



# Linux USB Driver Installation

## H24 HSPA Series

### Technical Information

#### Motorola H24 Linux Standard USB Driver Installation



**MODULES**   
Zero time, Zero effort



## ACM Driver – Modem Interface

Driver name: cdc-acm

Use this driver to take over H24 modem interface.  
After loading driver a new device will be added - /dev/ACM0.  
Check '/var/log/messages' for any abnormalities.

***In case ACM device is not created refer to section “ACM driver adjustments”.***

### There are 2 alternatives to build driver:

1. *Compile with Kernel configuration menu (kernel build):*

Select “Device Drivers” sub menu:

```
General setup --->
[*] Enable loadable module support --->
-*- Enable the block layer --->
Processor type and features --->
Power management options --->
Bus options (PCI etc.) --->
Executable file formats / Emulations --->
-*- Networking support --->
Device Drivers --->
Ubuntu Supplied Third-Party Device Drivers --->
Firmware Drivers --->
File systems --->
Kernel hacking --->
Security options --->
-*- Cryptographic API --->
[*] Virtualization --->
Library routines --->
---
Load an Alternate Configuration File
Save an Alternate Configuration File
```



Select "USB support" sub menu:

```
^(-)
Input device support --->
Character devices --->
{M} I2C support --->
[*] SPI support --->
[*] GPIO Support --->
{M} Dallas's 1-wire support --->
-*- Power supply class support --->
{*} Hardware Monitoring support --->
{*} Generic Thermal sysfs driver --->
[*] Watchdog Timer Support --->
    Sonics Silicon Backplane --->
    Multifunction device drivers --->
    Multimedia devices --->
    Graphics support --->
<M> Sound card support --->
[*] HID Devices --->
[*] USB support --->
<M> MMC/SD card support --->
< > Sony MemoryStick card support (EXPERIMENTAL) --->
-*- LED Support --->
[ ] Accessibility support --->
<M> InfiniBand support --->
[*] EDAC - error detection and reporting (EXPERIMENTAL) --->
<*> Real Time Clock --->
[*] DMA Engine support --->
[*] Auxiliary Display support --->
<M> Userspace I/O drivers --->
```



Select "USB Modem (CDC ACM) support" as module:

```
^(-)
[*] USB device filesystem
[ ] USB device class-devices (DEPRECATED)
[ ] Dynamic USB minor allocation
[*] USB selective suspend/resume and wakeup
[*] USB Monitor
*** USB Host Controller Drivers ***
<M> Cypress C67x00 HCD support
<M> EHCI HCD (USB 2.0) support
[*] Root Hub Transaction Translators
[*] Improved Transaction Translator scheduling (EXPERIMENTAL)
<M> ISP116X HCD support
<M> ISP 1760 HCD support
<M> OHCI HCD support
[ ] OHCI support for Broadcom SSB OHCI core
<M> UHCI HCD (most Intel and VIA) support
<M> Elan U132 Adapter Host Controller
<M> SL811HS HCD support
<M> CF/PCMCIA support for SL811HS HCD
<M> R8A66597 HCD support
*** USB Device Class drivers ***
<M> USB Modem (CDC ACM) support
<M> USB Printer support
<M> USB Wireless Device Management support
*** NOTE: USB_STORAGE enables SCSI, and 'SCSI disk support' ***
*** may also be needed; see USB_STORAGE Help for more information ***
<M> USB Mass Storage support
[ ] USB Mass Storage verbose debug
v(+)
```



## 2. Compile separately (only module):

Create a makefile in the cdc-acm.c directory (<linux src root>/drivers/usb/class)  
Copy & paste the following code to the new file.

```
obj-m := cdc-acm.o
```

```
KDIR := /lib/modules/$(shell uname -r)/build
```

```
PWD := $(shell pwd)
```

```
default:
```

```
$(MAKE) -C $(KDIR) SUBDIRS=$(PWD) modules
```

Execute the following to build the module (cdc-acm.ko)

```
# make
```

To install the driver copy it to '/lib/modules/`uname -r`/kernel/drivers/usb/class' or use the *install* command.

Execute the following line to load the driver.

```
# modprobe cdc-acm
```

If you don't want to install the module use:

```
# insmod cdc-acm.ko
```



## Serial Driver – Control interface

Driver name: **usbserial**

This driver can be used as reduced modem – taking over ACM interface. In this case no modem signals will be available.

Another usage is as control channel in multi channeling configuration - having 2 channels work in parallel, The ACM driver to handle Data and the Serial Driver for handling control.

Loading this driver should be done with vendor & product arguments (Use lsusb command to verify current product id)

For Example:

```
# lsusb
BUS007 Device 010: ID 22b8:2d91 Motorola PCS
:
:
# modprobe usbserial vendor=0x22b8 product=0x2d91
```

After loading driver a new device will be added for each relevant interface (n) -

/dev/USBn

Check '/var/log/messages' for any abnormalities.

***Verify that driver exists within kernel. If not, build it via kernel configuration menu (kernel build):***



Select "USB support" sub menu:

```
^(-)
[*] SanDisk SDDR-09 (and other SmartMedia) support
[*] SanDisk SDDR-55 SmartMedia support
[*] Lexar Jumpshot Compact Flash Reader
[*] Olympus MAUSB-10/Fuji DPC-R1 support
[ ] Support OneTouch Button on Maxtor Hard Drives
[*] Support for Rio Karma music player
[ ] SAT emulation on Cypress USB/ATA Bridge with ATACB
[*] The shared table of common (or usual) storage devices
    *** USB Imaging devices ***
<M> USB Mustek MDC800 Digital Camera support
<M> Microtek X6USB scanner support
    *** USB port drivers ***
<M> USS720 parport driver
<M> USB Serial Converter support --->
    *** USB Miscellaneous drivers ***
<M> EMI 6|2m USB Audio interface support
<M> EMI 2|6 USB Audio interface support
<M> ADU devices from Ontrak Control Systems
<M> USB Diamond Rio500 support
<M> USB Lego Infrared Tower support
<M> USB LCD driver support
<M> USB BlackBerry recharge support
<M> USB LED driver support
<M> Cypress CY7C63xxx USB driver support
<M> Cypress USB thermometer driver support
<M> USB Phidgets drivers
<M> USB PhidgetInterfaceKit support
v(+)
```



Select "USB Generic Serial Driver" as build-in driver:

```
--- USB Serial Converter support
-*- Functions for loading firmware on EZUSB chips
[*] USB Generic Serial Driver
<M> USB AIRcable Bluetooth Dongle Driver
<M> USB ARK Micro 3116 USB Serial Driver
<M> USB Belkin and Peracom Single Port Serial Driver
<M> USB Winchiphead CH341 Single Port Serial Driver
<M> USB ConnectTech WhiteHEAT Serial Driver
<M> USB Digi International AccelePort USB Serial Driver
<M> USB CP2101 UART Bridge Controller
<M> USB Cypress M8 USB Serial Driver
<M> USB Empeg empeg-car Mark I/II Driver
<M> USB FTDI Single Port Serial Driver
<M> USB Fundamental Software Dongle Driver
<M> USB Handspring Visor / Palm m50x / Sony Clie Driver
<M> USB PocketPC PDA Driver
< > USB IR Dongle Serial Driver
<M> USB Inside Out Edgeport Serial Driver
<M> USB Inside Out Edgeport Serial Driver (TI devices)
<M> USB Garmin GPS driver
<M> USB IPWireless (3G UMTS TDD) Driver
< > USB Infinity USB Unlimited Phoenix Driver
<M> USB Keyspan PDA Single Port Serial Driver
<M> USB Keyspan USA-xxx Serial Driver
<M> USB KL5KUSB105 (Palmconnect) Driver
<M> USB KOBIL chipcard reader
<M> USB MCT Single Port Serial Driver
v(+)
```





## ACM driver adjustments

Path: <linux src root>/drivers/usb/class/cdc-acm.c

If a device /dev/ttyACMn is not created after probing driver do the following code change and build the module:

*Add 5 elements to acm\_ids array ( static struct usb\_device\_id acm\_ids[] )*

```
USB_DEVICE(0x22b8, 0x2d91)
USB_DEVICE(0x22b8, 0x2d92)
USB_DEVICE(0x22b8, 0x2d93)
USB_DEVICE(0x22b8, 0x2d94)
USB_DEVICE(0x22b8, 0x2d95)
```

### **Note**

usbserial driver doesn't need adjustment. It probes with vendor & product arguments.