USB Interface III

*micro*HAM

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TABLE OF CONTENTS

1 - FEATURES AND FUNCTIONS

◆ *No Serial or Parallel port necessary, just one USB port*
◆ *Complete "Computer <-> Radio" isolation*
  • bidirectional transformer isolation of audio signals
  • optical isolation of ALL digital signals: Radio Control, CW, PTT, FSK
◆ *Compatible with all MS Windows based logging or control software*
  • the special microHAM "USB Device Router" program creates virtual COM ports for full operation with standard Windows applications.
  • customizable presets allow instantly changing USB Interface III parameters to match the program currently in use
◆ *Compatible with non-Windows logging or control software*
  • uses industry standard USB UART (FTDI) drivers
  • uses industry standard USB Audio (TI/Burr-Brown) drivers
◆ *Integrated computer control port for all radios CI-V, FIF-232, IF-232, RS-232*
  • fully supports Icom, Kenwood, Ten-Tec, Yaesu and other radios
  • no separate level converter required
◆ *Squelch input for additional software control*
◆ *Strong RFI immunity*
  • integrated chokes and filters for best RFI immunity
  • advanced shielding and circuit design for RFI product suppression
◆ *Connections:*
  • Computer – USB
  • Radio – DB15
◆ *Front panel LEDs for easy visual feedback of CW, PTT, SQL, POWER and radio control data*
◆ *Metal/Aluminum case, powder coated and silk screened*
◆ *Free, no time limit, on-line firmware/software upgrades*

2 - IMPORTANT WARNINGS

**You must set the CAT level jumpers inside the USB Interface III
before using it for the first time.**

**If you power USB Interface III from an external power supply ALWAYS
check the polarity of the external 13.8 V supply.**

**If your radio includes upgradeable firmware,
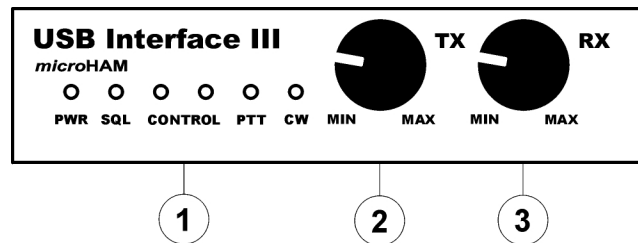DO NOT perform any upgrade through USB Interface III.**

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3 - PANEL DESCRIPTION

Rear Panel
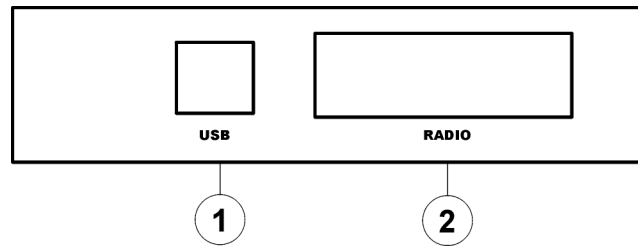
(1) - RADIO: DB15F connector for radio interconnection – a detailed description is in Appendix A

(2) - USB: USB B connector for computer connection. Connect a standard USB A-B cable.

Front Panel

(1) – POWER: YELLOW color indicates when unit is powered
     SQL: GREEN color indicates when squelch is active
     CONTROL: RED color indicates when radio sends data to computer
             GREEN color indicates when computer sends data to radio
     PTT: RED color indicates when PTT is active
     CW: RED color indicates when CW is active
(2) – TX: Transmit Audio Level
(3) – RX: Receive Audio Level

4 - INSTALLATION

Installing USB Interface III consists of several steps:
1) prepare USB Interface III to work with your radio
2) install microHAM USB Device Router (the control and interface software)
3) configure the USB Audio CODEC
4) configure Router

Preparing USB Interface III for Use

1. Remove the top cover from the USB Interface III and set the CAT jumpers as shown in the following chart. The CAT interface jumpers must be configured to select the proper level for each radio type.
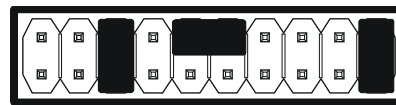
   RS-232 levels:
   Elecraft: K2, K3, Icom: 7800, JRC: JST-245
   Kenwood TS-480, 570, 870, 2000,
   TenTec: all radios with DB9 or DB25 connectors
   Yaesu: FT-450, FT-847, F-920, FT-950, FT-1000MP, Mark V, Mark V Field, FT-2000, FT-9000
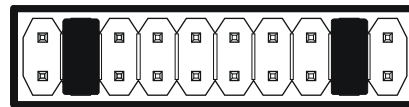
   RS232

   IF-232 levels:
   Kenwood: TS-140, 440, 450, 680, 690, 711, 790, 811, 850, 940, 950

   IF232

   FIF-232 levels:
   Yaesu FT-100, 736, 747, 757GXII, 767, 817, 840, 857, 890, 897, 900, 980, 990, 1000, 1000D

   FIF232

   CI-V levels:
   Icom: all radios except 7800 with RS-232
   Ten-Tec: all radios with 3.2 mm connector
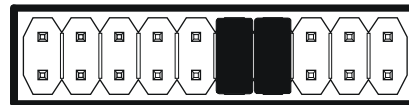
   CI-V

   Note: the CAT interface is not configured at the factory.

2. Plug the DB15M on the radio cable set into the DB15 connector on the rear panel of the USB Interface III and plug ALL connectors from the cable set to the appropriate jacks at the rear panel of your transceiver. Each connector on the radio interface cable is marked same as the matching jack on your transceiver.

3. If the radio cable ends with leads for external power, connect these leads to a 12-16V DC power supply. *Be sure to observe the proper polarity*.

4. Prepare but do not connect the USB cable from USB Interface III to your computer.

Installing *micro*HAM USB Device Router

To install Router click on the **Install USB Device Router** link on the installation CD or download the most recent installation package from the web site: www.microHAM.com/downloads.html.

If you download an updated package, click on "urouter_release_xx_xx.exe" (xx_xx is version) to start the installation.

The Windows setup utility will start and ask into which folder Router and its supporting files should be installed. Note: unless you have a very strong reason to install Router elsewhere, please accept the default location.
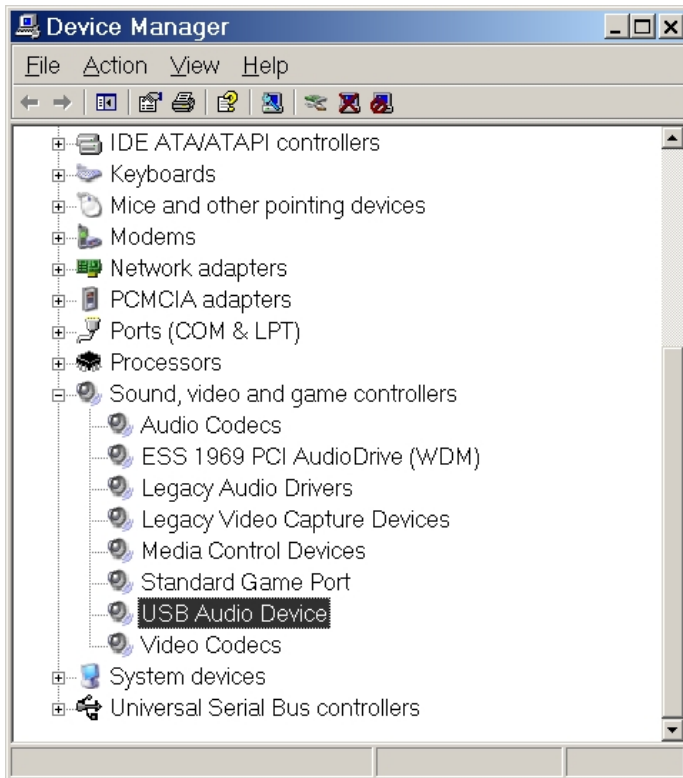
When the Router installation is completed, click "Finish" to launch Router for the first time.   Then plug in the USB cable and proceed to configuring Router for your station and software.

Configuring USB Audio CODEC

Windows will automatically install the USB Audio Device driver to support the USB Audio CODEC in USB Interface III.

Windows automatically selects any newly installed audio device as the default device for Sound Playback and Sound recording. This is undesirable as Windows Sounds would be played through USB Interface III.
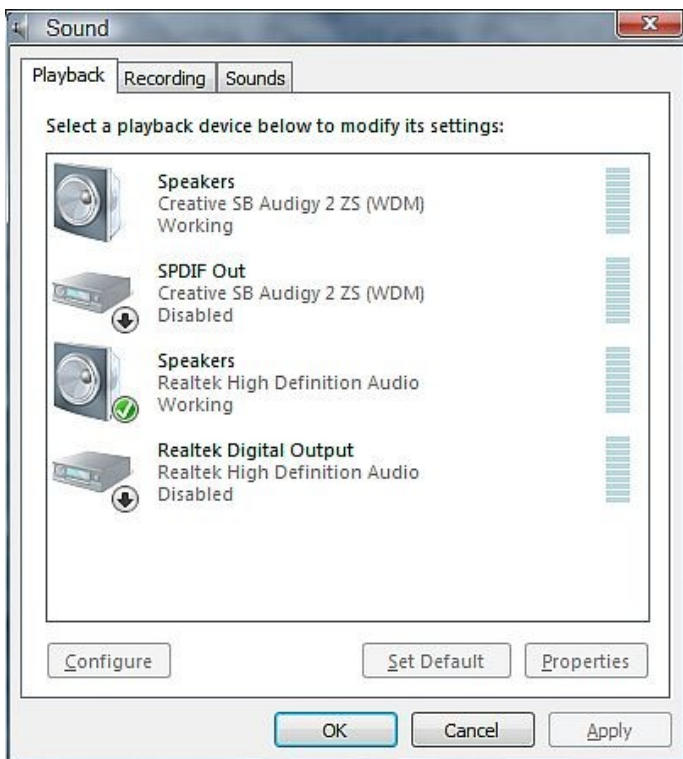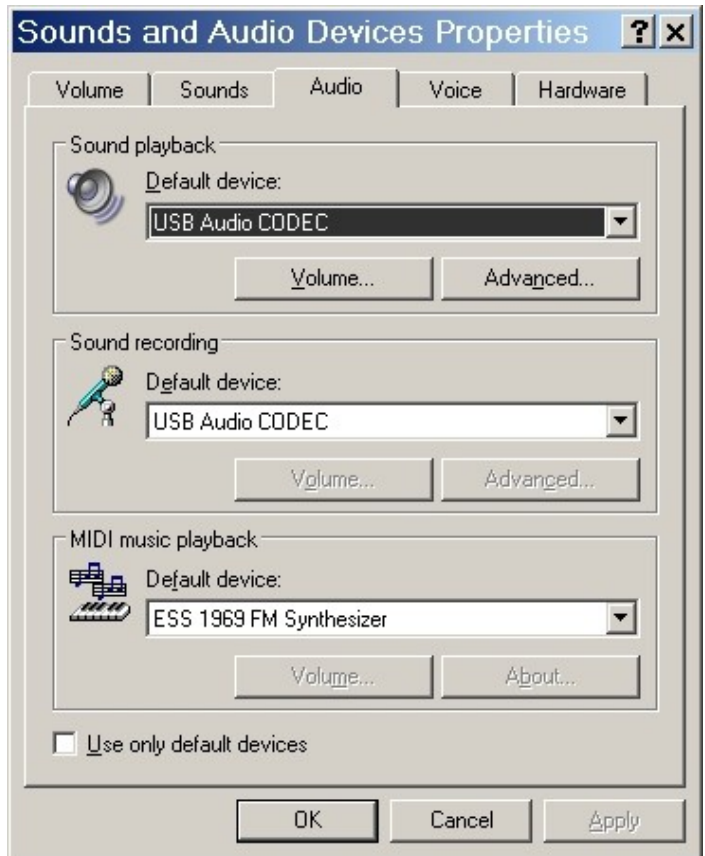
In Windows 2000 and Windows XP, open "Sounds and Audio Devices" in the Control Panel or right click on the Speaker icon on the Taskbar and select Adjust Audio Properties. Reset the Default device for Sound Playback and Sound Recording to your computer's primary sound device.

In Windows Vista, open "Sound" in the Control Panel or right click on the Speaker Icon on the Taskbar and select "Playback Devices." Reset the default to the Speakers of your compuer's primary sound device.

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Configuring *micro*HAM USB Device Router

The MicroHAM USB Device Router (Router) program provides a Windows compatible *configuration tool* for *micro*HAM USB Devices *(*USB Interface III as well as *micro*KEYER, CW Keyer and USB Interfaces*)* and *software interface* to other Windows applications (loggers, digital mode software, etc.). The software interface is provided as *Virtual Serial Ports*.

To configure and use USB Interface III with Windows compatible application programs it is necessary to have installed the USB driver, started the Router, and applied power to USB Interface III by turning on the attached radio or external power supply. Router is then configured to match the requirements of the application (logger or digital mode) software.

Creating and Using Virtual Serial Ports

microHAM Router provides a set of virtual serial ports which allow Windows applications (loggers and digital software) to work with USB Interface III just as they would work with "real" (hardware) serial ports.

In order to use these virtual Ports, you must first create the ports and then assign a function (radio control, PTT, CW, FSK, etc.) to each virtual port.

DO NOT define a port that is already in use (for example, COM1 or COM2 which are hardware ports on many motherboards) or a virtual port used by another USB device. Router will not allow using a COM port number which is already present in the system but ports are sometimes hdden. If a another device which also uses virtual serial ports (external USB devices, bluetooth devices, PDA etc ...) is not connected to the computer when creating virtual ports in Router, the ports can overlap and will not work properly when you connect such device.

Important warning: Before creating virtual COM ports, attach all external devices you will use with the computer. Restart Router and then create the virtual COM ports.

Virtual ports are created from the Virtual Port menu.

Create - Creates virtual COM ports. It is possible to select more than one port at a time by holding the *Ctrl* key and clicking several port numbers. Creating virtual ports may take a while, be patient.
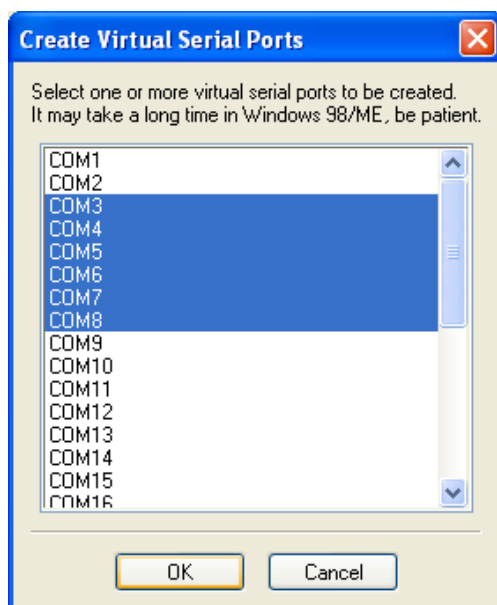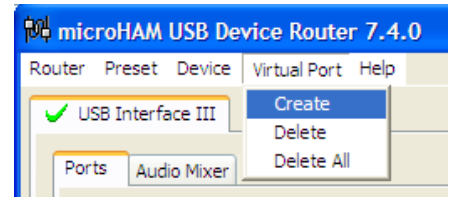
Delete - Deletes any single virtual port.

Delete All - Deletes all previously created virtual ports.

Do not delete a virtual port until all applications using that port have been closed.

TIP: It is possible to select multiple ports at one time by holding *Ctrl* key on keyboard and clicking on the COM port numbers.

TIP: If you have uninstalled another device which used virtual ports and Router does not offer the released COM port number you will need to reset the virtual port bus. You can do this by deleting all virtual ports in Router at once. Select "Virtual Port | Delete All" then create the ports again. Any missing COM port number should appear.

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5 - *micro*HAM USB DEVICE ROUTER
ROUTER MENU

Restore Router Settings: used to restore settings from a _urs_ file created by the backup command.
A _urs_ file can be used only with the device for which it was generated (the file contains the unit serial number) on a computer with same port assignments.

Warning: Restoring a backup replaces all current Router settings including presets, use it carefully!

Backup Router Settings: used to create backup _urs_ file.
This file contains Router settings (including Presets) for all devices defined in Router.

Options | General
- *Load Router on Start-up:* when checked, Router will start automatically each time the computer is started or rebooted.
- *Start Router Minimized:* when checked, Router will started minimized

Options | Band Map: - Does not apply to USB Interface III -
Customizable band edge boundaries used to drive the band data output. BCD codes can be customized for driving antenna switches or bandpass filter control. This setting is not used with DigiKeyer.

Options | Digital Band Map: - Does not apply to USB Interface III -
Customizable band boundaries for the digital mode operation. These settings are used for the (optional) automatic selection of audio switching and PTT mode based on operating freuquency. Careful selection of the "Digital band" is neccessary for transceivers which do not have a special mode for AFSK operation or do not report the mode in the computer command set. This primarily effects Kenwood and TenTec transceivers although it applies to some older Icom and Yaesu radios.

Options | Audio Devices: - Does not apply to USB Interface III -
- *Don't use audio devices:* when checked, Router does not use audio devices and the settings on the Audio Mixer and DVK tabs have no effect.
- *Manualy assign audio devices:* when checked, Router will allow the user to select audio devices (sound card) in the appropriate fields at Audio Mixer tab and will actively control the audio devices
- *Automaticaly assign microHAM audio devices:* when checked, Router will automatically assign proper audio device of the same name if multiple microHAM interfaces of the same kind are connected to the one computer.

Options | DVK: - DVK not supported by USB Interface III -
- *Voice message time limit:* maximum time for each voice message up to 120 seconds.
- *Sample rate:* sampling frequency used during recording and playback of voice messages.
- *Sample size:* sampling size used during recording of voice messages. Sampling size primarily effects audio quality of the messages. 16bit samples provide higher quality than 8bit.

Options | USB:
- *Noise immunity:* selects how many times an undelivered USB packet will be repeated before the USB device is disconnected from the operating system.
- *Response time:* selects how long the USB chip in a device will wait for additional data before sending data to the operating system.

Minimize: Clicking this will minimize Router to the system tray at the bottom right corner of the Windows Taskbar (the "System Notification Area"). .

TIP: When Router is minimized you can restore it by double-clicking on the Router tray icon. You can also restore Router by double-clicking on the Router icon on the desktop or restarting Router from the Programs menu.

Exit: Clicking on this item will terminate Router.

Note: when Router is terminated, application software will no longer be able to communicate with USB Interface III and the radio.

PRESET MENU

The requirements of each application (logging, control and digital mode programs) are different and each program handles radio control, CW / FSK/PTT keying, and the sound card its own way. In some instances what works for one application may not work properly with another. To get maximum performance from USB Interface III, you may wish to customise the settings for each application.

For easy switching among applications, Router supports up to 12 *user definable* **Presets**. Different configurations can be stored in these presets and recalled almost instantly simply by clicking on the preset button.

Each preset contains the settings for all devices connected to, and controlled by Router. For example, if Router controls a DIGI KEYER, a microKEYER, a CW Keyer and a USB Interface III, each preset remembers the settings for all four devices including the assignment of COM ports and the contents of all sub-tabs except the FSK/CW Messages tab.

There are three ways to apply a preset once it is created:

1. Click on **Preset** and select the desired preset from the pull-down menu.

2. Click on a preset button. To have buttons visible in Router, **Preset | Show Buttons** must be checked. When the settings from a preset are applied, a green light located in the preset button is lit. This green light is on ONLY when all settings in Router are same as those stored in the preset.

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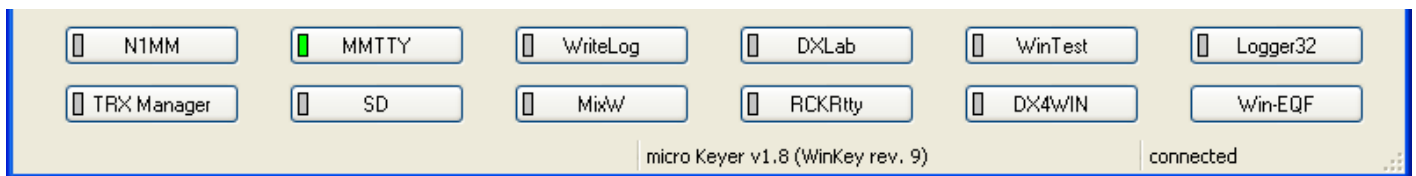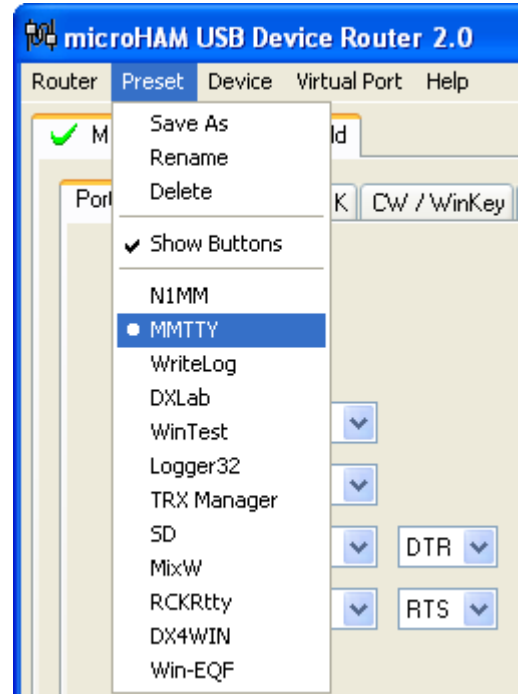
3. By right clicking on the system tray icon when the Router is minimized.

The presets and the current router configuration are stored to the registry when Router is closed and recalled when Router is loaded.

Save as - Saves the current Router settings to a preset for future use.

Rename - Allows renaming of an existing preset.

Delete - Delete chosen preset.

Show buttons - When checked, Router shows the preset buttons.
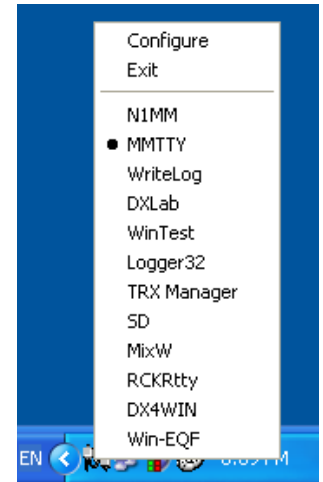
DEVICE MENU

Router can control several devices. This allows configuring the settings for all connected devices at one time by using the Presets.

Each device has its own tab (page) in the main Router notebook. The content of a device tab depends on device type. Adding a device is automatic the first time Router detects a supported device (USB driver). Once detected, a device remains in Router even though device is disconnected. Each device is identified by product identification number and a unique serial string.

Rename – Creates a custom device name. This is useful if two or more devices are connected to the Router. For example CW KEYER, micro Keyer and USB Interface III can be renamed to more identifiable names as shown here..
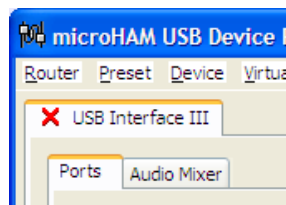
Delete - Removes a device from the Router. Only disconnected devices with a **RED "X"** on device tab can be removed. To disconnect a device from Router, unplug the USB cable from the computer or device.

Save Template - will save the current Router settings to template file.
> When clicked, Router will open a standard File Save dialog window – the default location is *C:\Documents and Settings\All Users\Application Data\microHAM\cfg.* If a hypertext (*html)* or plain text (*txt)* documentation file of the same name as the template is present in the same directory, it will be associated with the template.

Load Template – will automaticaly configure Router from a template (*.*tpl* file).
> When clicked, Router will open a standard File dialog – the default location is: *C:\Documents and Settings\All Users\Application Data\microHAM\cfg* - and the desired template can be chosen. When Router loads a template, it looks for an *html* or *txt* file with the same name as the template in the same directory. If such file is found, it is displayed.

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TIP: Templates are a powerful tool for quickly configuring Router to work with a particular application. Template files are interchangeable between computers and are well suited for cloning setups when using the same application in multi-computer stations or for sharing custom setups between users.

Upload Firmware: **- Does not apply to USB Interface III -**
     USB Interface III does not require any uploadable firmware.

VIRTUAL PORT MENU

It is necessary to create several virtual serial ports (COM ports) in order for a Windows application (logging, control or digital mode program) to access microHAM devices.
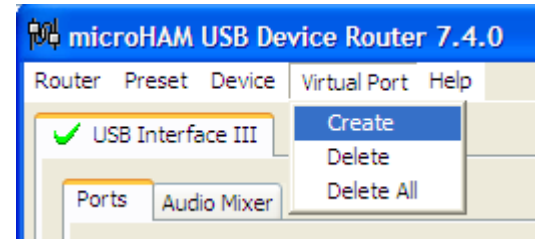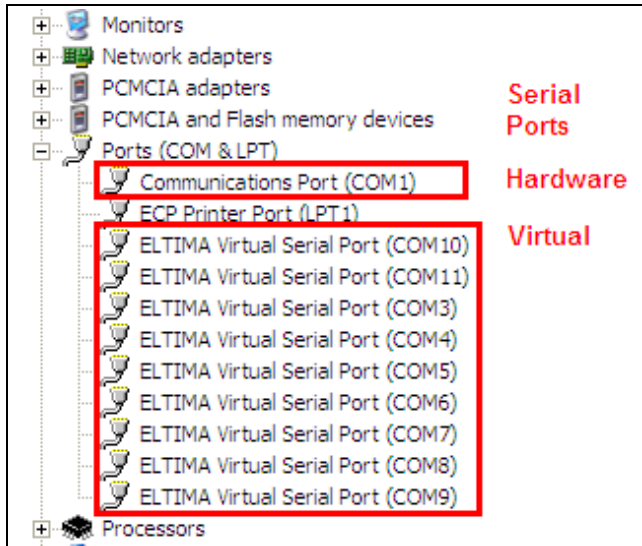
Create - Creates virtual COM ports. It is possible to select several ports at one time by holding the *Ctrl* key on the keyboard and clicking on COM port numbers. Creating a virtual port may take a while, be patient.

Delete - Deletes any single virtual port.

Delete All - Deletes all previously created virtual ports and resets Virtual Serial Port bus.

Do not delete a virtual port unless all applications using that port have been closed.

Virtual Serial Ports can be reviewed in Device Manager, under the **Ports (COM & LPT)** folder.

Note: Properly working ports should not display an exclamation mark (!).

HELP MENU

Manuals: Link to microHAM manuals located on your system

Setup Guides: Link to software configuration guides for many common applications.

Download Documents: Downloads microHAM documentation including updated manuals and setup guides. You may specify the products for which you want documentation. Note: requires an internet connections.

microHAM Home Page: Link to www.microHAM.com

microHAM Downloads Page: Link www.microham.com/downloads.html

Show Tooltips: When checked, small, single line help is displayed below the mouse cursor

Update Router: Download and install the most recent version of Rotuer.

About: Shows the Router's internal version number

PORTS TAB

Once the virtual ports have been created they must be associated with a specific device channel (e.g., Control, CW, PTT, etc.). These assignments should correspond to settings of the application software and must be configured first in Router then in the application (e.g., logging program, MMTTY, STREAM, etc.).

Proper assignment of the virtual COM ports is vital for intergration with loggers.
Read the following information carefully.

USB Interface III has four functions with indication of the state and settings applied by the host application

- **Radio** Control (uses RxD and TxD)
- **CW** (uses DTR)
- **PTT** (uses RTS)
- **Squelch** (uses CTS)

General note: Do not assign virtual ports for a function which is not used by your application. It is unnecessary and only consumes resources.

RADIO PORT

The control channel is used by the host application to control transceiver frequency, mode, T/R switching and many other parameters. The application communicates with the radio using a serial protocol. Most modern radios implement some form of serial control but almost every radio implementation is different. The amount of radio control depends on the particular application and radio.

TIP: The COM port number assigned in Router MUST match the port number assigned in the host application. First configure the virtual COM ports in Router then configure the application.

When an application opens the COM port assigned for control (usually at start-up), Router shows the channel as **open** and

displays baud rate, data bits, parity and number of stop bits used by the applicaiton. For example, 4800 8N2 means: 4800 baud, 8 bits data length, parity = none, and two stop bits.

Data flowing through the Control channel is indicated by two arrows. A green arrow indicates data flow from the host application to the radio and a red arrow indicates data flow from the radio to the application.

The virtual COM port assigned for Control can be shared with CW and/or PTT but sharing must be specifically supported by the application. Many applications do not know how to share the radio port with other functions, use the control lines (RTS, CTS, DTR, DSR) for handshaking, or apply a fixed level.

CW PORT

By their very nature, USB ports are not well suited to transfer the real time events required for CW keying on virtual serial port control signals (DTR). In addition to the latency in USB, there are also latencies caused by computer CPU load, internal Windows message processing (inter-process communication) and data flow from other peripherals using the USB ports. This can result in transmitted characters being garbled. To minimize these unwanted operating system effects Router uses a specially developed oversampling and prediction algorythm to assure the smoothest possible transfer of control signal events over USB. By using these techniques, CW keying in the Router is in most cases usable up to 50 WPM if the application generates keying signals accurately and does not consume 100% of CPU time at the highest priority class.

Activity on the CW channel is indicated by red arrow. The red arrow will light in time with the transmitted CW characters when port is properly configured in the application.
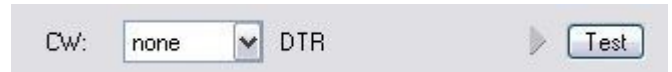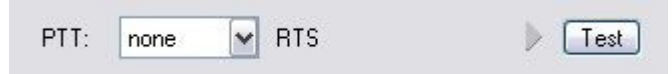
To test operation of CW from the computer to the radio, click on **Test** button with no port assigned or the port closed. Activating the Test button will cause the CW output to close.

Note: The test button is NOT available when the CW port is open.

PTT PORT

The PTT channel is used to switch the transceiver between transmit and receive. Router allows assigning a virtual serial port to the PTT channel.

Activity and the state of PTT channel is indicated by arrow. If port is opened, it does not mean that is properly configured for PTT keying. The arrow will light during the entire transmission when port is properly configured.

To test operation of the PTT from the computer to the radio, click on the **Test** button with no port assigned or the port closed.   Activating the Test button will cause the radio to key if one is connected.

Note: The test button is NOT available when the PTT port is open.

SQUELCH PORT

Even though most applications do not monitor the squelch and do not have the ability to perform specific functions based on its status, we have decided to include this feature in Router. Perhaps someday applications will be able to detect the squelch and use this information for automated functions like audio recording.

When a port is selected for Squelch, Router reports the Squelch status using the CTS signal.

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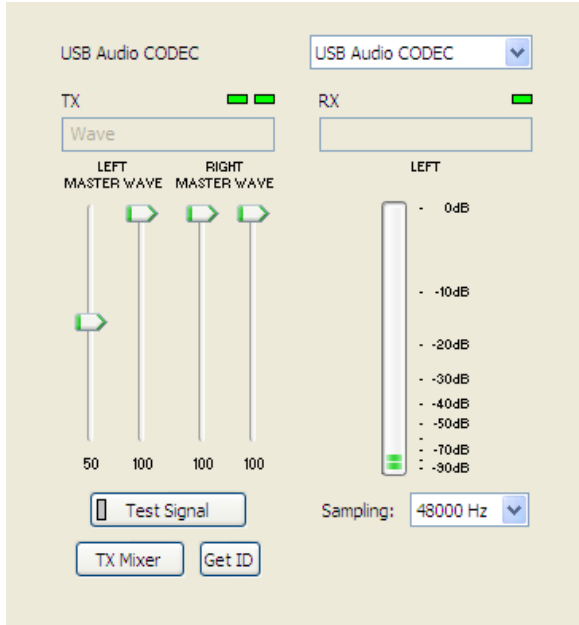
AUDIO MIXER TAB

The sound card configuration depends on the capability of your application software. Some software can directly drive the sound mixer controls some can not. Router's Audio Mixer tab provides exceptional control over the sound card. All level settings are stored into the presets for each application (or operating configuration).

To enable the Audio Mixer, you must select the name of the soundcard connected to USB Interface III.

Note: Because Windows can reassign sound cards "on the fly," Router may not invoke the proper mixer if you have more than one soundcard in your system. To confirm that the proper mixer has been assigned, click the Get ID button and check that the sound card name is same as sound card name in the Audio Mixer tab. If the names do not match, restart Router.

TX (transmit level)

These controls adjusts the output (transmit) level. If the channels are active, the green rectangle will be on. If not, click the **TX Mixer** button and unmute the master Volume (Speaker) and Wave controls.

There are two sliders for each audio channel, the WAVE slider (the AFSK or PSK level control) and MASTER slider (the Master Volume or Speaker control).

As a starting point, set the MASTER level to about 80% and the WAVE level to about 50%. Adjust WAVE for proper drive when using digital modes.   The Right channel is used only for "pseudo FSK" and CW by some software.

Note: To enable "pseudo FSK" or CW audio keying on the right channel, the right channel MASTER and WAVE sliders must be at 100%. Any value below 90% for the RIGHT MASTER slider will disables the detector output.

Test Signal: causes USB Interface III to output a 1500 Hz audio tone for setting the transmit output level.

TX Mixer: this button opens the Windows Volume Control (Playback Mixer) for the selected sound card.

GET ID: this button will retrieve the name and number of the sound card used for transmit functions. The name can be used to verify that the correct sound card has been selected. The number can be used to configure software that identifies sound cards only by number.

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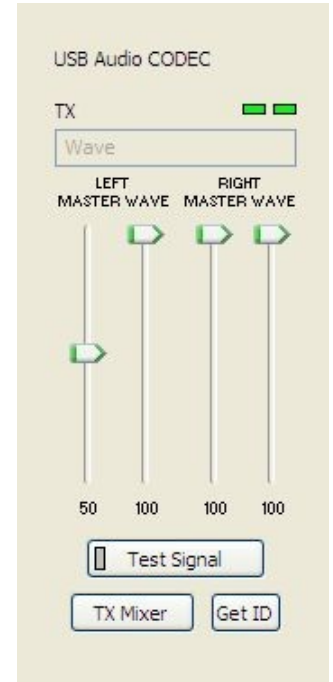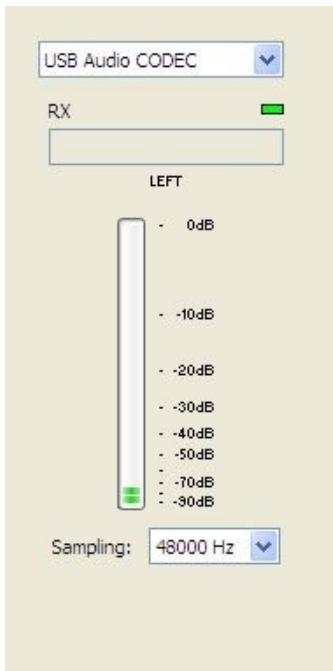
RX (receive level)

VU meter: this "stacked LED" display shows the audio level into the analog to digital controller. Note, the display is active only if a sample rate is selected.

USB Interface III has no slider sliders for the soundcard line in – the receive audio level is set witht he front panel control.

Sampling: sets the sample rate used for the RX level displays.

> Because of the of the way the Windows sound system handles multiple access to the sound card, it is best to turn off the level display (set Sampling to off) when they are not in use.

6 - SETTING AUDIO LEVELS

There are two pots on the USB III front panel for adjusting audio levels.

The TX Pot adjusts the level of audio to the transmitter. The RX Pot provides adjustment of the audio from the radio to the soundcard (computer).

Some tips from Geoff Anderson, G3NPA:

TIP: If you have achieved the correct settings for the transmit levels, you will see that changing from the PSK tuning tone to typing text, will make the transmitter power swing from 50% (no typing) to 100% (typing or tuning-tone) as observed on an RMS or average reading meter. This change in power is correct. If you do NOT see a 50% (or more) change, you are probably overdriving the radio. Please note that some radios have inbuilt power meters which give a PEAK reading and therefore the change in level discussed above will not be observed.

TIP: Don't fall into the trap of thinking that because the transmit signal on the waterfall looks good that your actual signal is OK. All the waterfall is showing during transmit is the local audio and NOT the resultant transmitted signal.

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7 - PACKAGE CONTENTS

The product includes USB Interface III™, USB cable, and CD-ROM containing the microHAM USB Device Router program and documentation. If the shipment is incomplete, please contact us at the following address:

E-mail: support@microham.com

fax :   +421 2 4594 5100

by Post: **microHAM s.r.o.**
               Nadrazna 36
               90028 Ivanka pri Dunaji
               SLOVAKIA

8 - WARRANTY

microHAM warrants USB Interface III for three (3) years. The product must not be modified in any way, except configuration or the warranty is voided. The product will be either repaired or replaced, at our discretion. The only cost will be the cost of return shipping.

The warranty does not cover damage caused by improper or abnormal use, failure to follow instructions, improper installation, lightning, or excessive voltage.

Cables are warranted against defects in materials and workmanship for a period of 60 days.

*micro*HAM USB Device Router (the software) is provided "as is" without guarantee of compatibility with any specific operating system, user computer, or other user provided hardware and accessories.

*micro*HAM assumes no liability or responsibility for damage to other devices or injuries to persons as a consequence of using our products.

If the terms of the above warranty are not acceptable, return the unit, all associated documents and accessories in the original package, prepaid, to microHAM or to your supplier for refund less shipping and restocking fee.

9 - SPECIFICATIONS

USB Interface III provides a basic USB to serial control interface and a USB sound card in a compact package.

USB Interface III is connected to the computer using the A-B USB.

The transceiver and USB Interface III are connected by single radio cable terminated on one side by a DB15M and on the other side by the appropriate plugs for the specific transceiver. The cable carries power for USB Interface III, audio, CAT control and keying. The appropriate transceiver interface cable is specified when USB Interface III is purchased.

If a Windows PC running the "*micro*HAM USB Device Router" program is connected, USB Interface III works as a computer interface. It transfers all control signals generated by the application program between the computer and transceiver. Software compatibility is provided by using virtual serial ports. Router monitors these virtual ports and transfers any data or commands by USB to the micro controller in USB Interface III. USB Interface III processes this data and sends it to the physical ports of transceiver as CAT, CW, and PTT functions.

System Considerations

USB Interface III can be used with a wide variety of application packages. The capabilities of those packages will have a great deal of influence on the level of computing power required.

"microHAM USB Device Router" must run with the application to provide an interface for the application and control of system functions. Since logging or digital mode programs and microHAM Router are real-time applications, system performance will be dependent on both CPU speed and the amount of available RAM.

While microHAM Router may run on slower computers, the minimum tested system is an 450 MHz Pentium III or Celeron, Windows 2000 Professional, 512 MB RAM, CD-ROM and USB 1.1 port. Whether it can run as designed on slower speed machines and leave sufficient free resources for application programs has not been determined. It has not been and will not be a priority to make it run on clunkers or discontinued operating systems.

In order to provide optimum performance of microHAM Router, the desired logging application, Internet connectivity and other accessory programs, the minimum recommended system is a 1.6GHz PC compatible computer with Windows XP Home or higher, 512 MB RAM, CD-ROM, USB 2.0 port, transceiver with CAT capability, and logger or control software.

USB Interface III is also compatible with Apple Macintosh G4 or better running OS 10.4 or later. It is supported by the native FTDI and Core Audio drivers shipped with the operating system. MacLoggerDX (http://www.dogparksoftware.com/MacLoggerDX.html) by Don Agro, VE3VRW and cocoaModem (http://homepage.mac.com/chen/w7ay/cocoaModem/index.html) by Kok Chen, W7AY are known to support *micro*HAM interfaces.

USB Interface III is compatible with most current LINUX distributions. It is supported as standard USB Serial and USB Audio devices. USB Interface III contains circuits specifically to support features of FLDIGI (http://www.w1hkj.com/Fldigi.html) by Dave Freese, W1HKJ.

Hardware Specifications

USB: USB 2.0 Full speed , USB 1.1 compatible

Power consumption: USB – less than 200mA; Transceiver – less than 100mA at 13.8V (max. 16V)

Radio Port: RxD, TxD – max. 57,600 Baud
              Levels: Jumpers selectable TTL, inverted TTL, open collector bus, RS232

CW: open collector, max 30V/400mA

FSK: open collector, max 30V/400mA

PTT: open collector, max 30V/400mA

Audio Out (left): 1.3V p-p max.
1 dB bandwidth: 0.3 - 3KHz typical
Second harmonic: -80 dB typical
Third harmonic: -70 dB typical
D/A Sampling rates: 32000, 44100, 48000 Hz.

Audio Out (right): internal P-FSK/QSK detector, output drives CW and FSK lines

Audio In: 50K Ohm, max 4Vpp
1dB bandwidth: 0.3 - 3KHz typical
Absolute noise floor: -90 dBm @600 Ohms typical
Dynamic Range: 87 dB typical
A/D sampling rates: 8000, 11025, 16000, 22050, 32000, 44100, 48000 Hz.

Dimensions: W 103mm (4 1/8") x **H** 28 mm (1 1/8") x **D** 101 mm (4")

Weight: 1100g (2.4 lbs.)

APPENDIX A – DB15 RADIO CONNECTOR

Pin #	Label	Description
1	Power +13.5V	12 - 16V DC input
9	CAT IN	Control port input
2	CAT OUT	Control port output
10	SQL1	Level squelch input
3	SQL2	Impedance squelch input
11	PTT	PTT output "open collector"
4	CW	CW output "open collector"
12	N/A	Not connected
5	FSK	FSK output "open collector"
13	AUDIO OUT S	Radio AUDIO input signal
6	AUDIO OUT GND	Radio AUDIO input ground
14	AUDIO IN MAIN S	Radio AUDIO output signal main receiver
7	AUDIO IN MAIN G	Radio AUDIO output ground
15	N/A	Not connected
8	N/A	Not connected
SHELL	GND	Radio and power GND

APPENDIX B – APPLE OS 10 INSTALLATION

1) To Install USB Interface III in Apple's OS 10 prepare the USB Interface III as for your radio as shown on Page 4.

2) Copy the FTDI USB Driver disk image (*.dmg)* to your desktop by clicking on the "Install microHAM Port Driver for Macintosh OS 10.0 – 10.39" or "Install microHAM Port Driver for Macintosh OS 10.4+" link from the supplied CD or download the most recent driver package from the *micro*HAM web site: www.microHAM.com/downloads.html

3) Open the disk image by clicking on it.

4) Run FTDIUSBSerialDriver.pkg by clicking on it and follow the prompts.

5) Plug in the USB cable

6) Turn on the radio or external power supply.

APPENDIX C – FSK with MMTTY

The USB III does not support FSK in the traditional way. However the unit can be used for FSK with the proper software.

Each radio specific cable set includes FSK connections which are shared with the CW output.
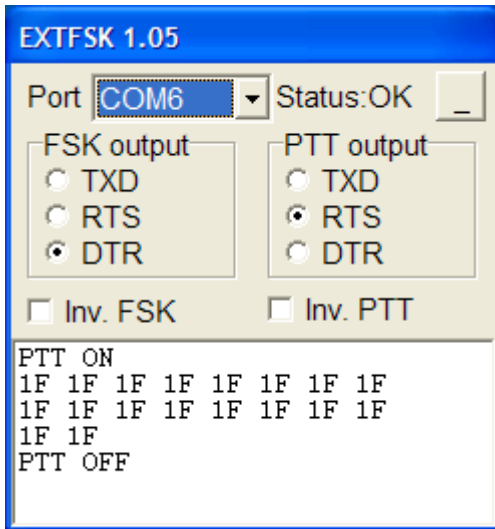
USB III supports FSK from the RTTY program "MMTTY" when the special MMTTY EXTFSK utility is used.
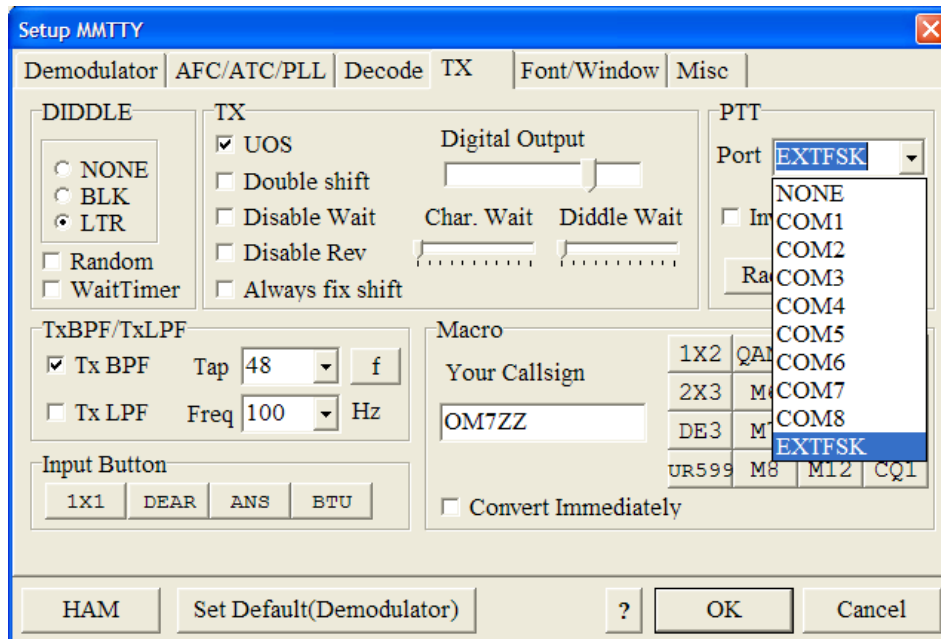
The EXTFSK.DLL file must be copied into the same directory in which MMTTY.exe is located and MMTTY must be configured to use EXTFSK for PTT and FSK.

One of the FSK options must be selected in Tx Port on the "Misc" tab and "Method C" must be selected from the "USB Port" button.
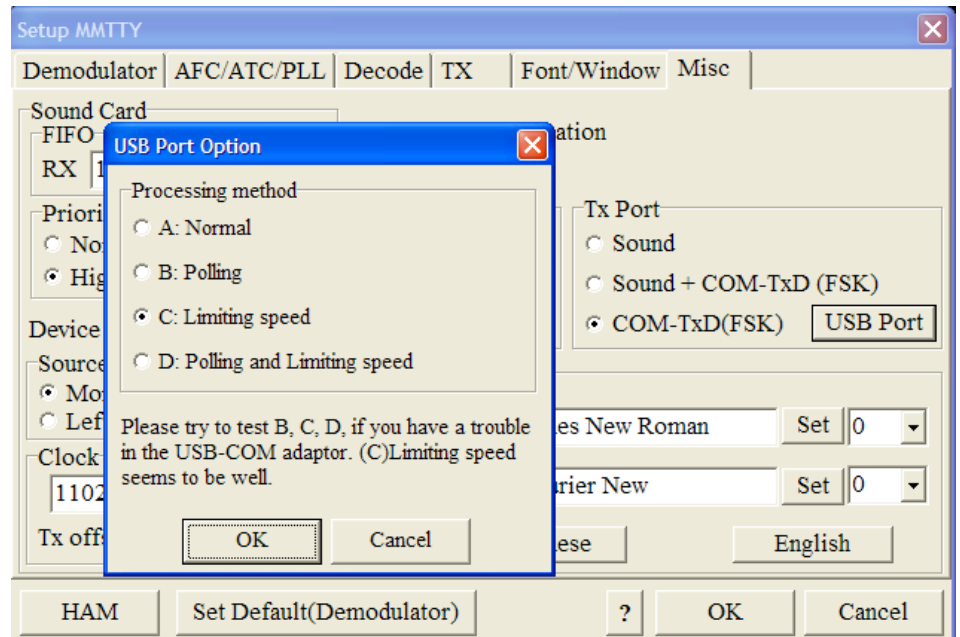
To use EXTFSK, the same port must be selected for PTT and CW in the USB Device Router and that port specified in the EXT FSK window. FSK must be defined as DTR and PTT must be defined as RTS. (Note: COM6 is selected in this example. However, the actual port will depend on the virtual port assigned for CW and PTT in Router).

If the transmit signal is reversed, its polarity can be changed by clicking the "Inv FSK" check box."

DECLARATION OF CONFORMITY

Federal Communications Commission Statement (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

European Union Declaration of Conformity

*micro*HAM, s.r.o. declares that the products:

Product Name: USB Interface III

Conforms to the following Product Specifications:

EN 55022: 1998 Class B following the provisions of the Electromagnetic

Compatibility Directive 89/336/EEC