



FINTEK

F81532 / F81534

Driver Installation Guide

for Linux

v1.29

May 18, 2023

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Revision History

Date	Version	Revision History
2015/1/14	1.0	Initial Version Driver Version: SVN810
2015/5/13	1.08	(Add) Transceiver / GPIO pin control Driver Version: SVN1260
2015/7/17	1.12	(Fix) System may crash when loading driver with data receiving Driver Version: SVN1580
2015/8/20	1.14	(Add) TX flow control via CTS pin on flow control enabled Driver Version: SVN1646
2016/7/13	1.16	(Fix) GPIOLIB compile issue for kernel 4.5 Driver Version: SVN1968
2017/4/5	1.17	(Add) HW pin (RX/DCD/DSR/CTS/RI pull down) to disable port. Driver Version: SVN2060
2017/8/28	1.18	(Fix) System may crash on fast plug in/out. Driver Version: SVN2065
2018/1/8	1.19	(Fix) Frame error on bit-rate 460800bps Driver Version: SVN2070
2018/4/3	1.21	(Fix) Device may not response when wakeup from S3/S4 with receiving data Driver Version: SVN2108 Notice: This version of driver will make IC not compatible with old version. Please refer to section "Driver Compatibility"
2018/5/2	1.22	(Fix) Output data error when redirect to Linux console Driver Version: SVN2129
2019/5/16	1.23	(Fix) Stability issue for reset device. (Fix) Baudrate setting error when first plug-in & open device without re-setting baudrate Driver Version: SVN2130
2019/5/21	1.23.1	(Modify) Document (Fix) Makefile Driver Version: SVN2130

2019/9/16	1.24	(Add) Break control (Add) User mode controlled by external M0/M1/M2 (Fix) Makefile (Fix) 2.6.32 compile issue (Reduce) Document Driver Version: SVN2134
2020/8/31	1.25	(Fix) make install priority issue Driver Version: SVN2138
2021/8/4	1.26	(Fix) Kernel 5.12 compile issue Driver Version: SVN2142
2022/5/17	1.26.1	(Change) Document & Makefile Driver Version: SVN2143
2022/8/2	1.27	(Change) Direct read modem status Driver Version: SVN2144
2023/2/21	1.28	(Fix) Lower RX trigger Level on high-baudrate to avoid overrun (Change) USB endpoint 0 default polling periods from 10 times & 1sec to 50 times & 200ms to improve performance Driver Version: SVN2145
2023/5/18	1.29	(Fix) Kernel 6.1 compile issue Driver Version: SVN2146

Driver Compatibility

We had changed the device initial parameter with newer driver. **If the device had activated by new driver, it'll not work for older driver.** The following table will list the version of new/old driver for Windows & Linux.

	Linux	Windows
Old driver config	v1.19/v1.19.1 and older	older
New driver config	v1.21 and newer	2018.3.13 and newer

1. Preliminary

This document is for Fintek F81534/F81532 driver installation in Linux. There are 3-ways to build this driver module.

1. Just make & insmod to evaluate this device (recommend for evaluation)
2. Using Dynamic Kernel Module Support (aka. DKMS) to dynamic build kernel modules for current and newer kernel (recommend with Desktop Linux system)
3. Merge into kernel (recommend with embedded system)

The driver with default transceiver setting of F81534/532 evaluation board & reference layout:

port 0/1 → F81437

port 2/3 → F81439

2. Building Driver (Debian / Ubuntu based)

1. `sudo su`
2. Prepare the kernel tree & compiler tools for your distribution.
 - `apt-get update`
 - `apt-get install build-essential gcc`
3. unzip driver zip file (F81534-532_DriverSourceCode-<version>_Linux.zip)
4. `cd F81534`
5. `make clean ; make ; make install`
6. `modprobe usbserial`
7. `rmmod f81534 ; insmod f81534.ko`
8. check new port added by “`dmesg | grep ttyUSB`”.
9. reboot

```
root@code:~/f81534# dmesg | grep ttyUSB
[ 1175.841208] usb 2-1.6.2: Fintek USB to 4 Serial Driver (f81534-Evaluation Board) converter now attached to ttyUSB0
[ 1175.854941] usb 2-1.6.2: Fintek USB to 4 Serial Driver (f81534-Evaluation Board) converter now attached to ttyUSB1
[ 1175.868312] usb 2-1.6.2: Fintek USB to 4 Serial Driver (f81534-Evaluation Board) converter now attached to ttyUSB2
[ 1175.881185] usb 2-1.6.2: Fintek USB to 4 Serial Driver (f81534-Evaluation Board) converter now attached to ttyUSB3
root@code:~/f81534#
```

3. Q&A

Q1: The F81534 will send strange data to make PassMark BurnInTest or our serial port application failed (Console or other usage).

A1: You can use “ps aux | grep Modem” in console to identify the service “ModemManager” is running.

```
root@code-VirtualBox:/home/code/ddd/hpeter/fintek/Usb4Uart/Android/Driver/Usb4Uart# ps aux | grep Modem
root    24367  0.6  0.6 37412 6508 ?        Ssl 13:14   0:10 /usr/sbin/ModemManager
root    24591  0.0  0.0  6160   852 pts/7    S+   13:41   0:00 grep --color=auto Modem
root@code-VirtualBox:/home/code/ddd/hpeter/fintek/Usb4Uart/Android/Driver/Usb4Uart#
```

It will probe all serial port by AT Command to find 3G Modem when this service running, It's also break normal serial port activity. We can add F81534 to the blacklist of ModemManager via following step.

1. Open “/lib/udev/rules.d/77-mm-usb-device-blacklist.rules”
2. Add the string upper then “mm_usb_device_blacklist_end”
ATTRS{idVendor}=="1934", ATTRS{idProduct}=="1202", ENV{ID_MM_DEVICE_IGNORE}="1"
3. Save file and re-plug F81534 again. The ModemManager will not probe our product.

```
ATTRS{idVendor}=="1934", ATTRS{idProduct}=="1202", ENV{ID_MM_DEVICE_IGNORE}="1"

LABEL="mm_usb_device_blacklist_end"
```

Q2: How to use serial mouse in CentOS7

A2:

1. Copy serialmouse.service to /etc/systemd/system/
If the target is Logitech mouse, using –intellimouse, otherwise using -msc.

```
[root@localhost ~]# cat /etc/systemd/system/serialmouse.service
[Unit]
Description=Enable Serial Mouse in X

[Service]
ExecStart=/usr/bin/inputattach --intellimouse /dev/ttyUSB0
#ExecStart=/usr/bin/inputattach -msc /dev/ttyUSB0

[Install]
WantedBy=multi-user.target
```

2. yum install linuxconsoletools
3. systemctl enable serialmouse
4. reset system

Q3: How to use serial console in CentOS7

A3:

The following examples will use ttyUSB0 & 38400n1 to output console.

1. Change kernel parameter as following and re-generate grub2.cfg:
BOOT_IMAGE=/vmlinuz-3.10.0-693.el7.x86_64 root=/dev/mapper/centos-root ro crashkernel=auto
rd.lvm.lv=centos/root rd.lvm.lv=centos/swap console=tty0 console=ttyUSB0,38400n8 selinux=0
2. Modify 77-mm-usb-device-blacklist.rules as Q1/A1.
3. Enable the login with systemd:
 1. systemctl enable [serial-getty@ttyUSB0.service](#)
 2. systemctl start [serial-getty@ttyUSB0.service](#)

We can use CTRL-C to break the operation if step2 takes too long time.

4. Reboot. The console & login prompt will output to ttyUSB0 with 38400 8n1.

Q4: “non-retpoline compiler” error with make

```
root@code-desktop:/home/code/d/driver# make
make -C /lib/modules/4.15.0-50-generic/build M=/home/code/d/driver modules
make[1]: Entering directory '/usr/src/linux-headers-4.15.0-50-generic'
arch/x86/Makefile:245: *** You are building kernel with non-retpoline compiler, please update your compiler.. Stop.
make[1]: Leaving directory '/usr/src/linux-headers-4.15.0-50-generic'
Makefile:8: recipe for target 'default' failed
make: *** [default] Error 2
```

A4: The current kernel & compiler is not matched. Please update the compiler with following command:

apt-get install gcc-5 gcc-5-base

Q5: Can't load driver when system reboot with Kylin (銀河麒麟).

A5: Run:

sudo kysec_set -n exectl -v original /lib/modules/`uname -r`/updates/f81534.ko

to entrust the driver and reboot.