# Application Notes

**IRRemote Control Key Value Configuration Guide**

**Revision 0.1**



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**Modify records**

| Version | date | author | Revise |
|---|---|---|---|
| 0.1 | March 5, 2013 | baoqi.wang | change mode & add message |
| 0.2 | Jun 18, 2014 | baoqi.wang | Support 20 remote |
| 0.3 | Jun 18, 2014 | Gangfeng.Xu | Add remote.conf config sample |

# 1. Overview

## *1.1. REMOTEProgram framework*

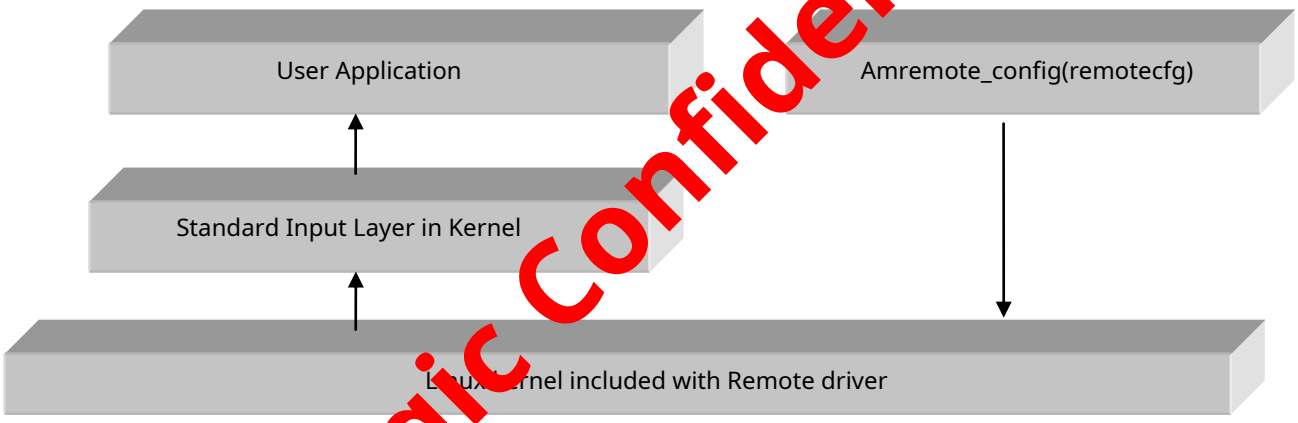
AmlogicThe chip is integrated withNECtiming decoder, for non-complianceNECThe infrared protocol of the protocol can also use the software mode, which can be very flexible to customize the customized infrared protocol, which has not been tested for greater or less than32bitThe special protocol of the driver, part of the code of the driver needs to be modified to adapt to non-32bit agreement.LinuxThe drivers provided in the kernel can be configured by the application to work in one of these modes.

In our released package there is aremotecfgThe command is used to configure the kernel driver. Users can write their own configuration files according to the rules to adapt to their own remote control, and then pass the serial port.remotecfg system/etc/*.confto configureIRThe corresponding registers of the decoder. This can be configured multiple times without restarting the system, which is very convenient for debugging.

Our driver can completely convert the key events of the infrared remote controlLinuxthe standardinput event, so the user program can handle the infrared remote control according to the standard keyboard and mouse events.

For simulating mouse movement with the remote control, an acceleration process is provided in the driver. If you press and hold it, the mouse movement will be accelerated.10 indivual pixel, but does not provide an application layer interface, so if you need to modify this acceleration effect, you must modify the driver code.

Application Architecture Block Diagram:



# 2. Software operation

***2.1.General configuration items:***

- work_modeworking mode settings,1forduokan,0forNEC.
- factory_codeRemote control user code, according toMSBformat, written in high16bit, low16Bits can be filled with any value.factory_codeThe configuration is described in Appendix IV.
- repeat_enableWhether to support pressing the burst key, the default is not supported.
- debug_enableEnable driver debug printing, the default is not supported. can be set to1A remote control used to test an unknown user code and key
- code. release_delayThe time interval for releasing the key, the unit isms,The default is200ms. repeat_delayPress the key to the first burst key to the
- time interval, the unit isms,The default is250ms. repeat_peroidThe time interval between two burst keys, in units of ms,The default is33ms.
-
- factory_infcode = n(n<=20)add thenGroup factory code mapping table, supportnindivualnecWhen using the remote control, it is usually not used

***2.2.Basic register configuration items:***

For the detailed configuration of these registers, please refer toM8Baby-AO-Registers.doc

## *2.3.keymap*

The keymap table needs to start with "key_begin"A string line is used as a start marker, and a "key_end"End of string behavior. Each line corresponds to a key mapping relationship, the front is the key value of the infrared key, and the back is the corresponding standard key scan code with a space as the separator. Multiple key values can correspond to a key scan code, but for repeated key value positioning, only the last corresponding relationship shall prevail. For the writing format, please refer to the examples in Chapter 3 and Appendix 4.

## *2.4.mouse direction map*

The mouse direction map needs to start with "mouse_begin"A string line is used as a start marker, and a "mouse_end"End of string behavior. Each line corresponds to a direction mapping relationship, the front is the direction number identifier, the back is the key value of the infrared button, and the space is used as the separator. Direction Numeric Identifier Comparison Table

| | |
|---|---|
| 0 | Left |
| 1 | Right |
| 2 | Up |
| 3 | Down |

Multiple key values cannot correspond to one direction, only the last corresponding relationship shall prevail. Special custom add method.

fn_key_scancode = 0xfe(scancode) = 0x1c Assign the mouse to enable function keys

left_key_scancode Specify the left mouse button

right_key_scancode = 0x48Specify the right mouse

button up_key_scancode = 0x44Specify the upper mouse button

down_key_scancode = 0x1dSpecifies the mouse down button

ok_key_scancode = 0x5cAssign mouse confirmation key

pageup_key_scancode = 0x04Specifies the previous page key

pagedown_key_scancode = 0x1bFor specifying the writing format of the

next page key, please refer to the example in Chapter 3.

# 3. Sample

### *3.1.Appendix INECconfiguration file*

1)The following configuration isAmlogic m200Public Media Box Remote Control

```
# amlogic NEC remote
factory_code        = 0xfb040001
work_mode                   = 0
repeat_enable = 1
repeat_delay = 40
repeat_peroid = 39
release_delay =             121
debug_enable        = 1
key_begin
    0x01 0x02 #Number keys on the remote control1Number keys mapped to standard keyboard1
    0x02 0x03 #Number keys on the remote control2Number keys mapped to standard keyboard2
    0x03 0x04 #Number keys on the remote control3Number keys mapped to standard keyboard3
    0x04 0x05 #Number keys on the remote control4Number keys mapped to standard keyboard4
    0x05 0x06 #Number keys on the remote control5Number keys mapped to standard keyboard5
    0x06 0x07 #Number keys on the remote control6Number keys mapped to standard keyboard6
    0x07 0x08 #Number keys on the remote control7Number keys mapped to standard keyboard7
    0x08 0x09 #Number keys on the remote control8Number keys mapped to standard keyboard8
    0x09 0x0a #Number keys on the remote control9Number keys mapped to standard keyboard9
    0x00 0x0b #Number keys on the remote control0Number keys mapped to standard keyboard0
    0x0d 0x110 #on the remoteOKThe keys are mapped to the left button of a standard mouse 0x41
    0x111 #on the remote■The key is mapped to the right button of a standard mouse key_end


mouse_begin
    0 0x10 #Arrow key left
    1 0x11 #Arrow key right
    2 0x0b #on the arrow keys
    3 0x0e #down arrow keys
mouse_end
```

2)As in adding anecRemote Control Profileremotesecond.confas follows:

```
# amlogic NEC remote
factory_infcode = 1
```

Other content is the same as the previous configuration file

```
factory_code = 0xfe010001
key_begin
                0x03 4
                0x55 221
key_end
```

***3.2.Appendix II Scan Code Table of Commonly Used Keys***

| scan code | button | scan code | button | scan code | button |
|---|---|---|---|---|---|
| 1 | Escape | 2 | 1 | 3 | 2 |
| 4 | 3 | 5 | 4 | 6 | 5 |
| 7 | 6 | 8 | 7 | 9 | 8 |
| 10 | 9 | 11 | 0 | 12 | Minus |
| 13 | Equal | 14 | Backspace | 15 | Tab |
| 16 | Q | 17 | W | 18 | E |
| 19 | R | 20 | T | twenty one | Y |
| twenty two | U | twenty three | I | twenty four | O |
| 25 | P | 26 | [ | 27 | ] |
| 28 | Enter | 29 | Left_Ctrl | 30 | A |
| 31 | S | 32 | D | 33 | F |
| 34 | G | 35 | H | 36 | J |
| 37 | K | 38 | L | 39 | ; |
| 40 | ' | 41 | ` | 42 | Left_Shift |
| 43 | \ | 44 | Z | 45 | X |
| 46 | C | 47 | V | 48 | B |
| 49 | N | 50 | M | 51 | , |
| 52 | . | 53 | / | 54 | Right_Shift |
| 55 | Print_Screen | 56 | Left_Alt | 57 | Space |
| 58 | Caps_Lock | 59 | F1 | 60 | F2 |
| 61 | F3 | 62 | F4 | 63 | F5 |
| 64 | F6 | 65 | F7 | 66 | F8 |
| 67 | F9 | 68 | F10 | 69 | Num_Lock |
| 70 | Scroll_Lock | 71 | NumPad_7 | 72 | NumPad_8 |
| 73 | NumPad_9 | 74 | NumPad_Minus | 75 | NumPad_4 |
| 76 | NumPad_5 | 77 | NumPad_6 | 78 | NumPad_Plus |
| 79 | NumPad_1 | 80 | NumPad_2 | 81 | NumPad_3 |
| 82 | NumPad_0 | 83 | NumPad_Del | 84 | |
| 85 | | 86 | | 87 | F11 |
| 88 | F12 | 89 | | 90 | |
| 91 | | 92 | | 93 | |
| 94 | | 95 | | 96 | |
| 97 | | 98 | | 99 | |
| 100 | | 101 | | 102 | Home |
| 103 | Up | 104 | Page_Up | 105 | Left |
| 106 | Right | 107 | End | 108 | Down |
| 109 | Page_Down | 110 | Insert | 111 | Delete |
| 112 | | 113 | Mute | 114 | VolumeDown |
| 115 | VolumeUp | 116 | Power | 117 | |
| 118 | | 119 | Pause | 128 | Stop |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 0x110 | Mouse_Left | 0x111 | Mouse_Right | 0x112 | Mouse_Middle |
| 0x115 | Mouse_Forward | 0x116 | Mouse_Back | | |
| | | | | | |
| 0x130 | GamePad_A | 0x131 | GamePad_B | 0x132 | GamePad_C |
| 0x133 | GamePad_X | 0x134 | GamePad_Y | 0x135 | GamePad_Z |
| | | | | | |

### *3.3.Appendix IIIAndroidThe following key process description*

Androidprovides a standardinputdevice scan code toAndroid APIThe key comparison mapping table method, inAmlogicIn the development system of , please refer todevice\amlogic\xxref\ Vendor_0001_Product_0001.kl

So you need to modify this mapping table to fit your remote control buttons

### *3.4.Appendix IVIRremote controlremote.conffile key configuration*

forIRRemote control infrared code andAndroid InputThe conversion of system key values can basically be done throughremote.confto configure to meet the requirements. public boardNECprotocolMENUkey for example.

when the user pressesMENUkey,DECODERAfter decoding is complete.KernelThe driver readsFRAME_BODYRegister to get the IR of the remoteRAWvalueam_remote_read_reg(FRAME_BODY).MENUkeyRAWvalue is0xac53fb04, this value containscustom code and~custom code,as well asdata codeand~data code. According to the driverNECprotocolDOMAINanalysis,fb04Yescustomvalue (this value is used inremonte.conf factory_codeConfiguration factory_code= 0xfb040001 ) .ac53Yesdatavalue whereacand53is the inverse code, is used for data comparison. But the driver does not add this function by default, only the value is taken53.MENUThe IR code of the key is 0xac53fb04

Android Inputin the systemMENUkeyKeycodeneed to refer to the correspondingKeyLayoutdocument, according toVendorIDandProductID, The public version of the infrared remote control corresponds todevice\amlogic\xxref\ Vendor_0001_Product_0001.kl

Query this file to knowMENUkeyKeycodeYes125

```
key 125     MENU
```

Soremote.confThe file is to associate these two values. inremote.confmiddle pairmatchthe keys are configured as follows:

```
key_begin
. . .
0x53 125#
. . .
key_end
```

This is driven by parsingremote.conf, find the corresponding keycode, then passInputSystem standard functionsinput_event() report. Complete the conversion from infrared code to standard key value.

thisremote.confat system startup byinit.amlogic.rcto complete the configuration, so if you need to create anotherconffile, which needs to be modified to the corresponding name

```
service remotecfg /system/bin/remote.cfg /system/etc/remote.conf
    class main
    Oneshot
```