INTRACOM

netMod

netMod USB Installation

LINUX 2.2.x

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Introduction

About USB...

USB (Universal Serial Bus) is a standard developed by computer and telecommunication industry for connection of peripheral devices to personal computers. USB devices offer high data rates and use a standard port and connector. They are configured automatically as soon as they are attached to the computer. No cards installation by opening the computer case is needed anymore. USB devices can be attached or removed while the computer is running. In the near future, USB port is going to replace the communication ports (like parallel, RS232 etc.).

About netMod USB
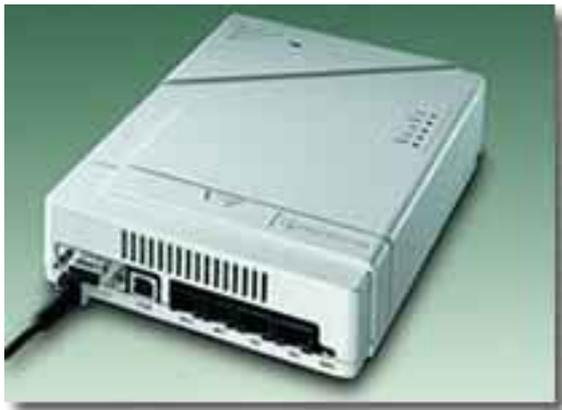

Figure 1   netMod USB

The *netMod USB* supports the Plug and Play functions of the USB standard and works with many operating systems such as *Windows$^{®}$98*, *Windows$^{®}$2000*, *Windows$^{®}$ME*, Linux, MacOS.

The *netMod USB* has the same functions as the *netMod* for serial port connection.

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Conventions used in this manual

☞ ... indicates instructions to be carried out by the user

⇒ ... indicates the results of instructions

! ... indicates notes or recommendations for the user

Names of devices, accessories, products etc. are written *italic*, e.g.: *netMod USB*

Text to be entered by the user is written ***italic bold***, e.g.: ***make xconfig* <Enter ↲>**

Keys to be pressed on the keyboard are depicted as **<key**>, e.g.: **<Enter ↲>**

Standard Accessories

1. netMod USB	*5. RS-232 cable* (serial cable)
2. USB cable	*6. Wall mounting Kit*
3. Serial Adapter (DP-9 to DB-25)	*7. netMod Manual*
4. RJ-11 cable (for POTS)	*CD-ROM netMod Installation & Configuration*

Figure 2   netMod USB Accessories

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References for further help

1.)	INTRACOM's netMod Helpdesk	http://netmod.intracom.gr
2.)	Linux Documentation Project	http://www.linuxdoc.org
2 a.)	Detailed guide to kernel configuration, compilation, upgrades, and troubleshooting for ix86-based systems.	http://www.linuxdoc.org/HOWTO/Kernel-HOWTO.html
3.)	Linux USB project	http://www.linux-usb.org/USB-guide/book1.html
4.)	USB Home	http://www.usb.org

Before installation....

! **Kernel Version 2.2.18 or higher**...
...for the proper installation of *netMod USB* in a Linux environment, make sure that the kernel installed on your computer is of version 2.2.18 or higher (only these versions support ACM drivers). If you have a lower version, please install the required kernel to the corresponding directory (generally: */usr/src/kenrel-version*).

! **ATTENTION**

In order to compile and configure the kernel It is assumed that the end user has very strong knowledge of Linux OS and PC Hardware. The current instructions had been written under the above condition. Don't do anything if you are not sure or you don't know what you do.

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Driver Installation Procedure in 12 steps

The easiest way to compile a kernel is within *X Windows* environment.

Step 1.   Startup

☞ Startup *X Windows*

☞ Open a terminal application (*xterm,rxvt*)

☞ At the command promt type: *cd /usr/src/linux-version*   **< Enter ↵ >**

⇒ You have changed to the directory of Linux kernel.

☞ Now type: *make xconfig* **< Enter ↵ >**

⇒ After a few seconds the following window will appear on your screen.

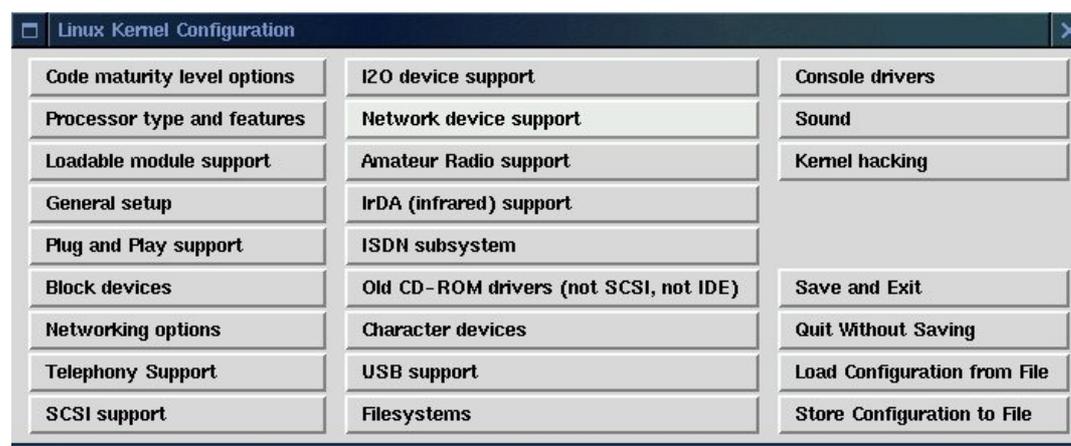| Linux Kernel Configuration		
Code maturity level options	I2O device support	Console drivers
Processor type and features	Network device support	Sound
Loadable module support	Amateur Radio support	Kernel hacking
General setup	IrDA (infrared) support	
Plug and Play support	ISDN subsystem	
Block devices	Old CD-ROM drivers (not SCSI, not IDE)	Save and Exit
Networking options	Character devices	Quit Without Saving
Telephony Support	USB support	Load Configuration from File
SCSI support	Filesystems	Store Configuration to File

Figure 3   Linux Kernel Configuration Window

! If this is the first time that you compile a kernel you must do a more general
configuration for the whole system. For help please refer to **References for further help**
on page 4.

If your have already done the general configuration, continue with the following steps....

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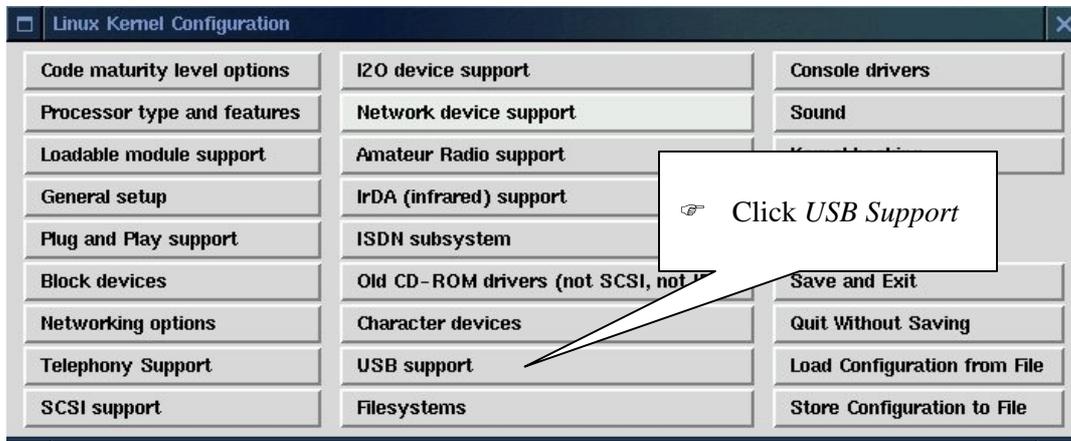## Step 2. USB Support Selection

☞ Click *USB Support*

Figure 4   Linux Kernel Configuration Window

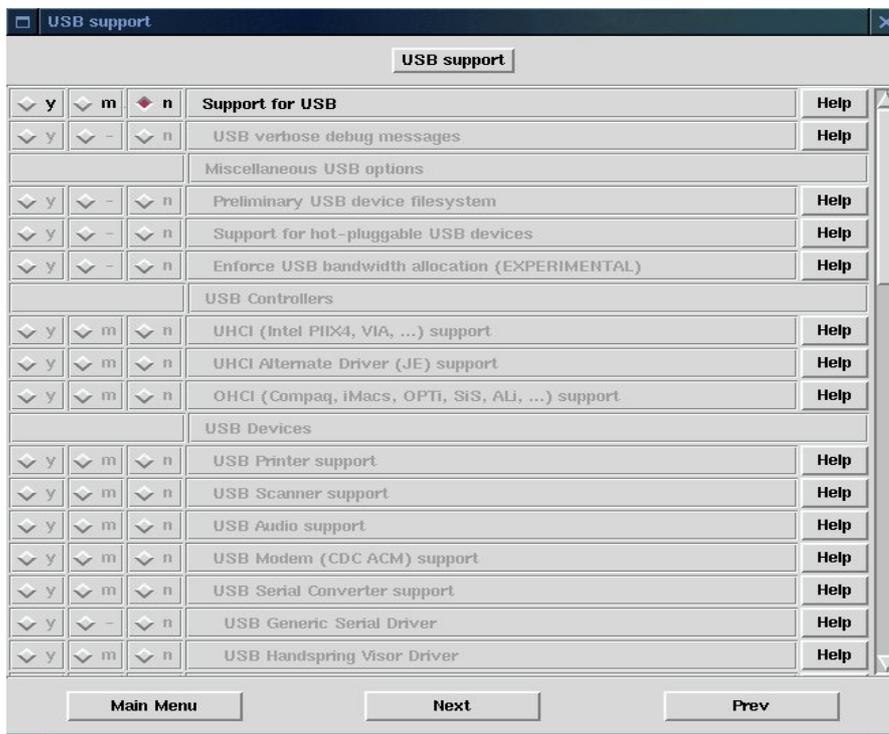⇒   The following window will appear:

Figure 5   USB Support Window

By default all options in this window are disabled. In the next step we will turn on only the necessary options for our system configuration...

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Step 3. *USB Support Configuration*

! The following configuration applies for Intel based machines (i386)

☞ Select *yes (y)*

☞ Select *module (m)*
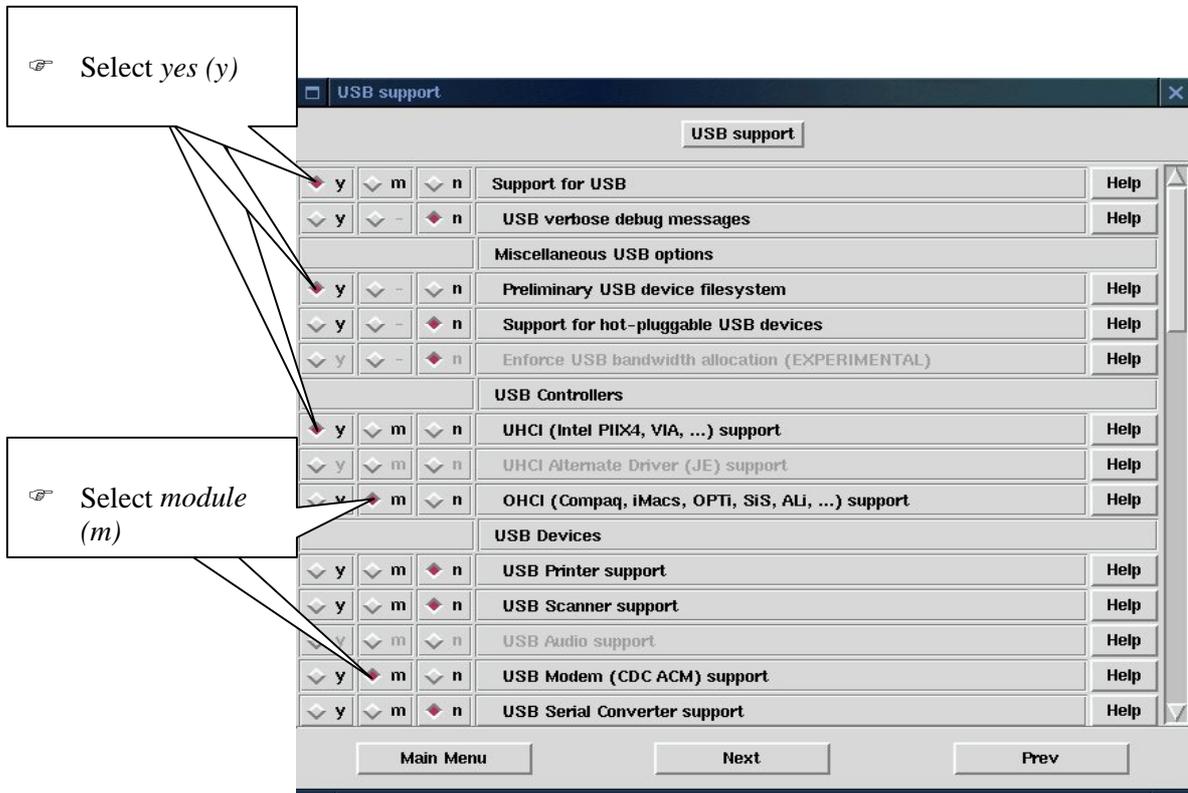
Figure 6   USB Support Window

⇒

Selected options:	What does that mean?
Support for USB	The core kernel support for USB
Preliminary USB device filesystem	The USB device file system
UHCI (Intel PIIX4, VIA, ...) support	The main support for the USB chipset
OHCI (Compaq, iMacs, OPTi, SiS, ALi, ...) support	Support for other USB chipsets
USB modem (CDC ACM) support	ACM driver for USB modems

! It is suggested here to include the ACM and OHCI drivers as modules in order to increase the kernel size.

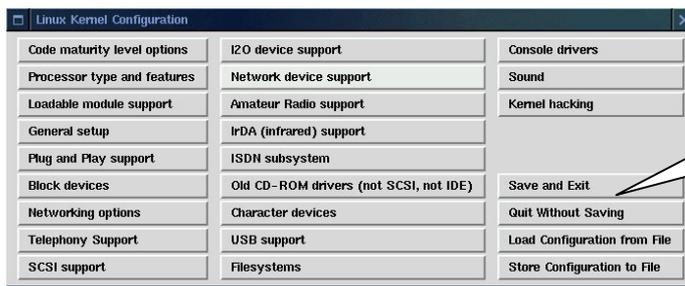**netMod USB Installation** Ver. 3 / 20/05/2002(usb_linux_22x_en)

Step 4. Return to Main Menu
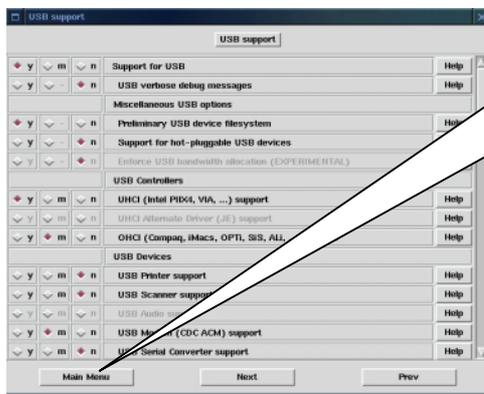
☞ Click *Main Menu* to return to the previous window

Figure 7   USB Support Window

Step 5. Save and Exit

☞ Click *Save and Exit* to save your kernel configurarion settings

Figure 8   Linux Kernel Configuration Window

Step 6. Start Compilation

☞ At the command promt type:
  make dep clean bzImage modules modules_install **< Enter ↵ >**

☞ **Note: In case that you are using "Lilo" in order to boot your kernel replace "bzImage" with "bzlilo".**

⇒ The compilation of the kernel begins now and if all settings are OK the whole process will end after required time (depends on CPU speed and memory of your system). The new kernel will then be saved now the directory:
  /usr/src/kernel-version/arch/i386/boot .

! For more information about kernel configuration and compilation see
  http://www.linuxdoc.org/HOWTO/Kernel-HOWTO.html

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Step 7. Enabling USB File System

☞ Open the file */etc/fstab* for editing

☞ Add the line:
none   /proc/bus/usb   usbdevfs   defaults   0   0

☞ If you don't want usb device file system to by enabled by default during system boot up you can ignore te above step. You can mount it at any time from the command prompt by typing:

```
mount -t usbdevfs none /proc/bus/usb
```

Step 8. Kernel Loader Configuration

☞ You have to configure your kernel loader (*Lilo,Loadlin*) and restart your system to load the new kernel.

Step 9. Reboot

☞ At the command promt type: *reboot* < **Enter ↵** >

⇒ During the booting of your system lines similar to the following will appear on your screen showing you that the USB core driver has been loaded from the kernel:

```
usb.c: registered new driver usbdevfs
usb.c: registered new driver hub
usb-uhci.c: $Revision: 1.251 $ time 14:40:13 Mar 20 2001
usb-uhci.c: High bandwidth mode enabled
usb-uhci.c: USB UHCI at I/O 0xe000, IRQ 3
usb-uhci.c: Detected 2 ports
usb.c: new USB bus registered, assigned bus number 1
```

Step 10. netMod Connection

☞ Connect *netMod USB* to the U line of the telephone network

☞ Connect *netMod USB* to the AC mains power supply

☞ Connect *netMod USB* to a free USB port of your PC with the *USB cable* (⇒ Standard Accessories)

⇒ The *USB* LED on your *netMod USB* device will light up green to show you that the *USB driver has recognized the netMod USB successfully*.

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Step 11. ACM Driver Loading

☞ Login to your system

☞ At the command promt type: *modprobe acm* **< Enter ↵ >**

☞ At the command promt type: *1smod* **< Enter ↵ >**

⇒ An information similar to the following will be displayed on your screen:

```
pcnikal:~ # lsmod
Module                  Size  Used by
acm                     4976   0  (autoclean)
sr_mod                 12112   1  (autoclean)
cdrom                  26560   0  (autoclean) [sr_mod]
snd-pcm-oss            18800   1  (autoclean)
snd-pcm-plugin         16624   0  (autoclean) [snd-pcm-oss]
snd-mixer-oss           5280   1  (autoclean) [snd-pcm-oss]
snd-seq-midi            3664   0  (unused)
snd-seq-midi-event      3408   0  [snd-seq-midi]
snd-seq                43360   0  [snd-seq-midi snd-seq-midi-event]
snd-card-cs461x         2064   2
snd-cs461x             66992   0  [snd-card-cs461x]
snd-rawmidi            10464   0  [snd-seq-midi snd-cs461x]
snd-seq-device          4256   0  [snd-seq-midi snd-seq snd-rawmidi]
snd-pcm                32704   0  [snd-pcm-oss snd-pcm-plugin snd-cs461x]
snd-timer               8864   0  [snd-seq snd-pcm]
snd-ac97-codec         24736   0  [snd-cs461x]
snd-mixer              25008   0  [snd-mixer-oss snd-ac97-codec]
snd                    37680   1  [snd-pcm-oss snd-pcm-plugin snd-mixer-oss snd-
seq-midi snd-seq-midi-event snd-seq snd-card-cs461x snd-cs461x snd-rawmidi snd-s
eq-device snd-pcm snd-timer snd-ac97-codec snd-mixer]
soundcore               3856   4  [snd]
nfsd                   67280   0  (autoclean)
```

Step 12. Viewing the USB Devices

☞ At the command promt type: *cat /proc/bus/usb/devices* **< Enter ↵ >**

⇒ On your screen you will see an informational text about the devices attached to the USB ports of your computer. This text will be similar to the following:

```
T:  Bus=01 Lev=00 Prnt=00 Port=00 Cnt=00 Dev#=  1 Spd=12  MxCh= 2

B:  Alloc=  0/900 us ( 0%), #Int=  0, #Iso=  0

D:  Ver= 1.00 Cls=09(hub  ) Sub=00 Prot=00 MxPS= 8 #Cfgs=  1

P:  Vendor=0000 ProdID=0000 Rev= 0.00

S:  Product=USB UHCI Root Hub

S:  SerialNumber=e000

C:* #Ifs= 1 Cfg#= 1 Atr=40 MxPwr=   0mA

I:  If#= 0 Alt= 0 #EPs= 1 Cls=09(hub  ) Sub=00 Prot=00 Driver=hub

E:  Ad=81(I) Atr=03(Int.) MxPS=    8 Ivl=255ms

T:  Bus=01 Lev=01 Prnt=01 Port=00 Cnt=01 Dev#=  2 Spd=12  MxCh= 0

D:  Ver= 1.10 Cls=02(comm.) Sub=00 Prot=00 MxPS=16 #Cfgs=  1

P:  Vendor=0bf1 ProdID=0001 Rev= 1.00

S:  Manufacturer=Intracom S.A.
```

```
S:   Product=NetMod USB
S:   SerialNumber=Firmware Ver 1.0
C:* #Ifs= 2 Cfg#= 1 Atr=60 MxPwr=   0mA
I:   If#= 0 Alt= 0 #EPs= 1 Cls=02(comm.) Sub=02 Prot=01 Driver=acm
E:   Ad=81(I) Atr=03(Int.) MxPS=   16 Ivl= 10ms
I:   If#= 1 Alt= 0 #EPs= 2 Cls=0a(data ) Sub=00 Prot=00 Driver=acm
E:   Ad=82(I) Atr=02(Bulk) MxPS=   64 Ivl= 10ms
E:   Ad=02(O) Atr=02(Bulk) MxPS=   64 Ivl= 10ms
```

You need now to set up the device node entries for the various modems. You can use up to 32 modems with this driver. Use the following commands to set up the first four:

```
mknod /dev/ttyACM0 c 166 0
mknod /dev/ttyACM1 c 166 1
mknod /dev/ttyACM2 c 166 2
mknod /dev/ttyACM3 c 166 3
```

They can be used with your dialer software (*Xisp,kppp*) or any other communication software (such *minicom*).

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