

FINTEK

F81232/F81532A/534A/ 535/536

Driver Installation Guide for Linux

v1.19

Jun 30, 2026

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Revision History

Date	Version	Revision History
2018/6/4	v1.0	Initial version.
2018/9/12	v1.1	Fixed BREAK signal handling.
2019/01/03	v1.2	Fixed open-drain detection logic Added internal loopback support Updated supported device IDs with 1632/1634/1635/1636 variants default to RS232 mode
2019/01/28	v1.3	Added new USB device ID entry
2019/04/29	v1.4	Fixed build compatibility with kernel 3.14
2019/05/15	v1.5	Fixed compiler issue with kernel 4.15 Added delay for MSR (Modem Status Register) read
2019/10/25	v1.6	Fixed build error on CentOS 7 (kernel 3.10) Fixed LSR (Line Status Register) incorrect OR/clear behavior Added S3 suspend support for f81232 Fixed 3.14 kernel compatibility in LSR read path
2020/05/05	v1.7	Fixed USB 3.0 host issue Implemented hardware flow control with configurable threshold Added remote wakeup support
2020/08/31	v1.8	Restore previous baud rate when requested baud rate is unsupported
2020/12/30	v1.9	Added hardware flow control enable/disable via ioctl Added GPIO read ioctl Changed HW flow control initialization to probe time
2021/01/07	v1.9.1	Enabled hardware flow control by default
2021-05-07	v1.10	Fixed TX packet compability issues Added TX delay tuning (tx_delay / tx_delay_type parameters) Fixed zero-length bulk TX issue
2022/01/07	v1.11	Fixed build error with kernel 5.12 API changes
2022/01/27	v1.12	Fixed 1608 device handling for Slot Accounting System applications Correct INPCK / PARMRK parity error flag behavior on 1608 variant
2023/05/24	v1.13	Fixed MSR (Modem Status Register) handling issue Suppressed 9-bit read callback error message flood

2024/09/13	v1.14	Fixed break_ctl() build error on kernel 6.5 Fixed build issue on kernel 5.14 Added 20K baud rate support (baudrate selector)
2024/11/08	v1.15	Disable COM port automatically on USB device disconnect
2024/12/19	v1.16	Fixed set_termios() regression Fixed f81534a_msr_async_prepare() enable logic Fixed MSR callback build error on newer kernels
2025/11/03	v1.17	Added RHEL9 / kernel 5.14 compatibility Fixed build error with kernel 6.12 Force RS232 mode on F81534A first probe GPIO initialization. Fixed printer compatibility issue Force baud rate update on first set_termios()
2026/04/16	v1.18	Refactored MSR polling mechanism Default MSR polling mode enabled (is_polling_msr=1)
2026/6/30	v1.19_20260630	Enhance Power saving when suspend with remote-wakeup disabled.

1. Preliminary

This document is for Fintek F81232/F81532A/F81534A/535/536 driver installation in Linux.

2. Building Driver (Debian / Ubuntu based)

1. sudo su
2. apt-get update
3. apt-get install build-essential gcc libncurses5-dev
4. Unzip the driver.zip
5. cd driver
6. make clean ; make ; make install
7. modprobe usbserial
8. rmmod f81232 ; insmod f81232.ko
9. check new port added by “dmesg | grep ttyUSB”.

```
root@code-H11H4-IM: /home/code [108x33]
連線(C) 編輯(E) 檢視(V) 視窗(W) 選項(O) 說明(H)
[11687.339176] f81534a_uart ttyUSB0: f81534a_port_probe: curr_idx: 1
[11687.339180] f81534a_uart ttyUSB0: not flash present
[11687.339531] usb 2-1.3.3.2: f81534a_uart converter now attached to ttyUSB0
[11688.107222] f81534a_uart ttyUSB1: f81534a_port_probe: curr_idx: 2
[11688.107227] f81534a_uart ttyUSB1: not flash present
[11688.107668] usb 2-1.3.3.3: f81534a_uart converter now attached to ttyUSB1
[11688.875184] f81534a_uart ttyUSB2: f81534a_port_probe: curr_idx: 3
[11688.875190] f81534a_uart ttyUSB2: not flash present
[11688.875655] usb 2-1.3.3.4: f81534a_uart converter now attached to ttyUSB2
[11689.643039] f81534a_uart ttyUSB3: f81534a_port_probe: curr_idx: 4
[11689.643045] f81534a_uart ttyUSB3: not flash present
[11689.643386] usb 2-1.3.3.5: f81534a_uart converter now attached to ttyUSB3
[11690.411078] f81534a_uart ttyUSB4: f81534a_port_probe: curr_idx: 5
[11690.411084] f81534a_uart ttyUSB4: not flash present
[11690.411533] usb 2-1.3.3.6: f81534a_uart converter now attached to ttyUSB4
[11691.179037] f81534a_uart ttyUSB5: f81534a_port_probe: curr_idx: 6
[11691.179041] f81534a_uart ttyUSB5: not flash present
[11691.180405] usb 2-1.3.3.7: f81534a_uart converter now attached to ttyUSB5
```

3. Q&A

Q1: The F81232/F81532A/534A/535/536 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 F81532A/534A/535/536 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}=="2c42", ATTRS{idProduct}=="1632", ENV{ID_MM_DEVICE_IGNORE}="1"
ATTRS{idVendor}=="2c42", ATTRS{idProduct}=="1634", ENV{ID_MM_DEVICE_IGNORE}="1"
ATTRS{idVendor}=="2c42", ATTRS{idProduct}=="1635", ENV{ID_MM_DEVICE_IGNORE}="1"
ATTRS{idVendor}=="2c42", ATTRS{idProduct}=="1636", ENV{ID_MM_DEVICE_IGNORE}="1"
ATTRS{idVendor}=="1934", ATTRS{idProduct}=="0706", ENV{ID_MM_DEVICE_IGNORE}="1"
```
3. Save file and re-plug F81232/F81532A/534A/535/536 again. The ModemManager will not probe our product.

```
ATTRS{idVendor}=="1d9d", ATTRS{idProduct}=="1011", 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: Can't load driver when system reboot with Kylin (銀河麒麟).

A4: Run:

```
sudo kysec_set -n exectl -v original /lib/modules/`uname -r`/updates/f81232.ko
```

to entrust the driver and reboot.

Q5: How to disable (not enable) com port.

A5: We can use module parameter “f81534a_disable_ports” to control which port will disable (not enable) by driver generator with bit-wise data.

```
rmmod f81232; insmod f81232.ko f81534a_disable_ports=0xffe # only generate port 1
rmmod f81232; insmod f81232.ko f81534a_disable_ports=0xffd # only generate port 2
```

If we want to apply the parameter (only generate port 1) on boot, please following the instructions.

1. Install the driver.
2. sudo su
3. Add and edit the file in “/etc/modprobe.d/f81534a.conf” with the content
options f81232 f81534a_disable_ports=0x0ffe
4. save & reboot
5. The driver will only generate the first port.

Q6: How to support RHEL/Rocky Linux 9.

A6: Using the F81534A driver on RHEL/Rocky Linux 9, which runs a customized Linux 5.14 kernel, the driver's build process requires specific macro definitions tied to the distribution's minor kernel version.

The necessary distribution-specific macro changes are as follows:

Rocky Linux 9 (Kernel 5.14.0-571): Define IS_ROCKY9_KERNEL_5_14_0_570 to 1

RHEL 9 (Kernel 5.14.0-427): Define IS_RHEL9_KERNEL_5_14_0_427 to 1

RHEL 9 (Kernel 5.14.0-36): Define IS_RHEL9_KERNEL_5_14_0_362 to 1

```
#define VERSION "v1.17_20251104"
#define DRIVER_NAME_APPEND ""
#define MULTIDROP_ENABLE
//#define LOOPBACK
//#define DELAY_READ

// If not RHEL/Rocky Linux 9, leave all following option to 0
#define IS_ROCKY9_KERNEL_5_14_0_570 0
#define IS_RHEL9_KERNEL_5_14_0_427 0
#define IS_RHEL9_KERNEL_5_14_0_362 0
// If not RHEL/Rocky Linux 9, leave all above option to 0

#if IS_ROCKY9_KERNEL_5_14_0_570
#define RHEL_BREAK_CTL 1
#define RHEL_TERMIO_CTL 1
#elif IS_RHEL9_KERNEL_5_14_0_427
#define RHEL_BREAK_CTL 1
#define RHEL_TERMIO_CTL 0
#else
#define RHEL_BREAK_CTL 0
#define RHEL_TERMIO_CTL 0
#endif
```

Q7: How to rename serial port by udev.

A7: For example, the F81536 has 12 serial ports. We will rename the 12th port to 'ttyUSB-fintek-f81536-11'. We can use the script '99-fintek-f81534a-fix-name.rules' to do so as following steps.

1. sudo su
2. Find the usb path for ttyUSB11.

```
udevadm info -a -p `udevadm info -q path -n /dev/ttyUSB11` | grep KERNEL
```

```
root@code-systemproductname:/home/code# udevadm info -a -p `udevadm info -q path -n /dev/ttyUSB11` | grep KERNEL
KERNEL=="ttyUSB11"
KERNELS=="ttyUSB11"
KERNELS=="3-10.13:1.0"
KERNELS=="3-10.13"
KERNELS=="3-10"
KERNELS=="usb3"
KERNELS=="0000:00:14.0"
KERNELS=="pci0000:00"
```

3. change the file "99-fintek-f81534a-fix-name.rules" rename to "ttyUSB-fintek-f81536-11" (or other customer desired name.)

```
SUBSYSTEM!="tty", GOTO="fintek_rule_end"

# F75115
ACTION=="add", KERNELS=="3-9:1.0" SYMLINK+="ttyUSB-fintek-f75115"

# F81532A/534A/535/536 USB path name
ACTION=="add", KERNELS=="3-10.13:1.0" SYMLINK+="ttyUSB-fintek-f81536-11"

LABEL="fintek_rule_end"
```

4. cp 99-fintek-f81534a-fix-name.rules /etc/udev/rules.d
5. chmod 644 /etc/udev/rules.d/99-fintek-f81534a-fix-name.rules
6. udevadm control --reload-rules
7. re-plug device or reboot

We'll do F75115 & F81536 insert order of operations change to see the result by command:

```
ls /dev/ttyUSB* -al
```

```
root@code-systemproductname:/home/code# ls /dev/ttyUSB* -al
crw-rw---- 1 root dialout 188, 0 12月 10 14:47 /dev/ttyUSB0
crw-rw---- 1 root dialout 188, 1 12月 10 14:47 /dev/ttyUSB1
crw-rw---- 1 root dialout 188, 10 12月 10 14:47 /dev/ttyUSB10
crw-rw---- 1 root dialout 188, 11 12月 10 14:47 /dev/ttyUSB11
crw-rw---- 1 root dialout 188, 12 12月 10 15:02 /dev/ttyUSB12
crw-rw---- 1 root dialout 188, 2 12月 10 14:47 /dev/ttyUSB2
crw-rw---- 1 root dialout 188, 3 12月 10 14:47 /dev/ttyUSB3
crw-rw---- 1 root dialout 188, 4 12月 10 14:47 /dev/ttyUSB4
crw-rw---- 1 root dialout 188, 5 12月 10 14:47 /dev/ttyUSB5
crw-rw---- 1 root dialout 188, 6 12月 10 14:47 /dev/ttyUSB6
crw-rw---- 1 root dialout 188, 7 12月 10 14:47 /dev/ttyUSB7
crw-rw---- 1 root dialout 188, 8 12月 10 14:47 /dev/ttyUSB8
crw-rw---- 1 root dialout 188, 9 12月 10 14:47 /dev/ttyUSB9
lrwxrwxrwx 1 root root 8 12月 10 15:02 /dev/ttyUSB-fintek-f75115 -> ttyUSB12
lrwxrwxrwx 1 root root 8 12月 10 14:47 /dev/ttyUSB-fintek-f81536-11 -> ttyUSB11
```

1st F81536, 2nd F75115

```
root@code-systemproductname:/home/code# ls /dev/ttyUSB* -al
crw-rw---- 1 root dialout 188, 0 12月 10 15:07 /dev/ttyUSB0
crw-rw---- 1 root dialout 188, 1 12月 10 15:07 /dev/ttyUSB1
crw-rw---- 1 root dialout 188, 10 12月 10 15:07 /dev/ttyUSB10
crw-rw---- 1 root dialout 188, 11 12月 10 15:07 /dev/ttyUSB11
crw-rw---- 1 root dialout 188, 12 12月 10 15:07 /dev/ttyUSB12
crw-rw---- 1 root dialout 188, 2 12月 10 15:07 /dev/ttyUSB2
crw-rw---- 1 root dialout 188, 3 12月 10 15:07 /dev/ttyUSB3
crw-rw---- 1 root dialout 188, 4 12月 10 15:07 /dev/ttyUSB4
crw-rw---- 1 root dialout 188, 5 12月 10 15:07 /dev/ttyUSB5
crw-rw---- 1 root dialout 188, 6 12月 10 15:07 /dev/ttyUSB6
crw-rw---- 1 root dialout 188, 7 12月 10 15:07 /dev/ttyUSB7
crw-rw---- 1 root dialout 188, 8 12月 10 15:07 /dev/ttyUSB8
crw-rw---- 1 root dialout 188, 9 12月 10 15:07 /dev/ttyUSB9
lrwxrwxrwx 1 root root 7 12月 10 15:07 /dev/ttyUSB-fintek-f75115 -> ttyUSB0
lrwxrwxrwx 1 root root 8 12月 10 15:07 /dev/ttyUSB-fintek-f81536-11 -> ttyUSB12
```

1st F75115, 2nd F81536

Q8: How to change MSR polling mode.

A8:

1. MSR Handling Modes:

- Disabled: No active monitoring of the MSR.
- Max Polling (Default): Continuous polling at maximum frequency for immediate detection.
- Delayed Polling: Periodic polling with a user-defined millisecond (ms) delay.
- Hardware Interrupt: Hardware sends a message to notify the driver when a change occurs.

2. Global Configuration: Set the global default using the driver parameter "msr_poll_mode":

- 0: Disable polling
- 1: Max polling (Default)
- =2: Delayed polling (Value = delay in milliseconds)
- -1: Hardware interrupt mode

3. Per-Port Configuration: Individual settings can be adjusted via sysfs before opening the serial port. (Replace 'ttyUSB0' with the appropriate device name)

- To check current status: `cat /sys/class/tty/ttyUSB0/device/f81534a_polling_msr`
- To modify the mode (e.g., set to hardware interrupt):
 - `echo -1 > /sys/class/tty/ttyUSB0/device/f81534a_polling_msr`