Timelink Touch Panel Driver Guide for Linux

Introduction

Timelink touch frame is based on standard USB HID protocol. The driver module "hid-multitouch" of Linux OS can make TimeLink touch frame work. Linux kernel version ≥ V3.5 invokes "hid-multitouch" to enable TimeLink touch frame automatically . And the older Linux kernel(lower than V2.6.38) is unable to drive TimeLink touch frame directly because of the driver matching approach of HID device is more conservative. Rather than "hid-multitouch" is not campatible with TimeLink touch frame. For more earlier Linux kernel(lower than2.6.35) is probably without "hid-multitouch" module at all,in this case TimeLink's Mode "hid-timelink" is needed to drive touch frame to work.

For those Linux OS which kernel version is higher that V2.6.38, we recommend you to use Linux hid-multitouch itself , which is the most convenient and compatible way; While you can use hid-timelink which is provided by us if your kernel version is quite old , requiring some extra function or you have meet troubles during using hid-multitouch.

1. Modify the kernel

The kernel version lower than V**3.5** forcibly bind all HID device (except in the black list) to driver *hidcore* or *usbhid-core*, but *hid-core* can not support multi-touch device. Therefore, in order to load our specified driver, our *vendor ID* and *device ID* should be added into the black list of hid-core.c first.

1)Add our device ID into ddrriivveerrss//hhiidd//hhiidd--iiddss..hh , use kernel 2.6.37 as an example:

```
--- a/drivers/hid/hid-ids.h
+++ b/drivers/hid/hid-ids.h
@@ -512,6 +512,9 @@
        #define USB_VENDOR_ID_THRUSTMASTER      0x044f
+       #define USB_VENDOR_ID_TIMELINK          0x2309
+       #define USB_DEVICE_ID_TIMELINK          0x1001
+       #define USB_DEVICE_ID_TIMELINK_V2       0x1005

        #define USB_VENDOR_ID_TOPSEED           0x0766
        #define USB_DEVICE_ID_TOPSEED_CYBERLINK     0x0204
```

2) Add our device into hhiidd__bbllaacckklliisstt（should be hhiidd__hhaavvee__ssppeecciiaall__ddrriivveerr instead of hhiidd__bbllaacckklliisstt in kernel since 3.0） in ddrriivveerr//hhiidd//hhiidd--ccoorree..cc , following use kernel 2.6.37 as an example:

```
--- a/drivers/hid/hid-core.c
+++ b/drivers/hid/hid-core.c
@@ -1389,6 +1389,7 @@ static const struct hid_device_id
hid_blacklist[] = {
```

```
        { HID_USB_DEVICE(USB_VENDOR_ID_THRUSTMASTER, 0xb653) },
        { HID_USB_DEVICE(USB_VENDOR_ID_THRUSTMASTER, 0xb654) },
        { HID_USB_DEVICE(USB_VENDOR_ID_THRUSTMASTER, 0xb65a) },
+       { HID_USB_DEVICE(USB_VENDOR_ID_TIMELINK, USB_DEVICE_ID_TIMELINK) },
+       { HID_USB_DEVICE(USB_VENDOR_ID_TIMELINK, USB_DEVICE_ID_TIMELINK_V2) },
         { HID_USB_DEVICE(USB_VENDOR_ID_TOPSEED,
USB_DEVICE_ID_TOPSEED_CYBERLINK) },
        { HID_USB_DEVICE(USB_VENDOR_ID_TOPSEED2,
USB_DEVICE_ID_TOPSEED2_RF_COMBO) },
        { HID_USB_DEVICE(USB_VENDOR_ID_TWINHAN,
USB_DEVICE_ID_TWINHAN_IR_REMOTE) },
```

3).Compiling driver source code（hid-multitouch or hid-timelink）

Using hid-multitouch（It comes with the kernel）

For kernel version higher than V2.6.38 , it only requires *hid-multitouch* module to drive our device by add our ID into mt_devices of drivers/hid/hid-multitouch.c directly:

```
--- a/drivers/hid/hid-multitouch.c
+++ b/drivers/hid/hid-multitouch.c
@@ - 461,11 + 461,11 @@ static const struct hid_device_id mt_devices[] = {
            /* GeneralTouch panel */
            { .driver_data = MT_CLS_DUAL2,
                    HID_USB_DEVICE(USB_VENDOR_ID_GENERAL_TOUCH,
                            USB_DEVICE_ID_GENERAL_TOUCH_WIN7_TWOFINGERS) },
+           /* TimeLink panel */
+           { .driver_data = MT_CLS_DEFAULT,
+                   HID_USB_DEVICE(USB_VENDOR_ID_TIMELINK,
+                           USB_DEVICE_ID_TIMELINK) },
+
+           { .driver_data = MT_CLS_DEFAULT,
+                   HID_USB_DEVICE(USB_VENDOR_ID_TIMELINK,
+                           USB_DEVICE_ID_TIMELINK_V2) },
```

*Make sure **hid-multitouch** module was chosen during kernel configuring.*

Using hid-timelink(timelink provide)

Our driver sources are in *timelink-touchwin-driver-x.x.x.tar.bz2* file, just extract hidtimelink.c and copy to kernel tree under drivers/hid/ and add corresponding information into kernel compiling configuration by yourself:

1. Put hid-timelink.c under directory kernel-source/drivers/hid/

2. Enter directory kernel-source/drivers/hid/ , open Kconfig , insert following lines at line 58 (below menu "Special HID drivers"):

+ config HID_TIMELINK
+ tristate"TimeLink Multi-Touch panels support"
+ depends on USB_HID
+ default y
+ ---help--- Support for ShenZhen TimeLink MultiTouch panels

3. Enter directory kernel-source/drivers/hid/ , open Makefile , insert this line at line 25:

+ obj-$(CONFIG_HID_TIMELINK) += hid-timelink.o

4. Then compile kernel, driver just be compiled into kernel.

If a kernel module is required (not recommended), you can modify default y *which is added into* Kconfig *above to* default m *, then put the generated kernel module hid-timelink.ko under the root of file system, add* insmod hid-timelink.ko *below the* on boot *block of* init.rc *in file system, system will load this module on boot.*