

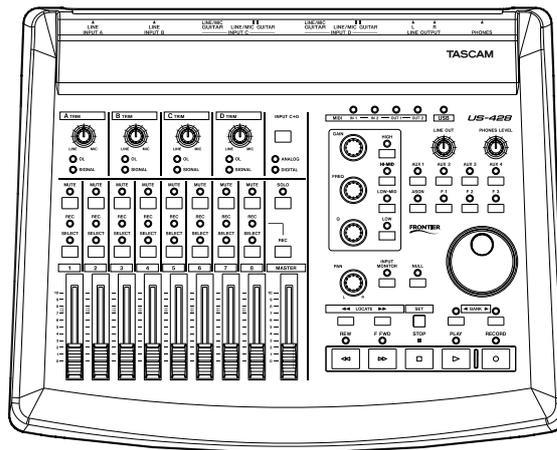
# TASCAM

TEAC Professional Division



# US-428

Universal Serial Bus  
Digital Audio Workstation Controller



## OWNER'S MANUAL



**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN

**CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

This appliance has a serial number located on the rear panel. Please record the model number and serial number and retain them for your records.  
Model number \_\_\_\_\_  
Serial number \_\_\_\_\_

**WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

# Important Safety Instructions

## Note for U.K. Customers

### **DO NOT cut off the mains plug from this equipment.**

If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain an appropriate safety approved extension lead or consult your dealer.

If nonetheless the mains plug is cut off, remove the fuse and dispose of the plug immediately, to avoid a possible shock hazard by inadvertent connection to the mains supply.

If this product is not provided with a mains plug, or one has to be fitted, then follow the instructions given below:

**IMPORTANT: DO NOT** make any connection to the larger terminal which is marked with the letter E or by the safety earth symbol  $\perp$  or coloured GREEN or GREEN-and-YELLOW.

The wires in the mains lead on this product are coloured in accordance with the following code:

**BLUE** : NEUTRAL  
**BROWN** : LIVE

As these colours may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

When replacing the fuse only a correctly rated approved type should be used and be sure to re-fit the fuse cover.

IF IN DOUBT — CONSULT A COMPETENT ELECTRICIAN.

## For U.S.A

### TO THE USER

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is a no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- a) Reorient or relocate the receiving antenna.
- b) Increase the separation between the equipment and receiver.
- c) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- d) Consult the dealer or an experienced radio/TV technician for help.

### CAUTION

Changes or modifications to the equipment not expressly approved by TEAC CORPORATION for compliance could void the user's authority to operate this equipment.

### Declaration of Conformity

Model Number : US-428  
Trade Name : TASCAM  
Responsible party : TEAC AMERICA, INC  
Address : 7733 Telegraph Road,  
Montebello, California, U.S.A.  
Telephone number : 1-213-726-0303

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.

# Important Safety Instructions

## CAUTION:

- Read all of these Instructions.
- Save these Instructions for later use.
- Follow all Warnings and Instructions marked on the audio equipment.

- 1) Read Instructions** — All the safety and operating instructions should be read before the product is operated.
- 2) Retain Instructions** — The safety and operating instructions should be retained for future reference.
- 3) Heed Warnings** — All warnings on the product and in the operating instructions should be adhered to.
- 4) Follow Instructions** — All operating and use instructions should be followed.
- 5) Cleaning** — Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- 6) Attachments** — Do not use attachments not recommended by the product manufacturer as they may cause hazards.
- 7) Water and Moisture** — Do not use this product near water – for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.
- 8) Accessories** — Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- 9)** A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

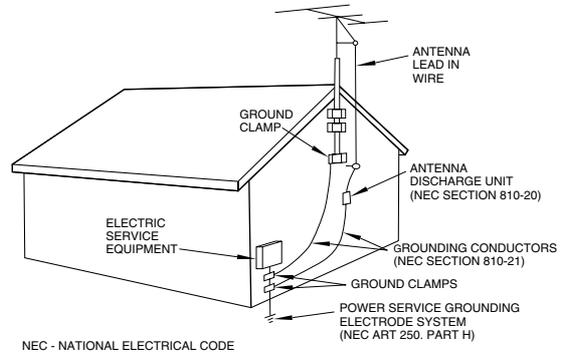


- 10) Ventilation** — Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- 11) Power Sources** — This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.
- 12) Grounding or Polarization** — This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
- 13) Power-Cord Protection** — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.
- 14) Outdoor Antenna Grounding** — If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

## "Note to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Section 820-40 of the NEC which provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Example of Antenna Grounding as per National Electrical Code, ANSI/NFPA 70



- 15) Lightning** — For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
- 16) Power Lines** — An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
- 17) Overloading** — Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in risk of fire or electric shock.
- 18) Object and Liquid Entry** — Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
- 19) Servicing** — Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 20) Damage Requiring Service** — Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - a) when the power-supply cord or plug is damaged.
  - b) if liquid has been spilled, or objects have fallen into the product.
  - c) if the product has been exposed to rain or water.
  - d) if the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
  - e) if the product has been dropped or damaged in any way.
  - f) when the product exhibits a distinct change in performance – this indicates a need for service.
- 21) Replacement Parts** — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- 22) Safety Check** — Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- 23) Wall or Ceiling Mounting** — The product should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 24) Heat** — The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

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# 1. Introduction

This product is designed to help you record and reproduce sound works to which you own the copyright, or where you have obtained permission from the copyright holder or the rightful licensor. Unless you own the copyright, or have obtained the appropriate permission from the copyright holder or the rightful licensor, your unauthorized recording, reproduction or distribution thereof may result in severe criminal penalties under copyright laws and international copyright treaties. If you are uncertain about your rights, contact your legal advisor. Under no circumstances will TEAC Corporation be responsible for the consequences of any illegal copying performed using the US-428.

TEAC Corporation can take no responsibility for any loss of data stored on hard disk, or any other media, or on MIDI equipment such as sequencers, etc. In case of such loss, TEAC Corporation will in no way be liable for any damages, consequential or otherwise, caused by such loss of data.

## 1.1 Overview

The US-428 is a USB controller for Digital Audio Workstation (DAW) software applications. Its design incorporates a four-input, two-output 24-bit audio interface, a dual MIDI interface, and a control surface for your most-used mouse functions.

Our goal was to create a device to make your DAW software as easy to use as a Portastudio. The transport and other controls are designed and laid out to look and function just like a Portastudio – if you've ever used a tape recorder, you know how to use the US-428.

Because the US-428 is USB based, it's the ideal companion to any desktop- or laptop-based digital recording setup. And since it's as compact as a laptop, it can be combined with one to create a complete portable digital audio workstation solution.

\* Microsoft, Windows, and Windows NT are either registered trademarks or trademarks of Microsoft Corporation in the US and/or other countries.

\* The full name of the product referred to as "Windows 98" is "Microsoft® Windows® 98 operating system".

\* Pentium is a registered trademark of Intel Corporation.

\* MIDI is a registered trademark of the Association of Manufacturers of Eleconic Instruments (AMEI).

\* All other brand or product names are trademarks or registered trademarks of their respective companies or organizations.

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## 1.2 Features

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The input section comprises a 24-bit audio interface, capable of streaming up to four simultaneous tracks of audio into your computer. Inputs include two balanced XLR mic inputs, two balanced 1/4" TRS inputs, two 1/4" unbalanced line inputs (switchable to high-impedance, for direct input of a guitar, bass or other hi-Z source), and an S/PDIF digital input. Outputs include a pair of unbalanced line outputs on RCA connectors, S/PDIF output, and separate headphone output.

The US-428 also features two independent MIDI I/O ports, allowing you to send and receive data and MIDI Time Code from your MIDI-based keyboards and other devices. You can, for example, use one port for MIDI modules and devices, and the other to synchronize your MIDI Time Code capable Portastudio, DTRS or other multitrack tape machine with your digital audio software.

The US-428's control surface includes a variety of controls which make working with audio software faster and easier. The channel section of the control surface consists of eight channel faders (plus one master fader), eight mute buttons, a switch to toggle Solo and Mute functions, and individual record-ready and select switches. The master section features four Aux Sends, a dedicated EQ module (with continuous controllers for level, frequency and Q, as well as four band-selection buttons), a data wheel and four application-defined soft keys. Dedicated transport and locate controls offer one-button access to these often-used functions.

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## 1.3 Special Note Regarding Programming of the US-428

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The many faders, switches and other controls on the US-428 make it an extremely versatile device. The basic operational premise behind the US-428 is that of a simple controller unit; that is, most of the hardware controls on the US-428 are sending out simple MIDI controller messages to and from the host computer's audio application. While the examples in this manual discuss the US-428's operation in conjunction with Steinberg's Cubasis VST (which is included with the US-428), the simplicity of the US-428's MIDI control protocol allows other applications to readily send and receive US-428 control surface messages.

In many cases, communication with a particular application can be accomplished using the application's

ability to redirect or "map" the US-428 control surface messages to the application. By making the programming specifications publicly available on our website, TASCAM is encouraging the creation of new applications for the US-428. As they are created and approved, we will be posting up-to-date news and details on our website at [www.tascam.com](http://www.tascam.com). There you'll also find an online users' group, where users will be encouraged to post MIDI maps of their own creation, and TASCAM product specialists will be on line to help answer questions and field suggestions.

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## 1.4 What's in the package

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The US-428 package contains the following items. When opening the package, please make certain that all the included items are present. If anything is missing, contact the dealer where you purchased it.

- US-428 Controller
- AC Adaptor PS-P428 (7.5 VAC, 1000 mA)
- USB Cable
- CD-ROM containing driver software and Cubasis VST

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## 1.5 Nomenclature used in this manual

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The following conventions will be used in this manual:

**ALL CAPS** will be used to designate physical buttons, faders, controllers and LED indicators on the US-428.

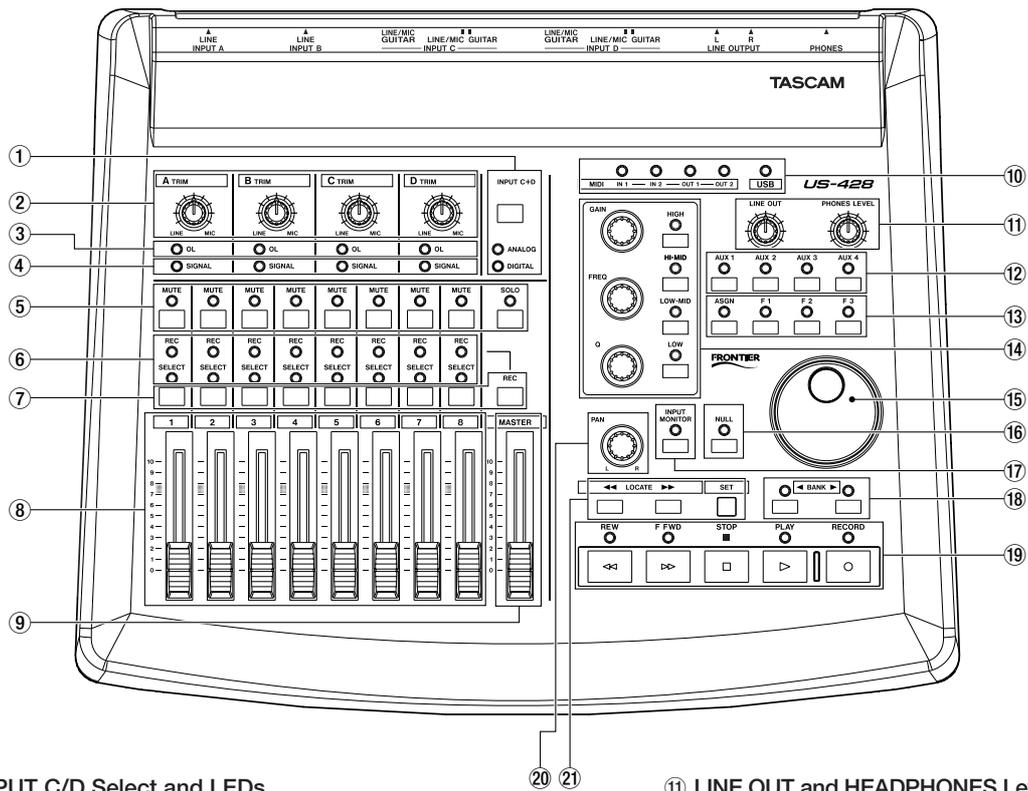
**BOLD CAPS** will be used to designate physical connectors on the US-428

*Italics* will be used to designate software dialog messages

Underlined Italics will be used to designate software menu functions and on-screen controllers.

## 2. Controls and Indicators

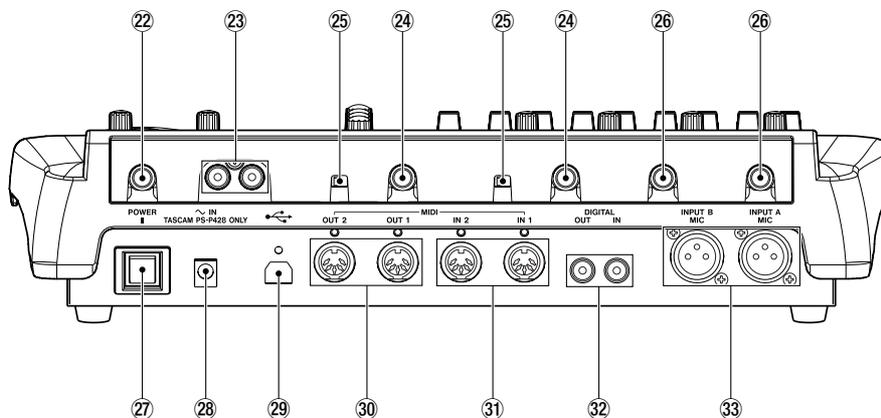
### 2.1 Front Panel



- ① INPUT C/D Select and LEDs
- ② INPUT Trim Pots
- ③ OVERLOAD LED
- ④ SIGNAL LED
- ⑤ Channel MUTE and SOLO switches and LEDs
- ⑥ REC and SELECT LEDs
- ⑦ REC and SELECT switches
- ⑧ CHANNEL faders
- ⑨ MASTER fader
- ⑩ MIDI and USB Status LEDs

- ⑪ LINE OUT and HEADPHONES Level Controls
- ⑫ AUX 1 through 4 Select Switches
- ⑬ User Soft Keys
- ⑭ EQ Module
- ⑮ Data Wheel
- ⑯ Fader NULL
- ⑰ INPUT MONITOR
- ⑱ BANK Selection Switches
- ⑲ TRANSPORT Controls
- ⑳ PAN Control
- ㉑ LOCATE Controls

### 2.2 Rear Panel



- ⑳ PHONES jack
- ㉑ OUTPUT L/R jacks
- ㉒ INPUT C and D
- ㉓ LINE/MIC / GUITAR switch
- ㉔ INPUT A and B
- ㉕ POWER switch

- ㉖ POWER jack
- ㉗ USB jack
- ㉘ MIDI Out 1 and 2
- ㉙ MIDI In 1 and 2
- ㉚ Digital In and Out
- ㉛ MIC INPUT A and B

### 2.3 Front Panel Descriptions

① **INPUT C+D button**

toggles inputs C and D between the unbalanced analog inputs (1/4") and the digital S/PDIF inputs.

**ANALOG LED**

indicates analog signal input to inputs C and D.

**DIGITAL LED**

indicates digital signal input (via S/PDIF) to inputs C and D. When glowing steadily, indicates valid digital input. When flashing, indicates an input error on the digital inputs. Refer to the ASIO control panel for error details.

② **INPUT TRIM A - D**

input level adjustment. Rotate clockwise to increase input level of analog sources.

③ **OL LED**

indicates an overload on the input level to the respective channel. (Specifically, a level of -2.5dBFS.) Only functions on analog input.

④ **SIGNAL LED**

indicates the presence of audio signal on the respective channel. (Specifically, when input level exceeds -42 dBFS.) Only functions on analog input.

⑤ **MUTE switch**

toggles mute or solo status for selected channel.

**MUTE LED**

when illuminated, indicates mute status of selected channel. (When SOLO LED is on, the associated channel's MUTE LED's indicate solo status when lit)

**SOLO switch**

toggles between mute and solo status.

**SOLO LED**

when illuminated, indicates MUTE buttons and LEDs are toggled to solo status.

⑥ **SELECT LED**

indicates selected status of channel.

**REC LED**

indicates record status of selected channel.

⑦ **SELECT button**

selects channel for editing, recording, etc.

**REC button**

when held, pressing the SELECT button toggles the selected channel(s)' record-ready status.

⑧ **CHANNEL FADERS 1 through 8**

send continuous controller information for banks of eight faders, as selected by the BANK switch.

⑨ **MASTER FADER**

controls level to the stereo bus output, and/or sends MIDI controller information to the host.

⑩ **MIDI In LED's 1 & 2**

indicates presence of incoming MIDI data at MIDI input 1 or 2.

**MIDI Out LED's 1 & 2**

indicates transmission of MIDI data from MIDI output 1 or 2.

**USB LED**

indicates an active USB connection.

⑪ **LINE OUT**

controls the level to the RCA (analog) outputs.

**HEADPHONE OUT**

controls the level to the headphone outputs.

⑫ **AUX 1 through 4**

selects the host application's auxilliary sends 1 through 4.

⑬ **ASGN**

Application specific key.

(In Cubasis, ASGN + Aux 1 or 2 will enable the Aux Send for the selected channel. ASGN + EQ band switch will enable the EQ for the selected channel.)

**F1 through F3**

Application specific function keys. In Cubasis VST, these keys perform the following functions:

**F1** - Open Audio Mixer window (when Bank 1 is selected); open MIDI Mixer (when Bank 2 or 3 selected).

**F2** - Open VST FX Send window.

**F3** - Toggle between open windows.

⑭ **EQ GAIN**

controls the gain level of chosen band of EQ in the host program's internal EQ.

**EQ FREQ**

controls the center frequency of chosen band of EQ in the host program's internal EQ.

**EQ Q**

controls the bandwidth surrounding the center frequency of the chosen band of EQ in the host program's internal EQ.

## 2. Controls and Indicators

### EQ HIGH

selects the highest band of EQ in the host program's internal EQ (up to a maximum of four bands).

### EQ HI MID\*

selects the upper midrange band of EQ in the host program's internal EQ (up to a maximum of four bands).

### EQ LO MID\*

selects the lower midrange band of EQ in the host program's internal EQ (up to a maximum of four bands).

### EQ LOW

selects the lowest band of EQ in the host program's internal EQ (up to a maximum of four bands).

(\* Not used in Cubasis VST)

### ⑮ DATA Wheel

sends continuous controller information to application. (In Cubasis, functions as a shuttle wheel if no AUX LED's are lit, or as Aux Send level if Aux key is selected.)

### ⑯ Fader NULL

when pressed, disengages physical faders from the application. Used to match US-428's faders with those of the software application's internal mixer. When using FADER NULL, the selected channel's REC and SEL LED's indicate the US-428's fader position relative to the associated channel in Cubasis' mixer.

### ⑰ INPUT MONITOR

toggles Input Monitor adjust mode. When the associated LED is on, the FADER and MUTE switches for channel strips 1,2,3 and 4 control the level of Inputs A,B,C and D to the US-428's stereo output.

### ⑱ BANK Selector

pages between successive banks of eight faders.

### ⑲ REW

transport rewind.

### FFWD

transport fast forward.

### STOP

transport stop.

### PLAY

transport play.

### RECORD

transport record.

### ⑳ PAN

controls L-R panning on selected track.

### ㉑ LOCATE ◀◀ and ▶▶

moves transport to L and R locate points.

### SET

holding SET and pressing ◀◀ and ▶▶ buttons sets L or R locate points, either on the fly or while stopped.

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## 2.4 Rear Panel Descriptions

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### ㉒ PHONES jack

standard 1/4" stereo headphone output.

### ㉓ OUTPUT L/R jacks

unbalanced (RCA) analog audio output of stereo bus.

### ㉔ Input C and D

unbalanced analog inputs C and D.

### ㉕ LINE/MIC / GUITAR switch

switches between line level and Hi-Z (inputs C & D).

### ㉖ INPUT A and B

balanced analog inputs A and B.

### ㉗ POWER switch

push on/push off power switch.

### ㉘ POWER jack

input for AC Adaptor PS-P428

### ㉙ USB jack

input for USB connection to host computer.

### ㉚ MIDI Out 1 and 2

MIDI outputs 1 and 2.

### ㉛ MIDI In 1 and 2

MIDI inputs 1 and 2.

### ㉜ Digital In and Out

S/PDIF digital input and output.

### ㉝ MIC INPUT A and B

Balanced XLR Inputs A and B.

## 3. Installation

### 3.1 System Requirements

**PC:** Minimum requirements: Pentium 200 MHz (or equivalent) processor running Windows 98 (First or Second Edition), 64MB RAM. Recommended: Pentium II 300MHz processor with 128MB RAM or better. (These requirements are for use with Cubasis VST. Other applications will have different requirements. Consult your application's manufacturer for further information.)

#### NOTE

*Due to Windows 95's handling of the USB spec, the US-428 will not work under Windows 95. We recommend upgrading to W98. Windows 98 Second Edition has further improved USB capabilities. A fast EIDE hard disk is required for throughput of multiple audio tracks. 64MB RAM is the minimum recommended, but with all digital audio programs, you'll have better results with more RAM. An SVGA graphics card is suggested (min. 256 colors, 800x600 resolution or better).*

*Although this product has been checked for use with standard configuration computers which meet the specifications above, we cannot guarantee the operation of the product, even with computers meeting the specifications, due to differences in architecture and implementation between computers.*

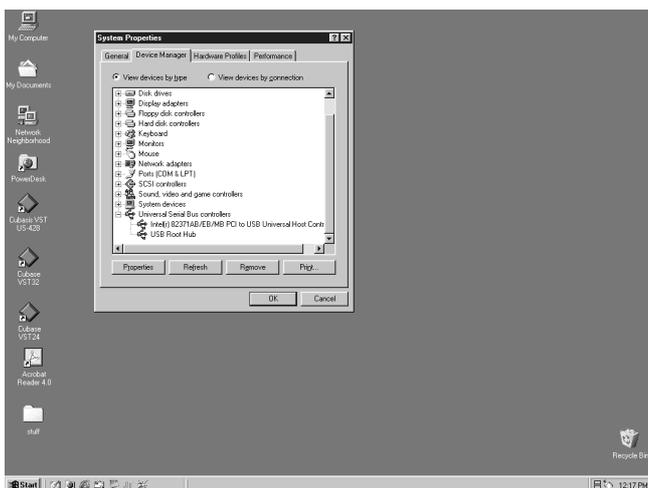


Illustration 3.01 - Determining your USB Controller

Chipsets are also a concern with USB audio. We've found that the most dependable motherboards are ones which utilize Intel-based chipsets. You can determine your chipset by going into the Device Manager. On the Windows 98 desktop, right click on My Computer, and select Properties. Click on the Device Manager tab, and then click on the plus (+) sign next to Universal Serial Bus Controllers. (see illustration 3.01)

The following chipsets have been successfully run with the US-428:

- Intel 82371 AB/EB PCI to USB Universal Host Controller
- Intel 82371 SB PCI to USB Universal Host Controller
- Intel 82801 AA PCI to USB Universal Host Controller
- ALi PCI to USB Open Host Controller

Some other chipsets, notably those specifying Open Host Controllers (rather than Universal Host Controllers) and VIA Tech chipsets, have been subject to some occasional incompatibilities. We have found that, in the majority of cases, a PCI-based USB card utilizing an Opti-chip controller will work dependably. These cards (also available in PCMCIA format for laptops) are available through a number of manufacturers. Please consult the TASCAM website for further information.

**MacOS:** PowerPC running MacOS 8.6 or better, and a USB port. Any Macintosh computer with one or more USB ports running Mac O/S 8.6 or later (the US-428 has not been tested with Mac O/S X as of this writing. Please check the website for updates).

#### NOTE

*Very early iMac computers may need one (or more) firmware updates to use the US-428. Which firmware update(s) is (are) needed depends on which Mac O/S version is installed in the early iMac. Apple provides details in its Apple Support Article #58174.*

PowerBook G3 Series (or later) with built in USB (or using a 3rd party PCMCIA USB Card) have been tested and work fine. Additionally, older PowerMac computers using 3rd party PCI-based USB cards also have been tested and work fine. Any iMac, G3 or G4 will work fine as well. A MacOS version earlier than 8.6 will not implement full USB support, and is not recommended.

Again, plenty of RAM and fast drives are suggested.

## 3. Installation

### 3.2 Installation

Because the US-428 is a USB device, installation is pretty straightforward. Simply plug the USB cable into the US-428, and the other end into your computer. (Since it's USB, your computer can already be up and running....if it's not, power it up now)

Make certain that your computer's USB host port is enabled. (Normally, most standard PC BIOS settings default to enabled, but make certain that it hasn't been turned off in the BIOS).

#### NOTE

*Handle the enclosed CD-ROM with care. If it becomes dirty or scratched, it will be impossible for a computer to read it, and the software cannot be installed. If the disc becomes unreadable, a charge will be made for its replacement.*

*Do not attempt to play the enclosed CD-ROM using an audio CD player, as this may cause damage to hearing, as well as to speakers, etc.*

*Use only the enclosed USB cable to connect the US-428 and the computer. Do not use other types of cable for this purpose, as some cables contain resistors. If you attempt to use such a cable, the audio input and output will not work properly, and the sound level will be inaudible or very faint.*

#### 3.2.1 Windows 98

1. Power up the US-428. The ANALOG indicator should illuminate.

2. Win98 will detect the USB device and report “*New Hardware Found. Audio Device*”. (See illustration 3.02)
3. The Plug&Play manager will activate the “*Add New Hardware*” wizard.
4. Choose “*Let Windows search for the best device*” from the two available options.
5. Insert the CD-ROM, select “CD-ROM” and then “Next”.
6. If Windows says it can't find one of the files, reselect the current file path.
7. After all the files have been copied to the system folders, the “Add New Hardware” wizard should report “*TASCAM US-428 (programming EEPROM). Windows has finished installing....*” Click *Finish*.
8. Windows may now ask to be restarted. If so, click *Okay* and reboot.
9. When the computer restarts, Windows will continue to load the rest of the driver and system files.
10. Windows Device Manager (Control Panel/System) should show “*TASCAM US-428*” in the *Sound, Video and Game Controllers* section.
11. You are now ready to open your audio application and choose the US-428 in the application's audio device menu.

#### 3.2.2 Macintosh

1. Insert the CD-ROM into the computer, double-click on the US-428 installer, and follow its instructions.
2. Connect the US-428 to the computer, and connect power to the unit. When the US-428 is connected and powered up, the Mac will find the drivers itself.

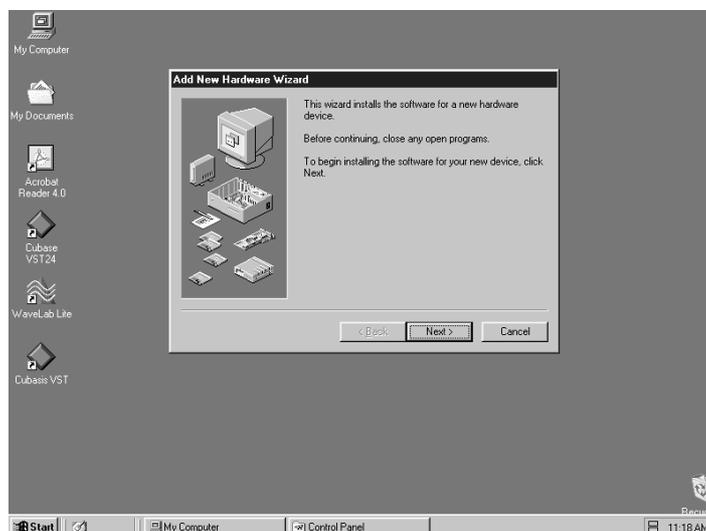


Illustration 3.02 - Windows 98 New Hardware Wizard

### 3.3 Tuning Your Computer

A few words about computers and audio. Much has been written about the best ways to optimize your PC or Mac for handling audio applications, and generally speaking, it's a much deeper topic than we've got space for in this manual. But here are a few basic points to help you get the best out of your audio programs:

- Don't run extraneous applications. While it's likely you'll sometimes use your computer for applications other than audio, it's strongly recommended that you avoid running other applications at the same time you're running audio programs. Processing digital audio requires considerable overhead from your computer, so don't overtax the system by running other applications (especially graphics or internet tools) that can steal those resources.
- Certain devices, such as network cards and WinModems, can cause conflicts with the native handling of USB. Should you experience such conflicts, the offending device can usually be temporarily disabled in the Device Manager. Refer to your Windows 98 manual for detailed instructions on how to resolve conflicts.
- Assuming your computer has an IDE hard disk (most do), enabling Direct Memory Addressing (DMA) on will improve performance. Some programs (such as Cubase VST) allow you to configure the DMA as enabled on install. If you've not already done this, here's how to configure the DMA transfer mode: On the Windows 98 desktop, go to the Start menu, Settings, Control Panel, System. In the System Properties window, select the Device Manager tab. Click on the plus sign next to Disk Drives, and highlight the IDE disk listing, then click on the Properties button. Check the DMA box under options. (see illustration 3.03)



Illustration 3.03 - Enabling DMA on your IDE drives

In addition, a number of simple hardware modifications and enhancements can substantially improve your computer's handling of audio, as well as your track count and DSP capability.

- Increase the amount of RAM in your system. While most digital audio software will function with a minimum of 32 MB, increasing your computer's RAM to 96, 128 or even 256 MB will markedly improve performance.
- Consider the addition of a dedicated hard disk for audio; preferably one with a high spindle rate (over 7200 RPM is recommended for most audio applications). Using different drives for program and audio data speeds up the seek time for the audio track data. (Note that simply partitioning a large drive will not have the same effect, as the computer will still be accessing the same physical drive.) For best results, add a SCSI or Wide-SCSI drive and SCSI controller card. SCSI (and particularly Wide and UW-SCSI protocol) are capable of considerably higher data transfer speeds; you'll notice a dramatic increase in track count and in the amount of signal processing plug-ins your computer can handle. Note that some of the recent UDMA-66 drives have proven to be almost as fast (and certainly cheaper); however, they are still limited in the amount of physical drives allowed and the bus length.
- If you're presently using a PCI-based graphics card, and your motherboard has an AGP slot, consider getting an AGP-based graphics card. This will decrease traffic on the PCI bus and allow for faster screen redraws.

### 3.4 Notes on USB interfacing

The USB protocol is an extremely versatile one, and much has been made of the possibility of using multiple (over 100) devices on a single bus. While this is certainly a possibility, we are recommending using as few other USB devices as possible in a system equipped with the US-428. The demands placed on the USB bus by passing multiple tracks of audio through it are considerable, and adding additional devices will risk reducing that bandwidth.

Another well-documented advantage of USB is the ability to "hot-plug" devices (that is, plug them in and out without powering the computer down). While this applies to the US-428 as well, we recommend against plugging or unplugging, or powering the unit on or off, while running your audio application. Doing so can result in audible pops, or even hanging or crashing the program.

You'll find a listing of web links and resources on hard disk recording on our website at [www.tascam.com](http://www.tascam.com).

## 4. Hooking up Audio and MIDI to the US-428

### 4.1 Hooking up audio

To monitor output from your computer, connect the analog outputs of the US-428 to your mixer, amplifier or powered monitors. Output volume is controlled by the LINE OUT level pot. If you've got a digital mixer, external D/A converter, or other device with S/PDIF input, you may prefer to monitor via the US-428's S/PDIF output.

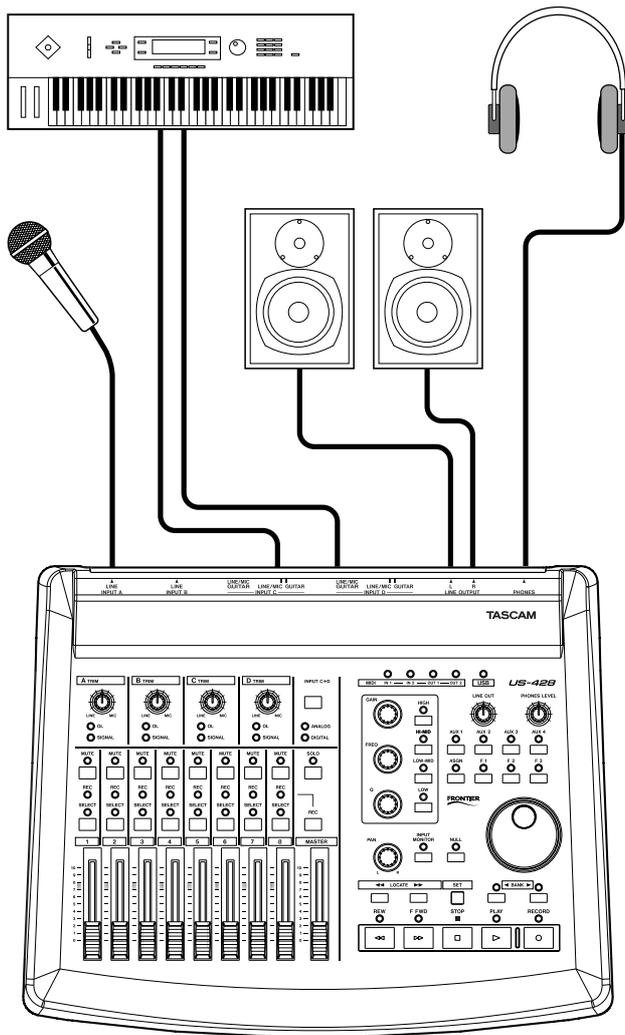


Illustration 4.01 - Connecting audio to the US-428

To record audio from the US-428 into your computer, simply connect a device to the appropriate input. Microphones should be plugged into the INPUT A or B XLR inputs. Note that the US-428 does not supply phantom power, so if you're using condenser mics, you'll need an external preamp or power supply. You can connect line-level sources (e.g., keyboards and sound modules) into one of the four LINE INPUTS (A through D). If you wish to plug in a guitar, bass, or other high-impedance source, simply use input C or D, and move the sliding switch next to the input

connector to the "Guitar" position. Finally, digital sources (e.g., CD players, DAT's etc) may be connected to the S/PDIF INPUT.

The inputs of channels A and B are available as either balanced XLR mic-level inputs or balanced TRS (1/4") line-level inputs. While both sets of inputs are capable of functioning simultaneously, in actual practice this is not recommended, as the signal level of the inputs will be summed and very likely interfere with each other.

Inputs C and D are switchable between the unbalanced 1/4" analog inputs C and D and the S/PDIF digital input. The input source is selected by pressing the INPUT C+D switch.

Input level for analog sources is regulated by the TRIM level pots (diagram), located directly above the faders. To use digital audio input, switch the INPUT C+D selector to Digital. The INPUT C and D TRIM controls do not affect digital input. Sampled audio from the S/PDIF digital input is passed directly to the application without modification. To reduce the level of the digital audio signal at inputs C and D, you will need to reduce the output level of your digital source.

Note about levels and gain structure here. The TRIM controls directly affect the input level at the A/D converters on the US-428, so it's advisable to use the SIGNAL and OVER LEDs to help set your levels. Unlike analog tape, when recording digital audio, it's important to keep your input level close to 0dB, but never to exceed it. If the input level is too high, the audio signal will clip - not a desirable sound. If the input level is too low, then the dynamic range that the US-428's A/D's are capable of is not being used, and the signal will be closer to the noise floor than it needs to be. In either case, this can not be fixed after the tracks have been recorded, so it's important to make this adjustment carefully.

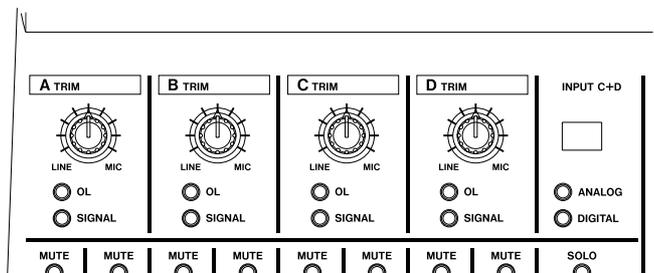


Illustration 4.02 - Input trims and level indicator LED's

### 4.2 Hooking up MIDI

The two MIDI in and out jacks are independent, giving you a total of 32 channels of MIDI I/O. Simply connect the MIDI out of your keyboard or other device to a MIDI in jack on the US-428, and vice versa. If you've got a MIDI sync box, you can dedicate one of the two MIDI I/O's to sending and receiving MTC (MIDI Time Code). This allows you to sync tracks from your MTC-capable Portastudio, DTRS multitrack, or any other machine that accepts time code with your digital audio software, for transferring tracks back and forth for editing and processing.

### 4.3 Using the Input Monitoring

In digital audio, the amount of time it takes for the input signal to pass through the circuitry of the unit and the software processing and arrive at the outputs will sometimes result in an audible delay. This added delay can be confusing when, for example, you're trying to overdub to previously recorded tracks.

The INPUT MONITOR mixer built into the US-428 eliminates this problem by providing a way to listen to the signals you're recording directly, without any computer processing delay. When the INPUT MONITOR button is depressed, the first four channel faders control the input levels of inputs A, B, C or D to the US-428's internal mixer. Changes in these levels affect the monitor and headphones outputs, but have no effect on the audio levels seen by the audio software application. The first four MUTE buttons also affect the four inputs, and PAN is also available in this mode; the four inputs come up panned to center, but can be SElected and PANned anywhere within the stereo field.

#### **NOTE**

*That in INPUT MONITOR mode faders 5-8 are inactive.*

#### **NOTE**

*That all the controls mentioned here are also accessible via the ASIO control panel, which displays the current status of the INPUT MONITOR section.*

### 4.4 Monitor vs. Master Level

It's important to make a distinction between MONITOR LEVEL control and level of the stereo bus output, as controlled by the MASTER FADER.

When using the US-428's analog inputs, only the TRIM controls actually affect the input level to the audio software application. When using the US-428's Digital inputs, the digital audio data received at the US-428's digital input is passed directly to the audio application without any gain or other modifications.

When monitoring audio playback from the application via the US-428, the level is controlled by that track's software gain control (which, in turn, is controlled by the US-428's channel FADERS), the MASTER FADER, and the LINE OUT or PHONES OUT level controls.

The LINE OUT and PHONES level controls directly affect the audio levels that appear on the LINE OUTPUT and PHONES jacks, respectively. The audio level produced at the DIGITAL OUTPUT is not affected by either control.

The MASTER FADER is the final level control affecting the digital stereo output to the application, consequently changes made to the MASTER FADER level will also affect the output level to the speakers.

Thus, if you want to simply reduce the volume of your listening environment, you'll want to use the MONITOR LEVEL control to do this without affecting the level of your stereo mix.

## 5. Interfacing with your Audio Software

This section is intended to present the basic concepts needed to interface the US-428 with an audio software application. We should point out that different programs will implement some of the features described here differently. As it would be beyond the scope of this manual to detail the operation of each individual program, we'll discuss the concepts presented here as they relate to the operation of the US-428 with the Cubasis VST audio software included in the US-428 package. This discussion, however, is not intended to replace your software's users' manual. If you've got questions specific to Cubasis (or your digital audio software of choice), please refer to the User Manual for the program for further detail.

### 5.1 Selecting the US-428 as your Audio Device

#### 5.1.1 Audio Control Panel

In Cubasis, open the Audio Control Panel (see illustration 5.01). It's located in the *Audio* pull-down menu, under *System*. Select the *ASIO Device* pull-down menu, and select *ASIO US-428 Driver*. If your software only supports 16 bit recording, a 16 bit driver has also been included.

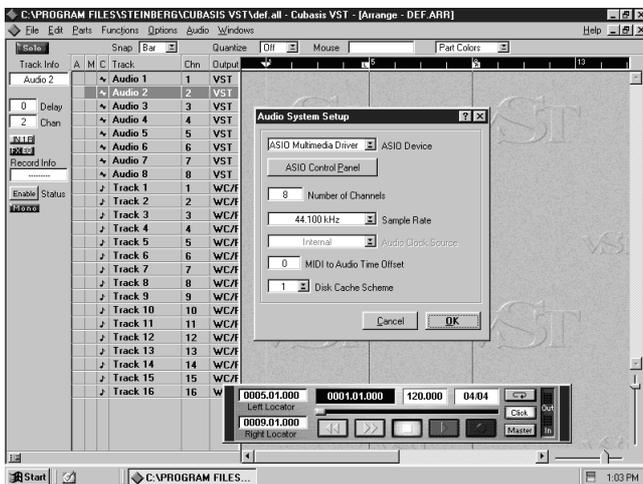


Illustration 5.01 - Cubasis Audio Control Panel.

In the Audio Control Panel, you can select the number of audio channels you wish to use, as well as the sampling rate, Disk Cache settings, and MIDI to Audio offset. See Chapter 6.1, Setting Up, for more information on these settings.

#### 5.1.2. ASIO Control Panel

In the Audio Control Panel, click on the button marked ASIO Control Panel. The US-428 Control Panel will appear. (If you're running the US-428 under Windows, you can also open the US-428 Control Panel using Start | Settings | Control Panel.) In the Control Panel, you can specify a number of options in the US-428's ASIO handling.

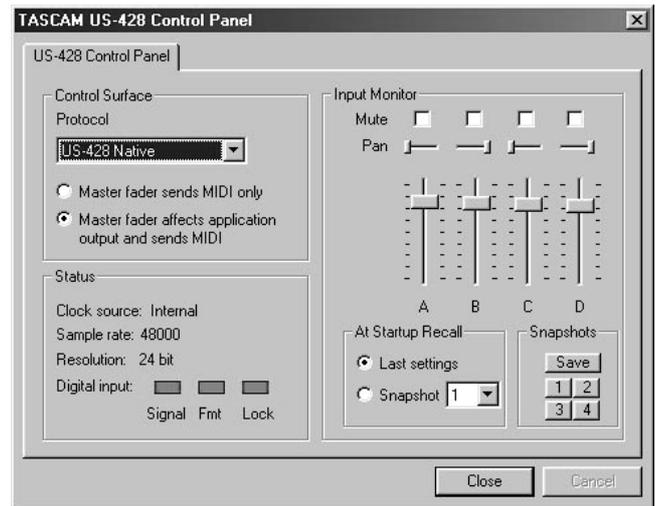


Illustration 5.02 - ASIO Control Panel

The *Control Surface Protocol* setting governs the type of MIDI messages used to send fader and button information from the US-428 to applications. The corresponding drop-down box allows you to select "US-428 Native" or "JL Cooper CS-10" emulation. For use with Cubasis, it's recommended that you leave the default "US-428 Native" selection.

The *Master Fader* always sends changes in position via MIDI. It can also be used to make the US-428 itself change the output level coming from an application. (This is useful for programs that do not have their own master volume control, such as Sound Forge.) In Cubasis, select the MIDI only option.

The *Status* area provides a view of the US-428's current settings:

- Clock source: Internal or Digital In
- Sample rate: 44100 or 48000
- Resolution: 24 Bit or 16 Bit
- Digital input:
  - Signal: Red - no digital input, Green - digital input active
  - Fmt: Red - improper format, Green - proper S/PDIF format
  - Lock: Red - digital in not ready to record, Green - digital in ready to record

## 5. Interfacing with your Audio Software

The *Input Monitor* area is a viewable and controllable version of the US-428 INPUT MONITOR mixer. Here you can control the level and position of each US-428 input as it will appear on the LINE OUTPUT, DIGITAL OUT, and PHONES connectors. Three controls (level, pan and mute) are available for each input A, B, C and D. Note that these controls can also be changed from the US-428 by pressing the INPUT MONITOR switch on the unit, and using channel strips 1-4. If you make the changes this way, the controls displayed in the US-428 Control Panel will be updated to reflect the new values.

Any settings shown in the input monitor section of this control panel can be saved as one of four Snapshots. To save your settings as snapshot number 1, for example, click on “Save” and then click on “1”. Any snapshot can then be recalled by just clicking on its corresponding button.

You can also control the input monitor settings that will be used when the US-428 first starts up. You can choose either the last settings in effect at the previous system shutdown, or any one of the four snapshots.

### 5.1.3 VST Remote

In Cubasis, the program will automatically recognize the US-428 as a remote controller unit. In Cubase (full versions), you will also need to select the US-428 as the program’s remote control. To do this, select the VST Remote option from the Audio menu, and choose the US-428 option (See illustration 5.03). You will also need to set the Input and Output devices to “US-428 Control Port” and the “Remote” setting should match the setting chosen in the US-428 Control Panel (see illustration 5.02).

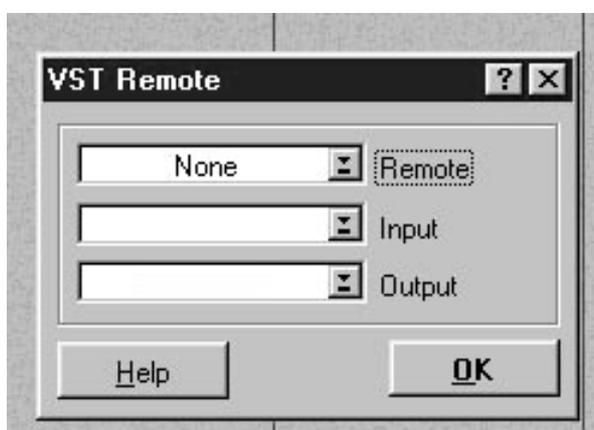


Illustration 5.03 - VST Remote Panel

## 5.2 Setting the Sample Rate and Bit Depth

The US-428 supports sample rates of 44.1kHz and 48kHz. In the Audio Control Panel, select the pull-down menu for Sample Rate and select either 44.1 kHz or 48 kHz.

The US-428 control protocol includes two separate drivers for 16-bit or 24-bit operation. This selection is made in the Audio Control Panel (see illustration 5.04).

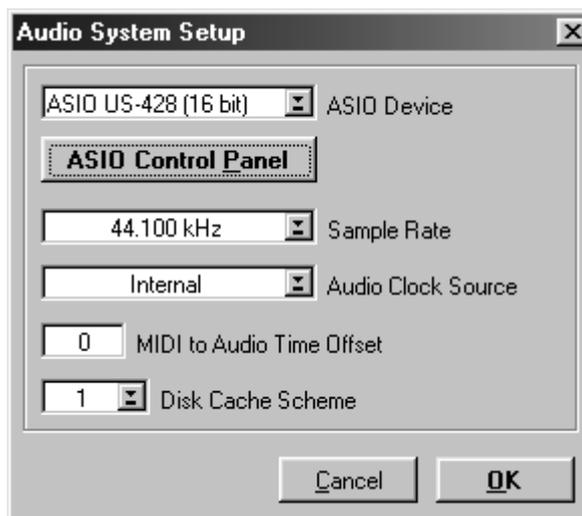


Illustration 5.04 - VST/24 Audio Control Panel

## 5.3 Input Enabling

You will need to enable the inputs on Cubasis. Open the Audio Input window (see Illustration 5.05) and select any one mono track or stereo pair.

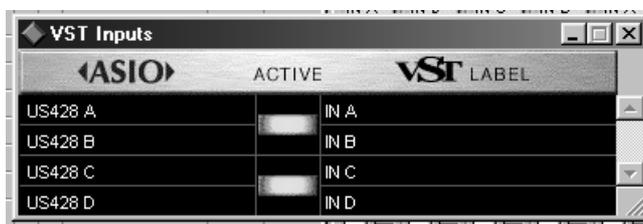


Illustration 5.05 - Input selection window

### NOTE

*That Cubasis supports only one input for recording (though this can be a mono or stereo track). To fully utilize the US-428’s four input capabilities, you’ll need to run it with a full version of Cubase VST, Emagic Logic, Cakewalk, or another application that supports multiple inputs on record.*

## 5. Interfacing with your Audio Software

Then select the inputs on Cubasis' internal mixer. Hold Control and left click on the input selector above the channel strip, and select the desired input. Verify that the designated channels' inputs ("IN") are selected, and the associated channels are receiving signal. (see illustration 5.06)

Highlight a track in the arrange window, and that track will automatically be Record-Enabled. (see illustration 5.07)

Verify that the drop-in and drop-out features in Cubasis (on the transport bar) are not enabled (or if so, that they are enabled at the desired locate points). Press the RECORD button on the US-428. Cubasis will issue a one or two bar countoff (depending on what's set in Cubasis' Metronome preferences menu), then commence recording.



Illustration 5.06 - Input selection window

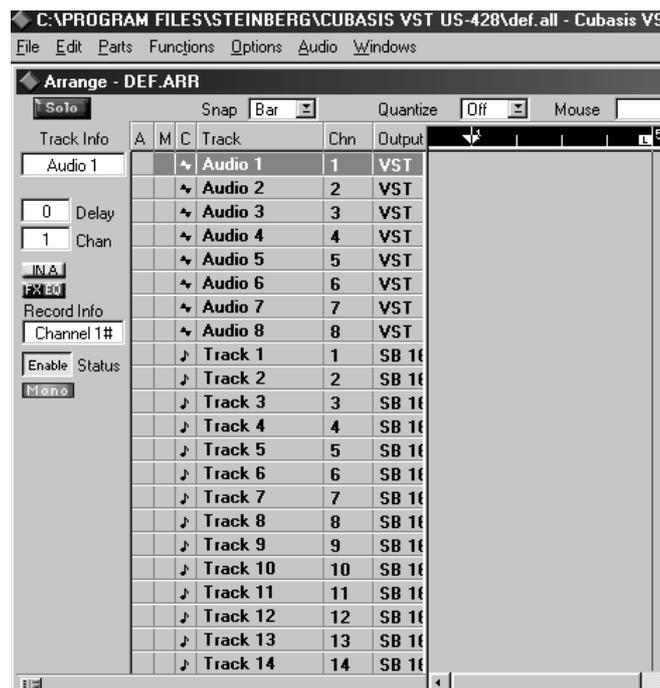


Illustration 5.07 - Record Enable

### 5.4 Transport Controls and Locate Points

The transport controls on the US-428 are set up to directly correspond to the on-screen transport controls in Cubasis. So, for example, pressing PLAY on the US-428 will activate the *PLAY* mode in Cubasis. Pressing STOP will halt playback on Cubasis. Pressing REW or FFWD will activate Cubasis' transports to Rewind or Fast Forward, respectively. The DATA WHEEL, when AUX is not selected, will also act as a shuttle wheel for the transport. Rotating the wheel clockwise will advance the song position forward, and rotating it counter-clockwise will move the transport backward.

Cubasis will record audio or MIDI into the track that is highlighted on the Arrange screen (see above). Pressing RECORD will start Cubasis into a count-off, after which it will begin recording audio or MIDI data into the selected track.



Illustration 5.07 - Transport Bar

The locate points function much like the left and right mouse buttons in Cubasis. To jump to the Left locate point, press the LOCATE ◀◀ button, and to jump to the right point, press the LOCATE ▶▶ button.

To set locate points, hold the SET button and press the ◀◀ or ▶▶ button to set the corresponding locate point. This will work when the transport is stopped or when moving, allowing you to set locate points on the fly.

### 5.5 Mute/Solo

The MUTE buttons toggle the Mute function in Cubasis' VST Channel Mixer for the selected channel. When a channel is muted, there are two indications: the *Mute* button in the Cubasis VST Channel Mixer's display will be activated, and the MUTE LED on the US-428 corresponding to the muted track(s) will be illuminated.

The SOLO switch works by toggling the status of the MUTE switches to SOLO mode. When the SOLO button is pressed and the SOLO LED is lit, the MUTE buttons act as SOLO buttons, soloing the selected channel(s).



Illustration 5-07 - Monitor Mixer with MUTE's and SOLO's

## 5. Interfacing with your Audio Software

### 5.6 EQ controls

The US-428 control surface has dedicated EQ controls that let you make changes to the setting on up to four bands of EQ in the internal mixer of your audio recording program. In the case of Cubasis, the US-428's LOW and HIGH EQ buttons address the lower and upper bands of Cubasis' two bands of internal EQ, respectively.

Press one of the EQ band selection buttons (LOW, LOW-MID, HI-MID or HIGH) to activate the associated band of internal EQ in the software. Once you have activated a particular band, the EQ GAIN control regulates the amount of equalization, in dB, which is added or subtracted from the signal. The EQ FREQ controls the center frequency around which the EQ cut or gain is centered. The EQ Q controls the width of the band of frequencies affected by the EQ GAIN control.

To open a selected channel's EQ panel via the US-428, press one of the EQ selection buttons and then the SELECT key on any channel, and the EQ/Aux Send panel for the selected channel will open.

### 5.7 Aux Buttons

The AUX buttons 1 through 4 select the corresponding *AUX SEND* in the software. When an AUX LED is illuminated, the selected AUX level is controlled via the DATAWHEEL.

To open a channel's Aux Send panel in Cubasis, press one of the AUX SEND buttons, and then the SELECT key on any channel; the EQ/Aux Send panel for the currently selected channel will open.



Illustrations 5-08 and 5-09 - EQ Control Panels in Cubasis (left) and Cubase VST/24 (right)

### 5.8 Data Wheel

The DATA WHEEL acts as a continuous controller, and is capable of a variety of functions. In Cubasis, when an AUX LED is illuminated, the level of the selected AUX Send is controlled via the DATAWHEEL. When no AUX LED's are selected, the DATAWHEEL functions as a shuttle wheel, moving the transport in the direction the wheel is turned.

### 5.9 BANK Controls and FADER NULL

The BANK SELECT keys page between successive banks of eight faders. Selecting any of the eight faders will control the corresponding channel in the software's internal mixer.

The US-428 will support an unlimited number of channels. It is only limited to the maximum amount of channels your audio software will support.

When changing to a different bank of faders, you may find that the fader on the US-428 is now out of position with the associated channel's fader in Cubasis. Pressing the FADER NULL button will disengage the US-428's faders from the program, allowing you to move the US-428's fader to match the fader in the software's internal mixer. The REC and SEL LED's function as up/down indicators, guiding you to the correct fader position. For best results, it is recommended that FADER NULL function be utilized with the transport stopped.

## 6. A Sample Recording Session in Cubasis

Okay. You've got your US-428 connected to your computer, and you've loaded the drivers. Your audio software is loaded, and you're ready to cut some tracks. Let's walk through a typical recording session with the US-428 and Cubasis.

### 6.1 Setting Up

Before starting Cubasis, make sure that the US-428 is runed ON, that its USB cable is connected to your computer's USB port, and that the device has been initialized.

#### **NOTE**

*When turning the US-428 on or off, or launching or closing the application (e.g. Cubasis VST), turn down the LINE OUT and PHONES LEVEL controls.*

*When Cubasis VST is running, do not turn off the US-428, or disconnect the power supply. Also, you should not disconnect or connect the cables of the US-428 or any other USB equipment while Cubasis VST is running.*

*If you launch Cubasis or another audio program before the US-428 has been initialized, the software will not "see" the US-428 and you will not be able to operate the software's controls, perform MIDI I/O, or record or play back audio. Likewise, many software applications don't expect that devices will be removed while the program is running. So make sure to exit your audio application programs before disconnecting or turning off the power to the US-428.*

It is also advisable, as with all audio devices, that you turn your amplifier or powered monitors off until the program is up and running, to avoid audio spikes.

Once you are certain that the US-428 is up and running, start the Cubasis application by double-clicking on its icon on the screen. Open the Audio Control Panel and select the US-428 as your audio device (see "Selecting the US-428 as your audio device" in previous chapter.) If you don't see the US-428 listed in your Audio Control Panel, make sure it's been installed correctly by referring to the section on Troubleshooting.

Select the ASIO Control Panel, and choose a sample Rate (44.1kHz or 48 kHz).

Your Audio Clock Source should be set to internal, unless you're using S/PDIF digital input (INPUT C and D set to DIGITAL), or otherwise slaving Cubasis to an external source.

Select the Disk Caching Scheme. Option 1 is "Virtual Tape Recorder", used primarily when your tracks are linear and of longer duration. Option 2 corresponds to "Audio Sequencer", and is more applicable when using loops and shorter segments of audio. Option 3, "Tape Recorder/Sequencer", is your best choice when working with a combination of short audio clips and longer linear tracks. (For further information on Disk Caching, please refer to the Cubasis VST manual.)

If you're using Cubasis, the program automatically connects to the US-428 control surface and LEDs, but if you're using another program, you will probably need to select the "US-428 Control Port" MIDI In and Out devices in that program's MIDI Setup menu.

If you're using the US-428's internal MIDI interface, you'll need to enable it in the Options/MIDI Setup menu. Each of the US-428's independent MIDI Ins and Outs can be enabled separately. For more information on setting up VST's very sophisticated MIDI functions, please refer to the VST manual.

Connect your audio sources to the US-428. Connect an analog source via the XLR or 1/4" inputs, or a digital source via the S/PDIF input.

### 6.2 Recording Your Tracks

In Cubasis, choose the input(s) you wish to enable on the US-428. In the Audio menu, select Input, and click on the input pair (or pairs, in Cubase VST) you'll be using on the US-428. The green Input icons will light in VST's Input window for active inputs.

Select the Audio track(s) to record to by highlighting that track in the Arrange window.

#### **NOTE**

*That all four will only appear if you've enabled their inputs, as described above. If this is the first track recorded in a given project, Cubasis will probably respond with a dialog box asking you for a path to save the audio files. It is highly recommended that you create a unique folder for each song or project, as audio .WAV files can accumulate very quickly on your hard disk, and keeping them organized can get pretty complicated.*

Once you've enabled your tracks, you'll want to monitor audio through them to set your levels. Open Cubasis' Monitor Mixer (Audio/Monitor menu), and make certain you've assigned your channel inputs and enabled them. You should see audio signal on those channels' meters (assuming you're sending signal from your source).

## 6. A Sample Recording Session in Cubasis

If your input signal is too high, the OL LED will glow steadily red. If the signal level is too low, you might only see a flicker, or nothing at all, on the SIGNAL LED.

You can regulate the input level of the input source in several ways. First, make sure that the signal you're sending to the US-428 is within a reasonable range – it should illuminate the green SIGNAL LED, but the red OL LED should only flicker occasionally. You can then fine adjust the level with the TRIM knobs for the selected channel(s).

### NOTE

*That the SIGNAL and OL LED's do not function with digital input.*

In the case of digital input, input level is regulated by the output level of the source, and passed directly to the software application without modification.

On Cubasis' Transport Bar, you can enable the recording to drop in or out of Record based on the locate points you've set. If you do not wish to enable this function, make certain the buttons for drop in and drop out are not enabled.

Press the RECORD button on the US-428. If you've got the metronome's Count-off function enabled, you'll hear a one or two bar countoff, and then the program will enter Record mode. It will stop recording when it reaches the drop out point, or if none is enabled, when you hit the STOP button.

Cubasis will now create a display of the track(s) you've just recorded. This can take a few seconds to a few minutes, depending on how long the recorded tracks are and how many there are. You'll then see the tracks appear in your arrange window.

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### 6.3 Overdubbing

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To overdub more tracks, simply select and enable additional tracks as you did the previous ones, and repeat the procedure. You can monitor the tracks you've already recorded via the US-428's outputs, while recording additional tracks into Cubasis via the US-428's inputs. Be sure to assign each track to its own channel in the program's internal mixer. For more information on Cubasis' mixer functions, including groups and output assigns, please refer to the Cubasis manual.

When overdubbing, you can also select the INPUT MONITOR mode by pressing the INPUT MONITOR button on the US-428. When the corresponding LED

is illuminated, channel strips 1,2,3 and 4 can be used to adjust the level, pan and mute status of inputs A, B, C and D, respectively. This will enable the first four faders as Input level monitors, allowing you to hear the inputs at the source, in sync with the previously recorded tracks.

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### 6.4 Mixdown

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You can control the mix of the channels you've recorded via the US-428. Make certain you've got the correct bank selected - the small on-screen window that indicates "VST Mixer 1-8", or "GM Mixer 1-8" or "GM Mixer 9-16" is your best indication of the currently selected bank. The LEDs next to the BANK buttons on the US-428 also indicate the selected bank: VST Mixer = "▶" only; GM Mixer 1-8 = "◀" and "▶" GM Mixer 9-16 = "▶" only. You can change the level of a track by adjusting its corresponding fader on the US-428 control surface. To adjust other parameters on a particular channel, first press the SELECT key for that channel on the US-428. The selected channel will be highlighted below that channel's fader on the screen.

Moving the channel fader on the US-428 will adjust the relative volume of the selected channel in Cubasis. The corresponding fader on screen will update as you move the US-428's fader.

The PAN control on the US-428 will pan the selected channel from Left to Right on the stereo buss.

To open the EQ panel, select the desired channel and then press ASGN and select any of the four bands of EQ on the US-428's EQ pod. The EQ's level, center frequency and Q can then be controlled via the US-428's EQ knobs.

To select a channel's FX sends, select the desired channel and then press ASGN and select any of the four AUX buttons. The level of the Aux send is controlled via the DATA WHEEL.

Once your tracks are recorded, mixing can be automated on Cubasis' internal mixer. By selecting Write on the mixer panel in Cubasis, your fader moves, EQ and FX settings and changes, panning, etc., can all be recorded into Cubasis' automated mixer settings. To play back the automated mix, select Read on the mixer panel. (You can play back existing mix moves while continuing to update your mix by selecting both Read and Write.) For more detail on Cubasis' mixdown procedure, refer to the Cubasis manual.

## 7. Special Notes on Other Programs

TASCAM will be working together with developers from all over the professional audio industry to create new applications templates for the US-428. As templates and other information are available, we will be posting them to our website for free download.

If you've created a new template, or are looking for one, or just want to see what other users are up to, we invite you to visit the US-428 users' group in our online BBS.

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### 7.1 Cubase VST and other Steinberg applications

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Cubase VST is, of course, the program from which Cubasis was derived. So as you'd expect, most of the features and functions are the same, with a few notable exceptions:

- The full version of Cubase VST (as well as VST Score and VST/24) supports a four band fully parametric EQ on each channel. Of course, it's supported on the US-428 - each of the four bands of VST are controlled by the four associated EQ band selector buttons.
- VST/24 supports 24-bit recording, so you can take advantage of the US-428's 24-bit A/D and D/A converters. To select 24-bit word length, go to VST's Audio Control Panel. (see illustration)

Cubase VST's Version 5.0 upgrade will also support the US-428, and will include separate drivers for 16-bit and 24-bit application.

See the Cubase VST manuals for more details on the program, or contact Steinberg.

A version of Cubasis for MacOS will be released soon, as well as drivers for the MacOS version of Cubase VST.

Other Steinberg programs, like Nuendo, will also work with the US-428. While Nuendo is geared toward a much more film and post environment, the essential features of the user interface are much the same. Consequently, most basic functions on Nuendo will respond to the US-428 in much the same way as in Cubase VST. For further information on Nuendo applications, please refer to the ReadMe file, or check our website.

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### 7.2 Other Applications

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As we go to press, TASCAM has made arrangements with the manufacturers of most of the major music software applications to provide support for the US-428. As templates and drivers are received, they will be posted on our website, [www.tascam.com](http://www.tascam.com), in the product support areas. Please check the TASCAM site for updates to the manual as well as related information.

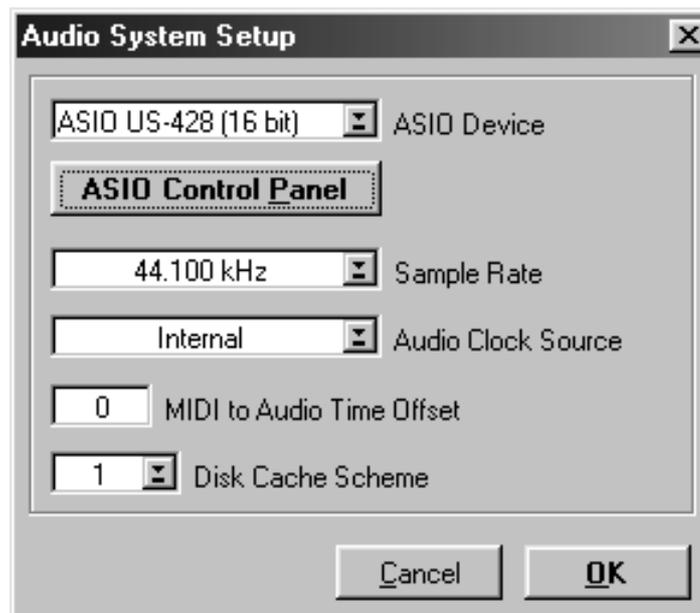


Illustration 7-01 - Audio System Control Panel in Cubase VST/24

## 8. Technical Support

### 8.1 Troubleshooting FAQs

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#### **NOTE**

*That there will be a currently updated FAQ file available on our website*

#### **Q. I don't see the US-428 in Cubasis' Audio Control Panel.**

A. Check to see if the US-428 is installed correctly within your OS. In Windows, go to the Device Manager (My Computer/Control Panel/Setup), and click on the Sound, video and Game controllers tab to make sure the US-428 is installed and operating correctly. Also check to see that your USB cable is connected securely, and that the unit is powered up before booting Cubasis.

#### **Q. I've connected audio to the US-428, but can't hear anything.**

A. Make sure your input levels are sufficient. The green INPUT LED's should light to indicate the presence of analog audio signal at the inputs. Make sure your monitor or headphone levels are turned up, and connected correctly.

#### **Q. My audio is distorted.**

A. Check to see if the signal is overloading. The red OL LED's should only occasionally flicker. In the case of a digital input, try reducing the output level of the source.

#### **Q. I can see a response on screen from Cubasis to the US-428, but I don't hear any audio.**

A. Make sure your audio signal path is correctly routed. Make sure the channels you're trying to monitor are not in Input mode. Make sure your output level is turned up. Make sure that the US-428 ASIO driver (16 or 24 bit) is selected.

#### **Q. I can hear audio, but I see no response to the US-428 on screen.**

A. Make sure you've got the US-428 selected in the VST Remote menu. Make sure you're looking at the correct BANK of faders on screen.

### 8.2 Tech Support Contacts

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If you've got questions on the US-428, post them to our US-428 forum on our BBS, located on our website at [www.tascam.com](http://www.tascam.com). TASCAM techs are on line to field questions, but don't be surprised if your question is answered by another user.

The BBS is also a forum for comments and ideas on the US-428. You'll find users of a variety of software platforms, so someone's likely to be familiar with your program of choice. And since many of the situations you're likely to encounter will be related to the software you're using, it's a good idea to check not only our website, but the websites and resources of the software program's manufacturer as well.

If you've got a hardware or other problem and need to speak to us, you'll find a full list of contacts for TASCAM worldwide on our website.

### 8.3 Software Downloads

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You'll also find a collection of templates for software applications on our website. While we will be doing our best to post as many templates as possible, we also want to encourage those users with MIDI programming skills to design their own interface.

### 8.4 Programming the US-428

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We're very excited about the potential of the US-428. The simplicity of its design allows it a tremendous range of possible uses. We've already received suggestions for using the US-428 with Software Synths and Virtual Keyboards, DSP Plug-Ins, MIDI lighting controllers, and even video editing applications. And while programming MIDI controller information isn't for everyone, we feel certain that the development of new and different applications for the US-428 is of interest to many users.

In an effort to foster the creative development of the US-428's application base, TASCAM has made the programming specifications for the US-428 publicly available. You'll find basic information on the US-428's Programming Spec in the User's Forum on the TASCAM website.

# MIDI Implementation Chart

TASCAM Digital Audio Workstation Controller  
 Model US-428 MIDI Implementation Chart

date:2000.07.28  
 Version : 1.01

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	×	×	Through
	Changed	×	×	
Mode	Default	×	×	Through
	Messages	×	×	
	Altered	*****		
Note Number		×	×	Through
	True voice	*****		
Velocity	Note ON	×	×	Through
	Note OFF	×	×	
After Touch	Key's	×	×	Through
	Ch's	×	×	
Pitch Bender		×	×	Through
Control Change		×	×	Through
Prog Change		×	×	Through
	True #	*****		
System Exclusive		×	×	Through
System Common	: Song Pos	×	×	Through
	: Song Sel	×	×	
	: Tune	×	×	
System Real Time	:Clock	×	×	Through
	:Commands	×	×	
Aux Mes-sages	: Local ON/OFF	×	×	Through
	: All Notes OFF	×	×	
	: Active Sense	×	×	
	: Reset	×	×	
Notes:				

Mode 1 : OMNI ON, POLY  
 Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO  
 Mode 4 : OMNI OFF, MONO

○ : YES  
 X : NO

# TASCAM

TEAC Professional Division



# US-428

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