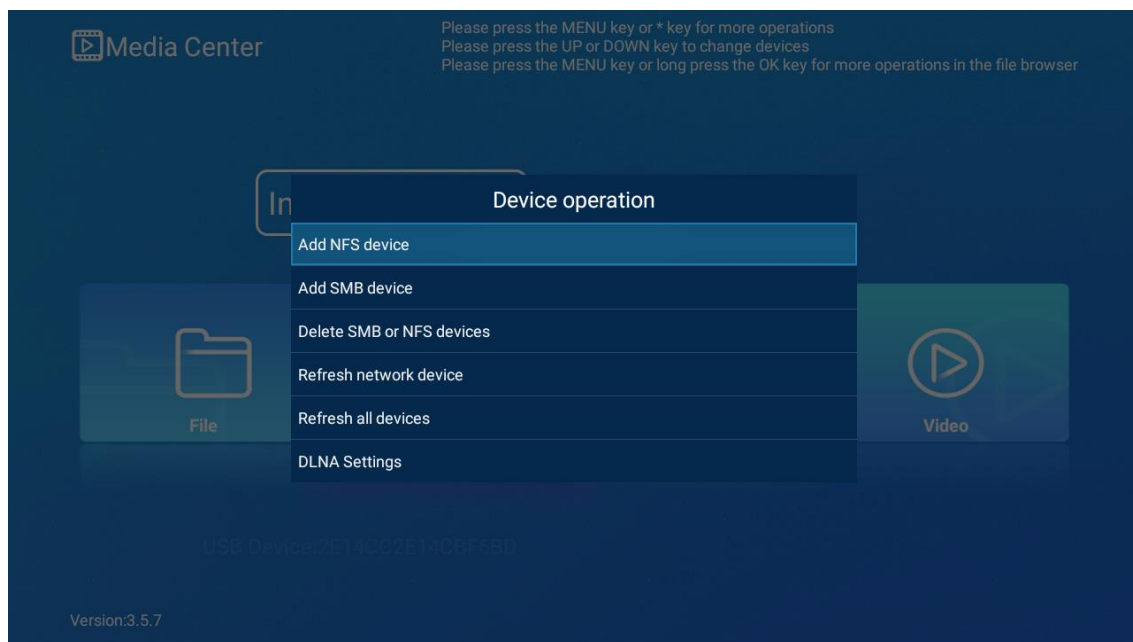

Figure 2 媒体中心主界面菜单栏 Media Center Home Screen Menu Bar

1.2 系统相关属性配置说明 System Association Attribute Configuration Instruction

根据不同客户的不同需求，媒体中心对系统中的以下两个属性进行判断，来处理开机自启的 DLNA 服务，只有当 ro.config.low_ram＝false，并且 persist.sys.dlna.enable＝true 时系统启动后才会

自启 DLNA 服务。

According to customers' different requirements, Media Center application judge according to below two attributes of the system, to handle start on boot DLAN service. Only when ro.config.low_ram = true and persist.sys.dlna.enable = true, then DLNA service will be automatically enabled after the system starts up.

1) ro.config.low_ram:低内存属性，当设置为 true 时，开机后媒体中心无法自启 DLNA 功能，需要手动进入菜单的 DLNA Setting 选项中，将 DLNA 功能使能。

   ro.config.low_ram: low memory attribute, when it's set as true, DLNA function can not be enabled automatically after starting up. You need to enter DLNA Setting option in Menu Bar to enable DLNA function manually.

2) persist.sys.dlna.enable:开机是否自启媒体中心 DLNA 服务，默认为 false。

   persist.sys.dlna.enable: enable DLNA service in media center on boot or not, the default value is false.

2 多媒体模块使用说明 Multimedia Module Instruction

媒体中心自动扫描设备文件并进行归类，对视频、图片、音频文件分类后可在媒体中心主界面对应的 Video、Image、Audio 打开，选择从 File 目录进入则保持设备文件结构不变。同时媒体中心还涵盖网络设备管理、DLNA 等强大功能，以下将从 6 个方面对其展开详细介绍。

Media center scans device files automatically and classifies them. You can open video files, pictures and audio files in the corresponding Video, Image, Audio folders of the Media Center home screen. If you choose to enter File directory, then file structure of the device will keep the same. At the same time, Media Center covers strong function like network device management, DLNA and so on. The following is a detailed introduction from six aspects.

2.1 视频播放模块Video Playing Module

Figure 3 视频播放界面 Video Playing Interface

从文件浏览页面或视频浏览页面选中一个视频文件，按下确定键则进入 Figure 3 所示的视频播放页面，默认全屏、循环、立体声播放。

Select a video file from File browsing page or Video browsing page, press the confirm button, it will enter video playing interface shown as Figure 3. Full screen, loop and stereo playing mode is default.

在该页面下可进行以下操作，支持鼠标左键单击播放/暂停功能：

You can do below operations in this UI(support mouse single click to play or pause)

1) 按确定键，视频将暂停/开始播放；

Press confirm button, the video will pause/play.

2) 按一下右键/左键，视频播放位置将前进/后退 10s；

Press right/left button, the video playing will skip forward/back 10 seconds.

3) 长按右键/左键对视频进行快进/快退操作；

Long press the right/left button to skip fast-forward/fast-back.

4) 按菜单键将从底部弹出如 Figure 4 所示操作菜单（只有系统开启 PIP Feature 才会显示 PIP 操作项）

Press menu button, the operation menu like Figure 4 will pop up at the bottom of the interface(only when the system enables PIP Feature, then the PIP option is shown)
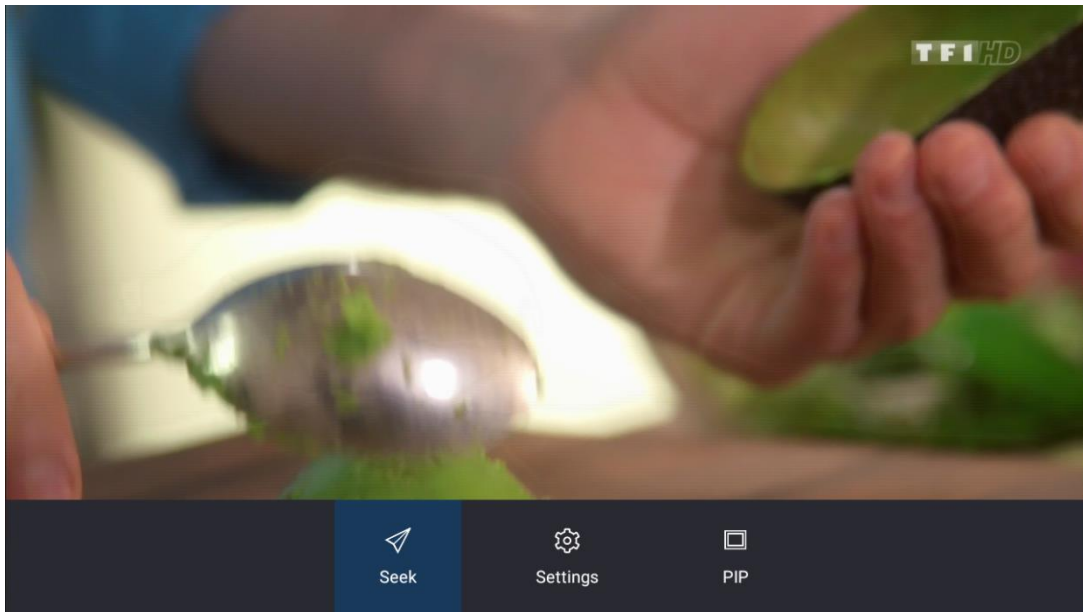
Figure 4 视频功能菜单界面 Video Function Menu Interface

Seek 选项，支持用户进行精确定位浏览视频。具体如 Figure 5 所示。

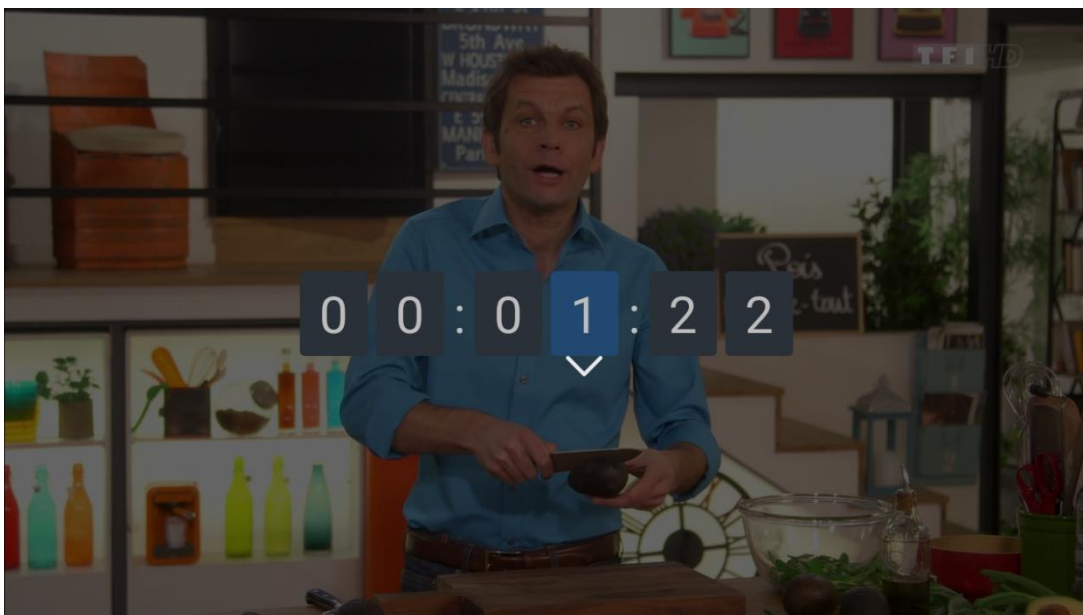Seek option, it will allow users to do accurate positioning to browse the video. Shown as Figure 5.

Figure 5 视频 Seek 选项功能 Video Seek Option Function

Setting 选项包含视频界面缩放、声道选择、播放模式、字幕选择、音轨选择、3D 模式等功能选项。

Setting option includes function options like interface scaling, channel selection, play mode, subtitle selection, audio track selection, 3D mode and so on.
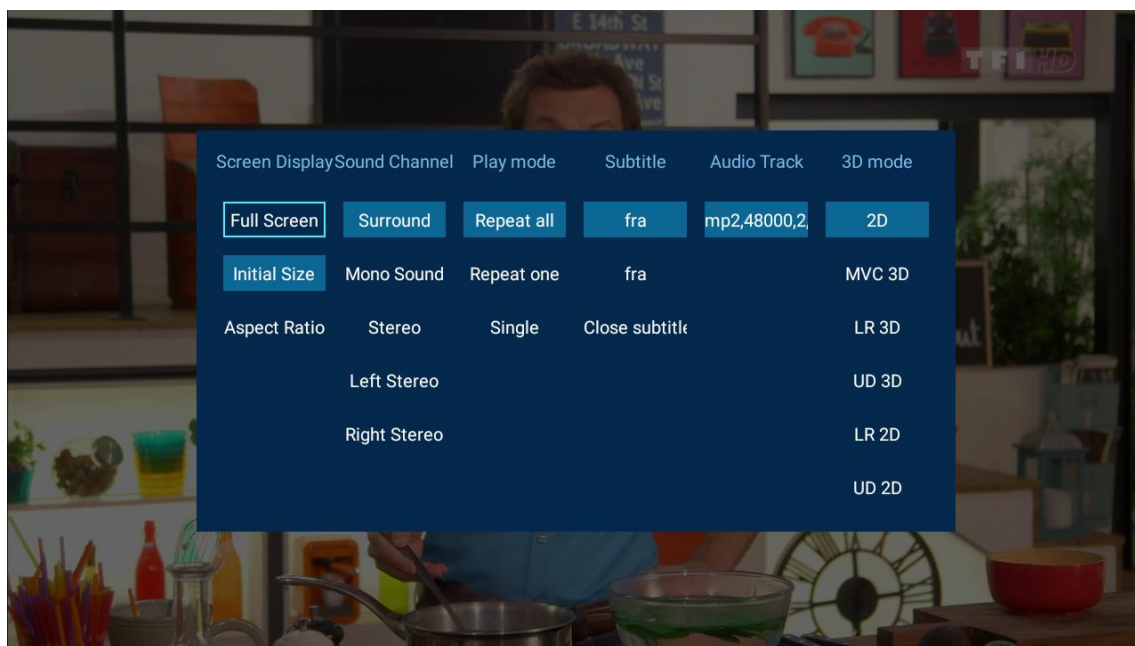
Figure 6 视频 Setting 选项功能 Video Setting Option Function

PIP 选项，视频将进入画中画模式播放，如 Figure 7 所示。此时，用户可以退出媒体中心，执行其他的应用。长按 Home 键，在当前页面下呈现最近任务栏，并且画中画窗口将调整到屏幕中间，如 Figure 8 所示，此时用户可以还原画中画为全屏播放，关闭画中画，暂停画中画播放。

PIP option: the video will be played under picture in picture mode, shown as Figure 7. At the moment, users can quit Media Center, run the other applications. Long press home button, lately taskbar will appear at the bottom of the current page, and PIP window is adjusted to the screen center, shown as Figure 8. At the moment, uses can undo PIP to full screen playing, close PIP or pause PIP.
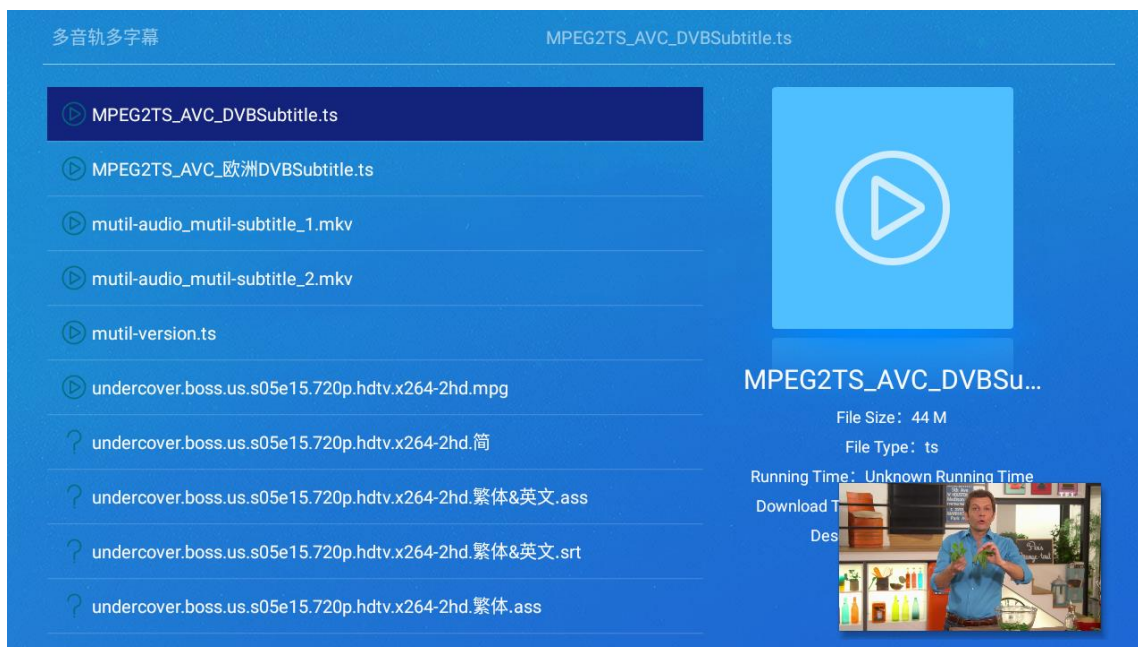

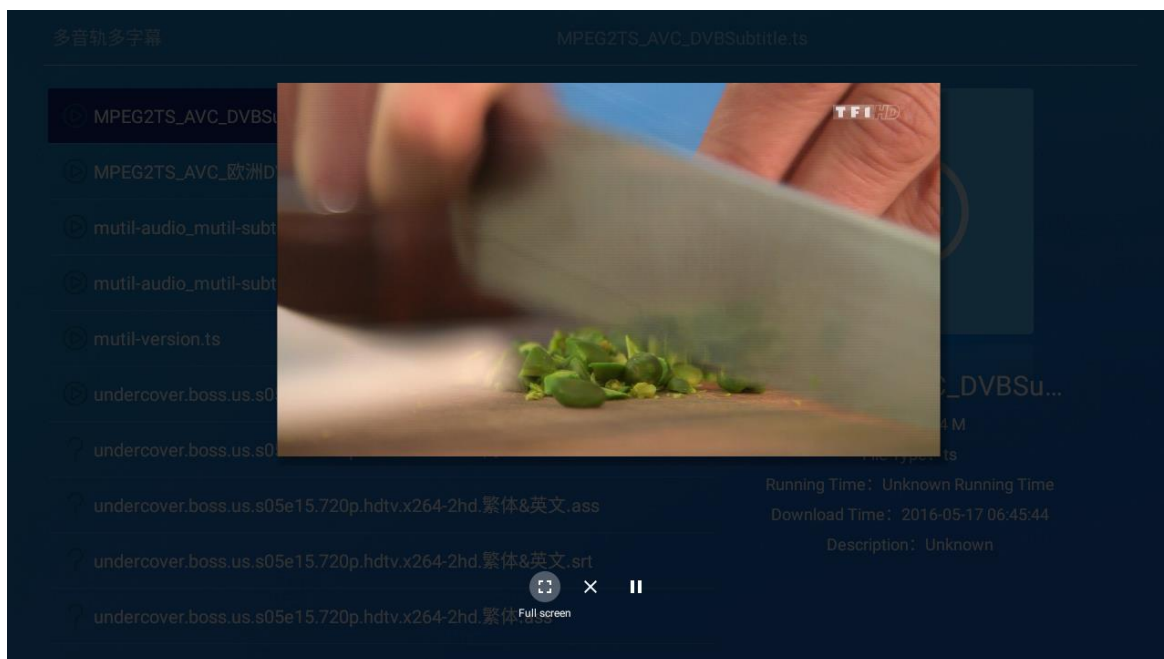Figure 7 视频 PIP 选项功能 Video PIP Option Function

Figure 8 视频 PIP 控制界面 Video PIP Control Interface

2.2 DLNA 模块 DLNA Module

RK DLNA 是多屏组件之一，主要需要实现了 DLNA 定义的 Digital Media Server（DMS）、Digital Media Player（DMP）、Digital Media Renderer（DMR）三种设备类型，各设备类型的具体功能如下：

RK DLNA is one of the multi-screen components, which mainly needs to realize three device types defined by DLNA: Digital Media Server (DMS), Digital Media Player (DMP) and Digital Media Renderer (DMR). The detailed function for each device type is shown below:

1）DMS：

数字媒体服务器，主要实现媒体资源的存储和共享，可以将存储的媒体内容提供给联网的 DMP（数字媒体播放器）和 DMR（数字媒体渲染器）访问。

Digital Media Server, it is mainly used to implement storage and sharing of media resource, it can provide stored media contents to online DMP and DMR for access.

2）DMP：

数字媒体播放器，主要实现查找、获取 DMS 或 M-DMS 发送的内容，并提供播放、渲染、播控功能。

Digital Media Player, it's mainly used to implement finding and getting contents sent by DMS or M-DMS, and providing function like playing, rendering and broadcast controlling.

3）DMR：

数字媒体渲染器，在通过其他设备配置后，播放从 DMS 或 M-DMS 播放的内容。DMR 和 DMP 的区别在于 DMR 需要通过 DMC（Digital Media Controller）控制才能获取 DMS 发送的内容。

Digital Media Renderer, it can play contents from DMS or M-DMS after it's configured by other devices. The difference of DMR and DMP is that DMR can get contents sent by DMS only when it's controlled by DMC(Digital Media Controller).

为保证兼容和避免与第三方 DLNA 应用干扰，目前 RK DLNA 组件独立集成在 RK 媒体中心应用中供产品快速集成。用户可以通过媒体中心的 DLNA 中将其功能打开，或通过打开 DLNA 向导应用使能 DLNA 服务。在 Service Status 为 Opened 状态下时，用户可通过手机、电脑 DLNA 软件进行投屏等一系列操作。如果 DLNA 功能无法使用，请参考投屏指南进行操作。具体如下图所示。

To guarantee compatibility and avoid interference with the third party DLNA application, now RK DLAN component is integrated in RK Media Center application for product fast integration. Users can enable DLNA function through Media Center application, or open DLNA guidance application to enable DLNA service. When Service Status is set as Opened, users can use mobile phone or computer's DLNA application to cast screen and make a series of operations. If DLNA function is unavailable, please refer to cast screen guide shown below:

Figure 9

2.3 音乐播放模块 Music Playing Module

Figure 10 音乐播放界面 Music Playing Interface

从文件浏览页面或音乐浏览页面选中一个音乐文件，按下确定键则进入 Figure 10 所示的音乐播放页面，默认循环播放。左侧的是音乐专辑图片，文件名称，艺术家，专辑名称，右侧是播放列表，底部是播放控制器和歌词显示。在该页面下：

Select a music file from File browsing page or Music browsing page, press confirm button to enter a music playing page shown like Figure 10, the music is set on loop by default. The left side shows music album picture, file name, artist and album name. the right side shows playlist, the bottom shows playing controller and lyrics. On this page:

1) 按上下键切换当前选中音乐，在选中框未消失时按确定键则播放当前选中音乐，否则暂停/继续当前音乐播放；

    Press up and down button to switch current selected music. Before checked box disappears, press confirm button to play selected music, otherwise it will pause/continue current music.

2) 按左键或右键可以调整当前音乐播放进度；

    Press left button or right button to adjust playing progress of current music.

3) 按菜单键从底部弹出如 Figure 11 所示页面，Play Mode 和 Image 选项，可分别用于设置音乐的播放模式，以及背景配图。

    Press menu button to pop up a page like Figure 11 at the bottom of the screen. The options of Play Mode and Image can be used to set the playing Mode of music and the background picture.
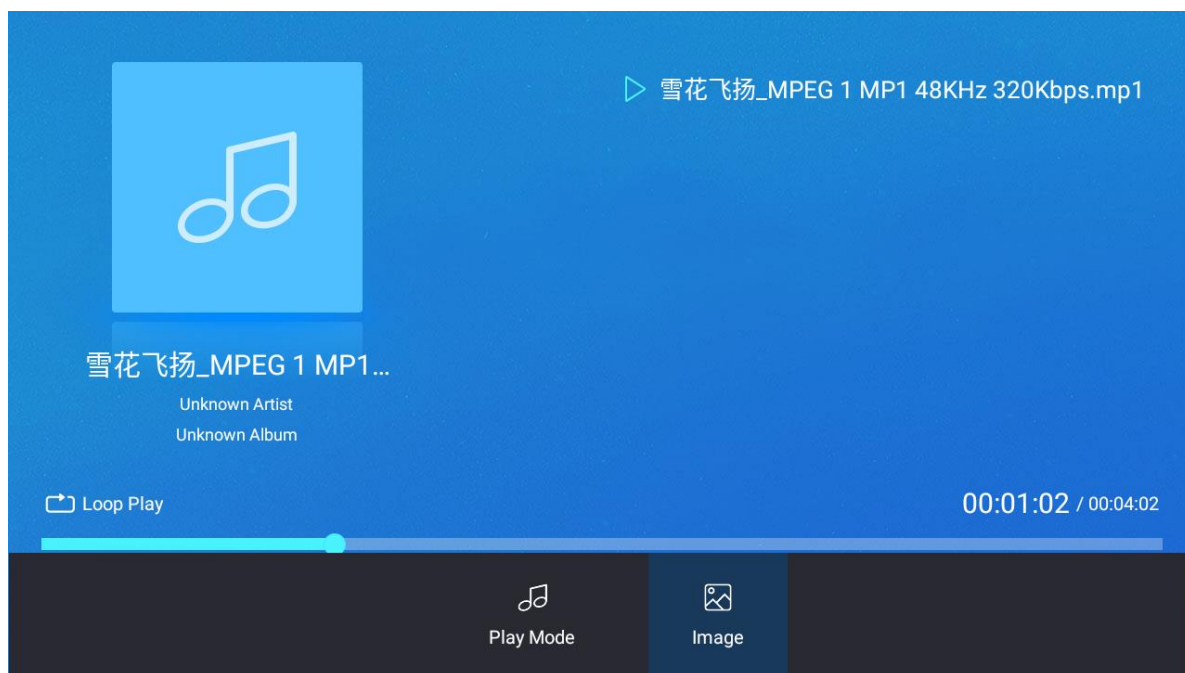
Figure 11 音乐播放菜单 Music Playing Menu

2.4 图片播放模块(支持 4K 显示)Picture Play Mode(Support 4K Display)

从文件浏览页面或者图片浏览页面选中一个图片文件，按确定键就进入 Figure 12 所示的图片播放页面。 默认情况下图片会自动播放，播放间隔为 5s，切换效果为淡入淡出，背景音乐开启。在该页面下：

Select a picture file from File browsing page or Picture browsing page, press confirm button to enter picture playing page shown like Figure 12. By default, the picture will play automatically, with an interval of 5s. The switching effect is fade in and fade out, and the background music is turned on. On this page:
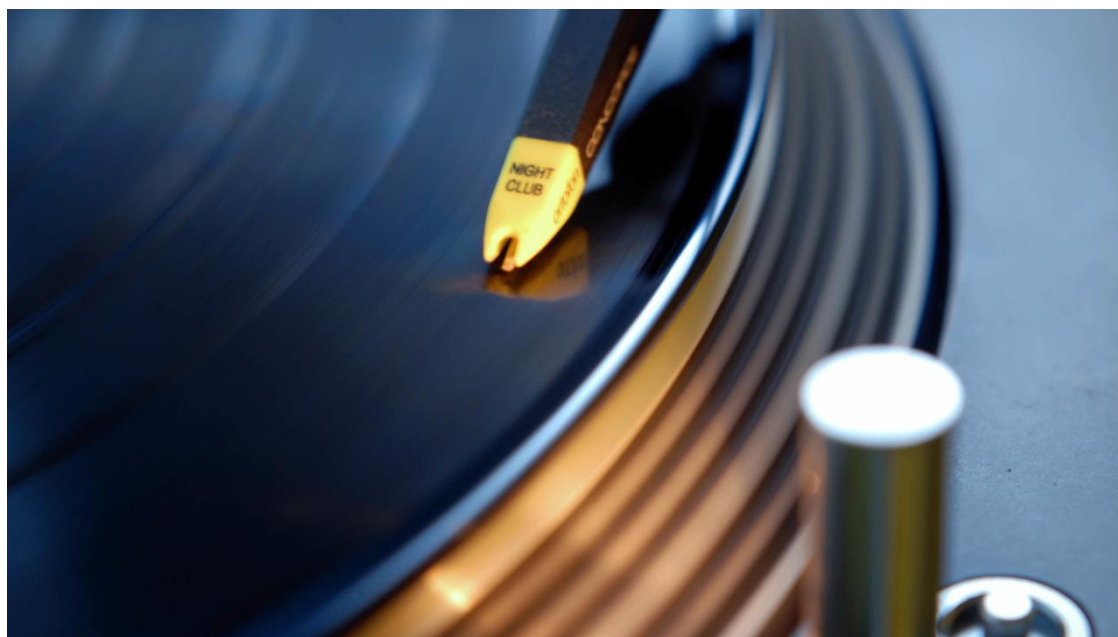
Figure 12 图片播放界面 Picture Playing Interface

1) 按下确定键将开启/关闭图片的自动播放；

   Press confirm button will enable/disable picture's auto play function.

2) 按下菜单键，底部弹出图片菜单选项，如 Figure 13 所示。

   Press menu button, it will pop up the picture's menu options at the bottom of the screen, shown as Figure 13.
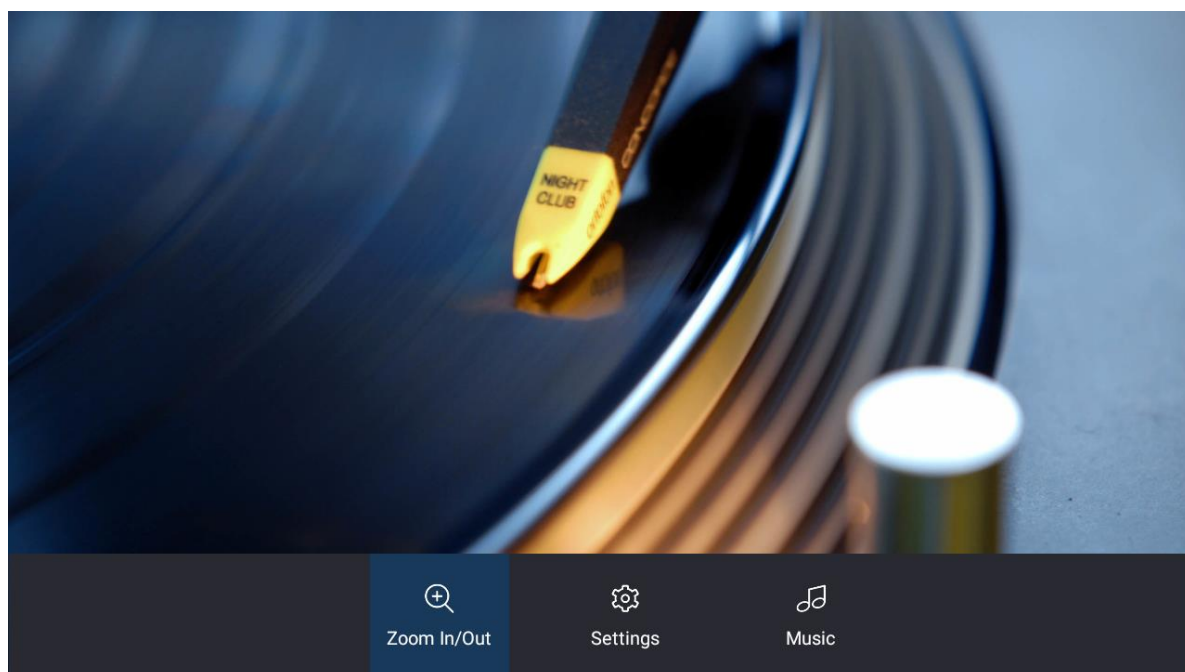

Figure 13 图片播放菜单界面 Picture Playing Menu Interface

选中 Zoom In/Out，将进入图片缩放控制界面。

Select Zoon In/Out option, it will enter picture zoom control interface.

选中 Settings，将弹出就 Figure 14 所示对话框，它用于设置图片的切换模式，图片切换的时间间隔，图片详细信息的开启/关闭。

Select Settings option, it will pop up dialog box shown as Figure 14, it's used to configure the picture's switch mode, switch time intervals, and enable/disable picture detailed information.

选中 Music，将弹出提示对话框，它用于设置图片播放时候背景音乐的开启和关闭。

Select Music option, it will pop up prompt dialog, it's used to enable and disable background music during picture playing.
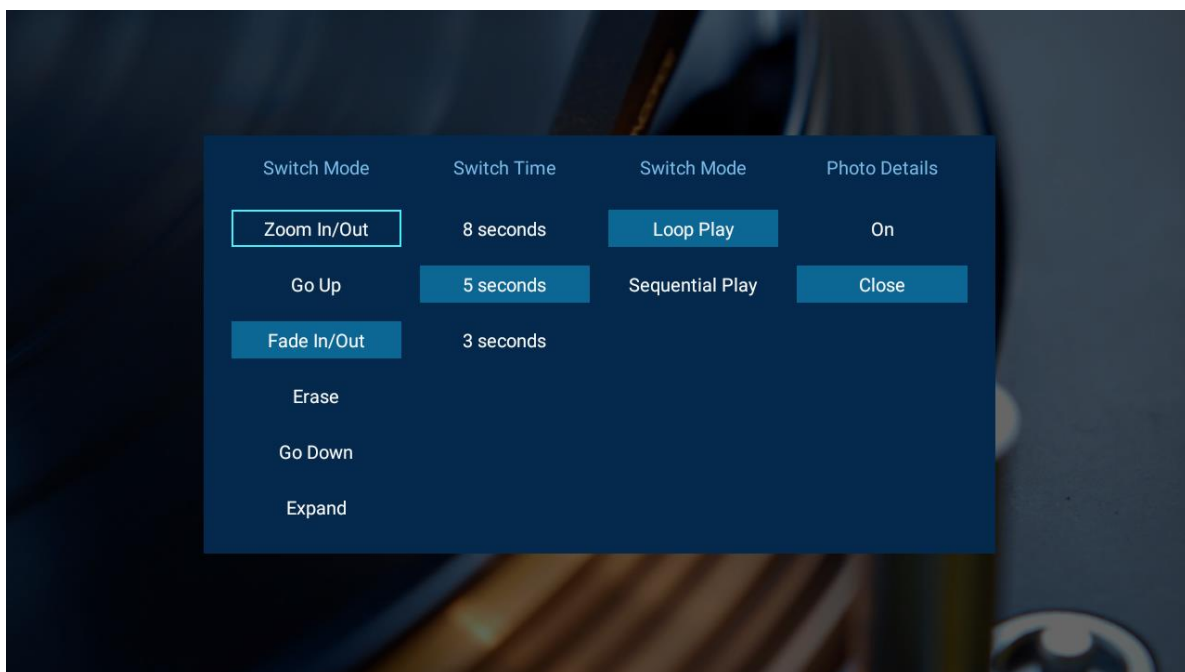

Figure 14 图片播放 Setting 对话框 Picture Playing Setting Dialog Box

备注：目前媒体中心在安卓 7.0 及以上 SDK 平台上支持 4K 图片显示。通过安装媒体中心 3.5.4 及以上版本，在外接 4K 显示器情况下，即可支持 4K 图片的高清显示。

Note: currently Media Center supports 4K picture files' display in Android7.0 and above SDK platform. You can install Media Center of version 3.5.4 or above, and connect a 4k displayer to support 4K picture's high definition display.
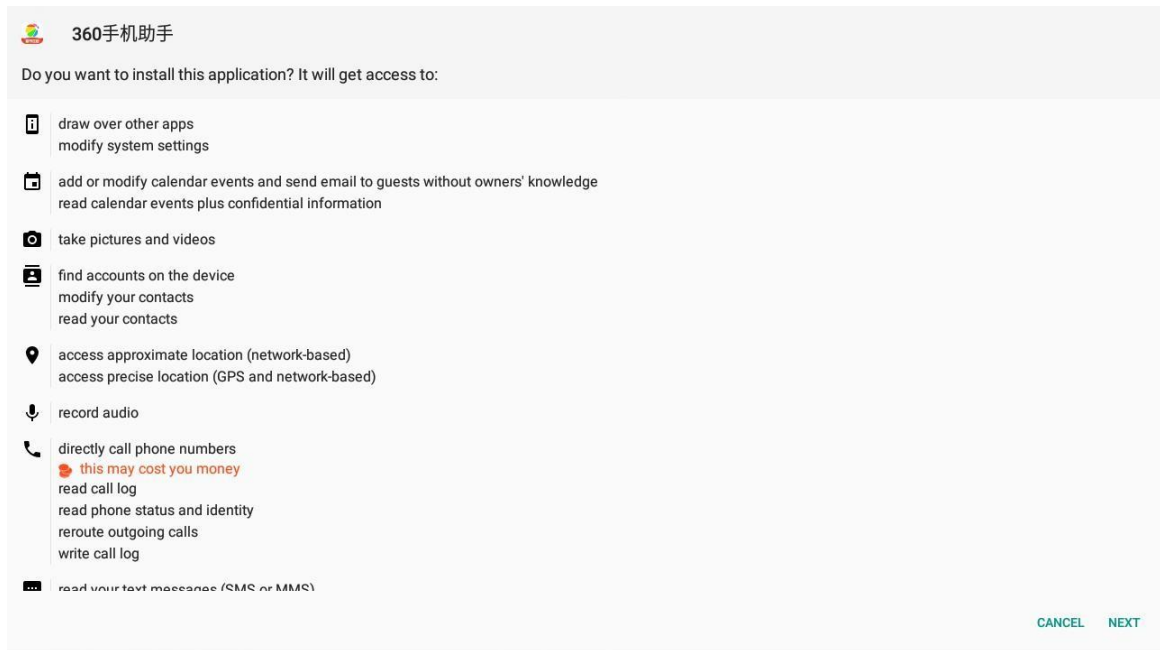
2.5 APK 安装模块 APK Installation Module

Figure 15 apk 安装界面 APK Installation Interface

启动媒体中心，从文件浏览页面选中一个 APK 文件，按确定键将启动如 Figure 15 所示的 APK 安装页面。如果遇到安装失败的情况，请确认应用权限是否打开。

Start Media Center, select a APK file from File browsing page, press confirm button to start the APK installation page shown as Figure 15. If the APK installation is failed, please make sure whether its application permission is opened.

2.6 设备及文件管理模块 Device and File Management Module

媒体中心支持本地存储设备（内部存储，SD 卡，U 盘，移动硬盘），Samba、NFS 以及应用在局域网下扫描到的网络 DLNA UPNP 设备及文件管理，其中 Samba、NFS 需用户进行手动添加挂载。以挂载 samba 为例，如 Figure 16 所示。

Media center supports management of local storage devices(internal storage, SD Card, U Disk and Mobile Hard Disk), Samba, NFS, network DLNA UPNP devices and files scanned by the application under local area network. Among which, Samba and NFS need users to add and mount manually. Take samba mounting as an example, shown as Figure 16.
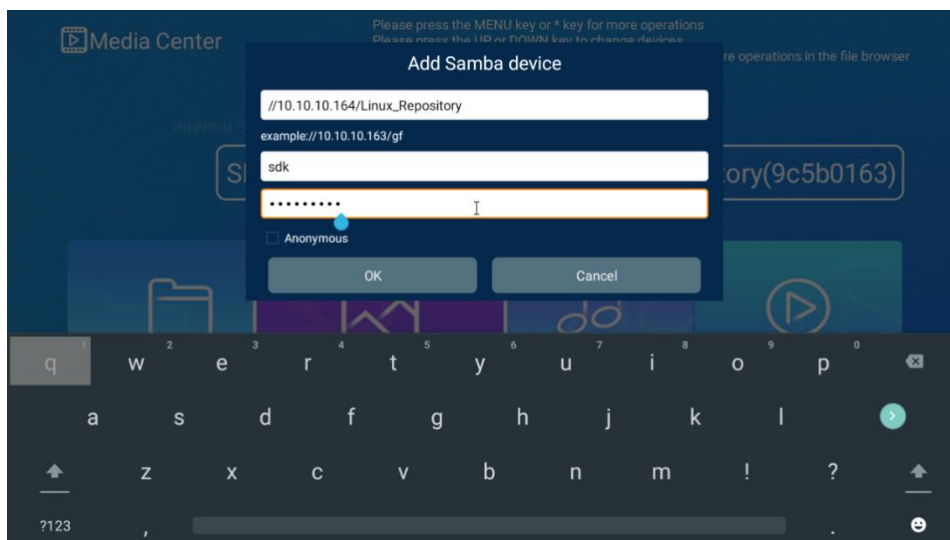
Figure 16 添加网络设备操作界面 Add Network Device Operation Interface

选择添加 samba 设备，输入 samba 网络地址、用户名、密码即可实现挂载，如 Figure 17 所示。

Select "Add Samba device", enter samba network address, user name, and password to implement mounting, shown as Figure 17.
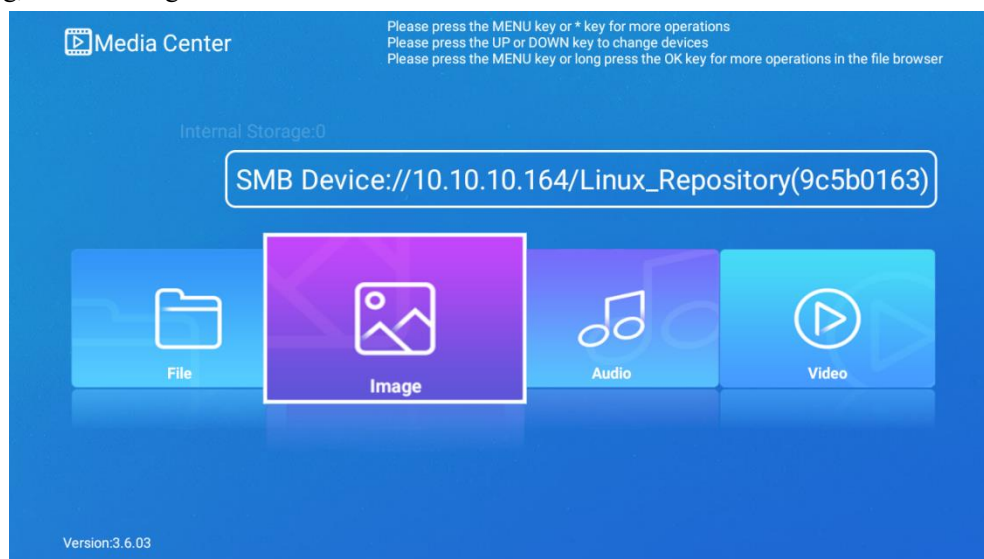

Figure 17 Samba 挂载成功显示界面 Samba Mounting Success Display Interface

若要删除网络设备，选择删除设备，在弹出的对话框中选择需要移除的网络设备即可。如 Figure 18 所示。

If you want to delete network device, select delete devices, choose network device to be removed in the pop-up dialog box, shown as Figure 18.

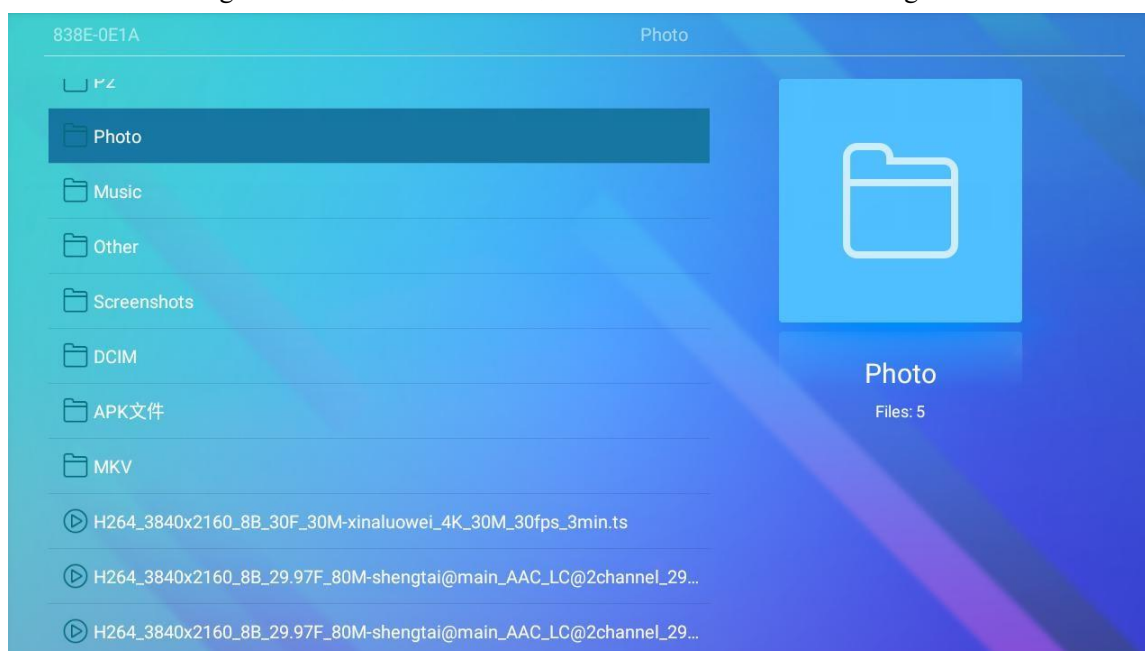Figure 18 删除网络设备对话框 Delete Network Device Dialog Box

Figure 19 文件目录 File Directory

在媒体中心主页面下，可以选择进入不同设备的文件，点击确定键之后就进入 Figure 19 文件浏览页面。在该界面下单击菜单键，可弹出操作对话框，如 Figure 20 所示。用户可以对文件进行复制、删除、移动、重命名、排序、文件搜索、蓝牙分析。

In the homepage of Media Center, users have a choice to access different devices' File, press confirm button to enter file directory page like Figure 19. Press menu button on this page to pop up an operation dialog box, shown like Figure 20. Users can copy, delete, move, rename, sort, do file search and bluetooth analysis to the file.
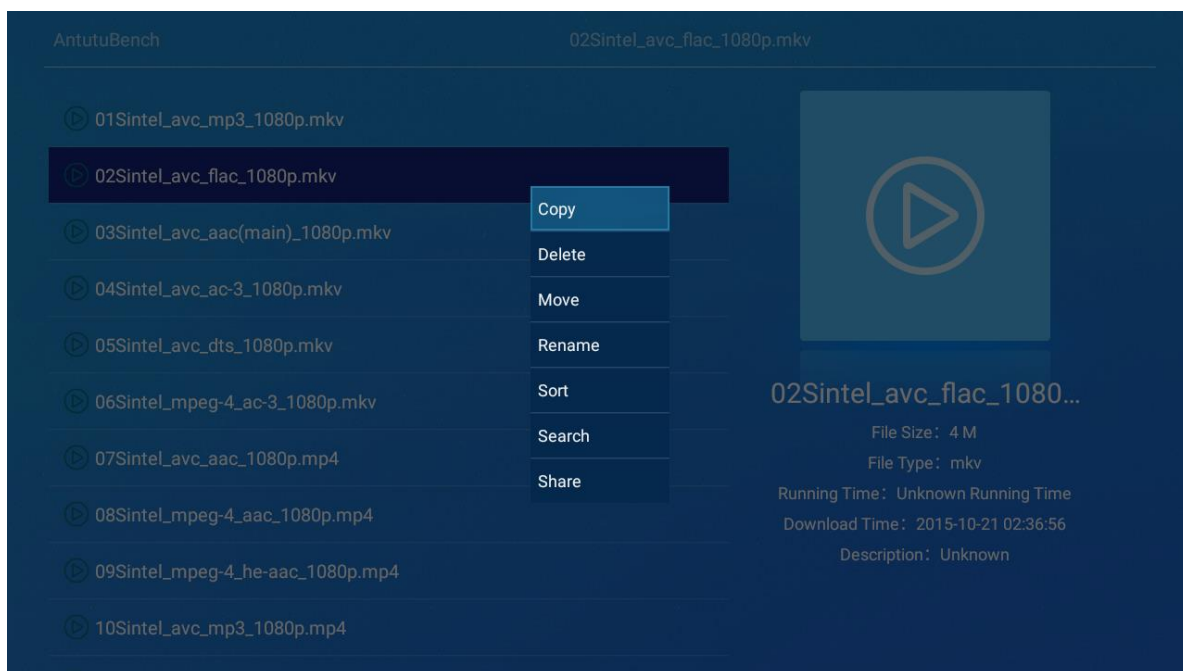
Figure 20 文件操作对话框 File Operation Dialog Box

在该页面显示的文件列表是按照文件目录结构显示的，文件夹显示在列表前面，文件显示在列表后面。按上下键可以切换当前选中的位置，右侧预览图及显示信息如下：

File list shown in this page is displayed according to file directory struction. The folder displays at the front of the list, files display at the behind of the list. Press up and down button to switch current selected positon, the right side preview picture and display information is shown as below:

Figure21   Figure22

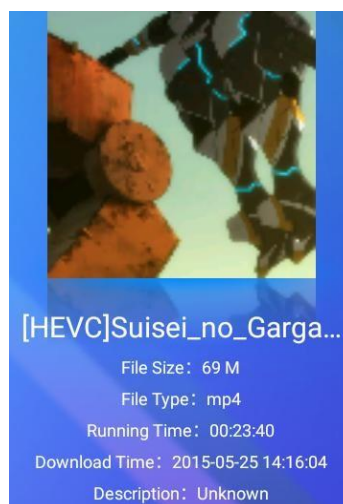1)   当前选中是文件夹：预览图显示文件夹图标。详细信息显示显示文件夹名称和当前文件夹下子文件（夹）的数目，如 Figure21 所示。按确定键后，在当前页面下加载当前选中文件夹的子文件（夹）列表。

If currently selected is a folder: preview picture displays the folder icon. The detailed information displays the folder name and its subfolder number, shown as Figure21. Press confirm button, then the current page will load subfolder list of the selected folder.

2)   当前选中是视频文件：如果视频缩略图获取成功，预览图显示视频缩略图，否则显示的是

默认的视频图标。详细信息显示文件名称，文件大小，文件类型，视频时长，文件最后修改时间，如 Figure22 所示。按确定键后，启动视频播放器播放。

If currently selected is a video file: when video thumbnail is acquired successfully, the preview picture displays video thumbnail, otherwise displays the default icon. The detailed information displays file name, file size, file type, video duration, file last modification time, shown as Figure22. Press confirm button to start video player and play.

丁当 - 漂洋过海来看你.w...	t01be29212459d1d197.j...
File Size: 4 M	File Size: 156 K
File Type: music	File Type: jpg
Running Time: 00:04:27	Download Time: 2016-08-30 13:57:50
Download Time: 2015-01-09 01:03:46	Description: Unknown
Description: Unknown	

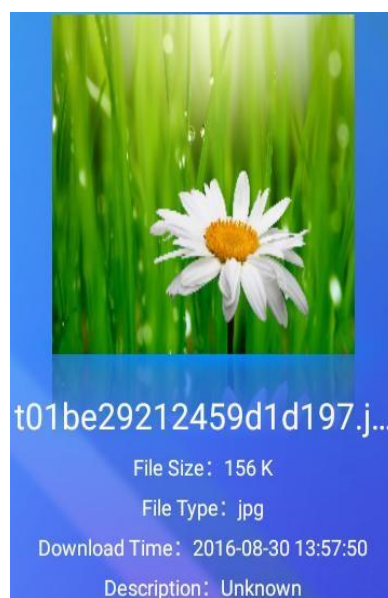Figure23   Figure24

3) 当前选中的是音乐文件：如果音乐的专辑图片获取成功，预览图将显示音乐专辑图片，否则显示默认的音乐图标。详细信息显示与(2)类似，如 Figure23 所示。按确定键后， 启动音乐播放器播放。

If currently selected is a music file: when music album picture is acquired successfully, the preview picture will display music album picture, otherwise display default music icon. The detailed information is similar to video file detailed information, shown as Figure23. Press confirm button to start music player.

4) 当前选中的是图片文件：如果图片文件的缩略图获取成功，预览图显示图片文件的缩略图，否则显示默认的图片图标。详细信息第一行显示图片文件名称，第二行显示文件大小，第三行显示文件类型，第四行显示文件的最后修改时间，第五行显示描述信息，如 Figure24 所示。按确定键后，进入图片浏览页面。

If currently selected is a picture file: when picture file's thumbnail is acquired successfully, the preview picture displays picture file's thumbnail, otherwise displays default picture icon. For the detailed information, the first line displays picture file name, the second line displays file size, the third line displays file type, the fourth line displays file's last modification time, the fifth line displays description information, shown as Figure24. Press confirm button to enter picture browsing page.

MediaCenter.apk

File Size: 8 M

Modified Time: 2017-02-16 05:55:44

iso.cfg

File Size: 15 B

Modified Time: 1970-01-01 17:18:16

Figure25   Figure26

5) 当前选中的是 APK 文件：如果 APK 安装包文件的图标获取成功，预览图显示 APK 文件文件的图标，否则显示默认的 APK 图标。详细信息第一行显示 APK 文件名称，第二行显示文件大小，第三行显示文件的最后修改时间，如 Figure25 所示。按确定键后，进入系统 APK 安装页面。

If currently selected is a APK file: when the APK installation package file's icon is acquired successfully, the preview picture displays APK file icon, otherwise displays default APK icon. For the detailed information, the first line displays APK file name, the second line displays file size, the third line displays file last modification time, shown as Figure25. Press confirm button to enter APK installation page.

6) 当前选中的是非上述类型文件：预览图显示问号图标。详细信息第一行显示文件名称，第二行显示文件大小，第三行显示文件的最后修改时间，如 Figure26 所示。按确定键后，无任何反应。

If currently selected is a file type not listed above: the preview picture displays a question mark icon. For the detailed information, the first line displays file name, the second line displays file size, the third line displays file last modification time, shown as Figure26. Press confirm button, there won't be any action.