

Professional 24-bit USB Audio Interface

**U1688XT**

**User's Guide**



**ESI - Copyright © 2016 - 2017**

Revision 2, May 2017

**[www.esi-audio.com](http://www.esi-audio.com)**

## INDEX

|   |           |
|---|-----------|
| <b>1. Introduction</b> .....            | <b>4</b>  |
| 1.1 Features.....                       | 4         |
| <b>2. Installation</b> .....            | <b>7</b>  |
| 2.1 System Recommendation.....          | 7         |
| 2.2 Hardware Installation.....          | 7         |
| 2.3 Driver & Software Installation..... | 7         |
| 2.3.1 Installation under Windows .....  | 7         |
| 2.3.2 Installation under Mac OS X.....  | 9         |
| <b>3. Control Panel</b> .....           | <b>10</b> |
| 3.1 Latency settings .....              | 11        |
| <b>4. Specifications</b> .....          | <b>11</b> |
| <b>5. General Information</b> .....     | <b>13</b> |

## 1. Introduction

U168 XT is a USB 2.0 Hi-Speed audio interface for Mac and PC, bringing USB audio technology to a new level by providing better performance for better results.

This interfaces provides not less than 16 input channels and 8 output channels that are all available for simultaneous usage. The 24-bit / 96kHz solution not only provides balanced 1/4" TRS line connectors, it also includes 4 integrated microphone preamps with XLR inputs on the front of the unit with switchable +48V phantom power, 2 Hi-Z instrument inputs for electric guitars as well as coaxial digital S/PDIF input and outputs. There are two independent headphone outputs on the front, next to an integrated monitoring mixer. External keyboards, synthesizers and sound modules can be connected via the MIDI inputs and outputs on the backside of the unit.

U168 XT provides fast high performance low latency drivers based on our EWDM and DirectWIRE technology with support for the latest WDM, ASIO 2.0 and CoreAudio technology for both Mac and PC, making it possible to use the interface with all current standard audio applications available for professional usage.

All this makes the stylish U168 XT an audio interface, bringing USB audio for professional applications to a new level.

### 1.1 Features

The front panel of the U168 XT hardware has these main features:

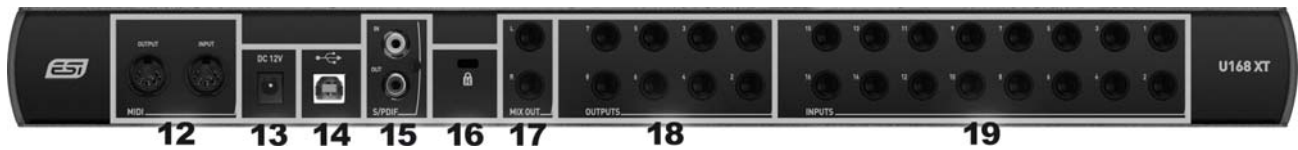


1. **microphone and Hi-Z instrument input channel 1** with XLR/TRS combo connector, use this connector to connect a dynamic or condenser microphone or an electric guitar. Next to it is the **on switch** that enables this input for usage when pressed. When not pressed, the corresponding line input on the backside of the unit is used instead. With the **gain knob** you can control the input level which is indicated with the LEDs above it. The **+48V switch** enables phantom power if required for a condenser microphone; when enabled this is shown with the LED next to it. Please note that for microphones you should use XLR connection while a guitar needs to use a TRS connection.
2. **microphone and Hi-Z instrument input channel 2** with XLR/TRS combo connector, use this connector to connect a dynamic or condenser microphone or an electric guitar. Next to it is the **on switch** that enables this input for usage when pressed. When not pressed, the corresponding line input on the backside of the unit is used instead. With the **gain knob** you can control the input level which is indicated with the LEDs above it. The **+48V switch** enables phantom power if required for a condenser microphone; when enabled this is shown with the LED next to it. Please note that for microphones you should use XLR connection while a guitar needs to use a TRS connection.
3. **microphone input channel 3** with XLR connector, use this connector to connect a dynamic or condenser microphone. Next to it is the **on switch** that enables this input for usage when

pressed. When not pressed, the corresponding line input on the backside of the unit is used instead. With the **gain knob** you can control the input level which is indicated with the LEDs above it. The **+48V switch** enables phantom power if required for a condenser microphone; when enabled this is shown with the LED next to it.

4. **microphone input channel 4** with XLR connector, use this connector to connect a dynamic or condenser microphone. Next to it is the **on switch** that enables this input for usage when pressed. When not pressed, the corresponding line input on the backside of the unit is used instead. With the **gain knob** you can control the input level which is indicated with the LEDs above it. The **+48V switch** enables phantom power if required for a condenser microphone; when enabled this is shown with the LED next to it.
5. **MONO 1 switch**, allows you to create a mix down for input channels 1 and 2 to a dual stereo signal (i.e. input channel 1 goes to channel 2 and input channel 2 goes to channel 1), for the monitor mix. Likewise, the **MONO 2 switch** allows you to create a mix down for input channels 3 and 4 to a dual stereo signal (i.e. input channel 3 goes to channel 4 and input channel 4 goes to channel 3), for the monitor mix. This makes sure that you are not listening to a microphone or guitar input signal on only the left or right speaker while monitoring.
6. **input selection LEDs**, showing the selection of the physical inputs for input channels 1 to 4. When the corresponding LED is on, the input on the front is used. When the LED is off, the line input from the backside of the unit is used instead.
7. **headphone signal selection switches**, allow you to select for each of the two headphone outputs if the main signal from output channel 1/2 (switch is off) or from the mix output of the integrated monitoring mixer (switch is on) will be used.
8. **1st headphone output** with 1/4" TRS connector, use this to connect a pair of headphones and control the volume / gain of it with the knob next to it.
9. **2nd headphone output** with 1/4" TRS connector, use this to connect a second pair of headphones and control the volume / gain of it with the knob next to it.
10. **monitoring mixer**, these three gain knobs allow you to control the integrated monitoring mixer of U168 XT. The first knob controls the volume of the input channels 1 to 8, the second the volume of input channels 9 to 16 and the last one the volume of the output channels 1 to 8. The mixed signal is available via the headphone outputs (when selected) and the mix output on the backside of the unit.
11. **power switch / LED**, allows you to switch U168 XT on and off. When on, the LED next to it shows the status.

The rear panel of U168 XT has these main features:



12. **MIDI input and output connectors**, connects to MIDI equipment such as keyboards, synthesizers, sound expanders and more.
13. **12V DC power connector**, connects to the included DC power supply. U168 XT requires this power supply to operate.
14. **USB connection port**, connects to your computer with the supplied USB cable.
15. **S/PDIF digital input and output**, these two RCA connectors provide the coaxial digital connection option for S/PDIF signals. The input can be used in alternative to the analog input channels 15/16 (switchable in the control panel by software), the output provides the playback signal from output channel 1/2.
16. If required, this connects your unit to a standard **laptop lock connector**, preventing it from being stolen.
17. **mix output**, provides balanced / unbalanced 1/4" TRS connectors for the stereo master mix signal from the integrated monitoring mixer of U168 XT. This connects typically to your studio monitors if you choose to use the integrated mixer.
18. **line outputs channel 1 to 8**, these balanced / unbalanced 1/4" TRS connectors provide each independent analog output signal of U168 XT. If you do not use the integrated mixer, you would typically connect output 1/2 to your studio monitors.
19. **line inputs channel 1 to 16**, these balanced / unbalanced 1/4" TRS connectors are used to input up to 16 simultaneously available analog line signals. Input channels 5 to 16 are always provided as line input signal, while for channels 1 to 4 you can select between the inputs on the front panel or these inputs on the backside with the switches on the front panel of U168 XT.

## 2. Installation

### 2.1 System Recommendation

U168 XT is not simply a standard digital audio interface, but a high-resolution device capable of advanced processing of audio content. Even though U168 XT is built to have low-CPU resource dependability, system specifications play a key part in the U168 XT's performance. Systems with more advanced components are generally recommended.

#### Minimum System Requirements

##### PC

- Windows Vista / 7 / 8 / 8.1 or 10 (32- and 64-bit) operating system
- 1 available USB 2.0 port

##### Mac

- Mac OS X 10.7 or higher
- 1 available USB 2.0 port

### 2.2 Hardware Installation

U168 XT is directly connected to an available USB port of your computer. In order to make sure the unit works, you need to use the included electric power supply that connects your mains power outlet to the 12V DC connector on the backside of U168 XT. Once this connection is made, simply install the hardware by plugging it into your computer with the supplied USB cable.



*USB port of a computer*

### 2.3 Driver & Software Installation

After the connection of U168 XT, the operating system automatically detects it as a new hardware device. However, you need to install our driver in order to use it.

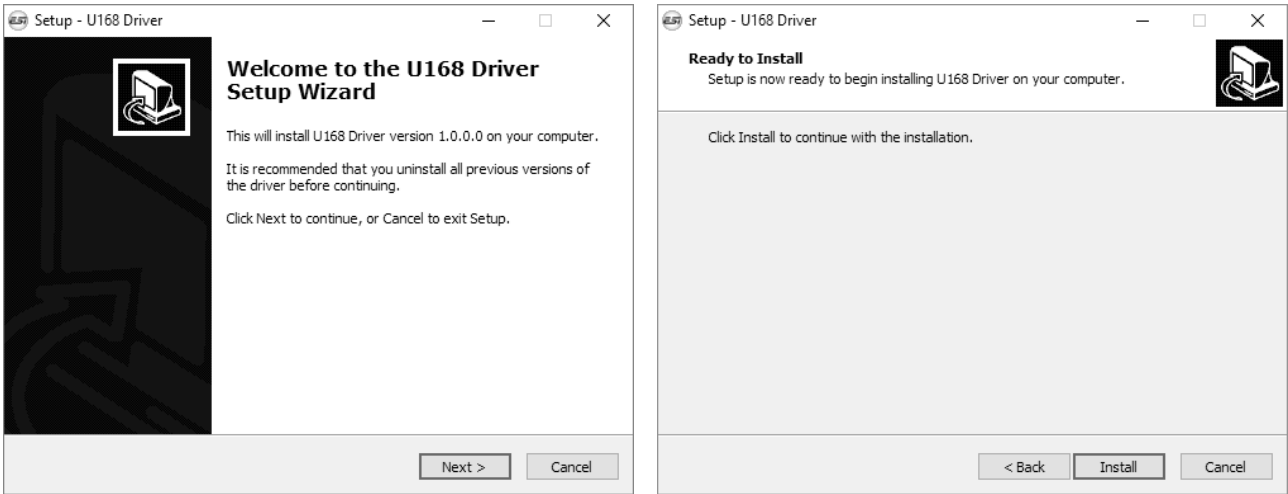
We **strongly** recommend to download the latest driver from [www.esi-audio.com](http://www.esi-audio.com) before installing U168 XT on your computer. The driver on our website can always be more recent compared to the driver on the included Installation DVD.

#### 2.3.1 Installation under Windows

This text explains how to install U168 XT under Windows 10. If you use Windows Vista, Windows 7, Windows 8 or Windows 8.1, the steps are basically the same. Connect U168 XT before you install the driver, but turn it off first.

To start the installation, launch the setup program, which is an .exe file that is inside a recent driver download from our website or in the *Windows XX* folder (XX refers to the Windows version) of the

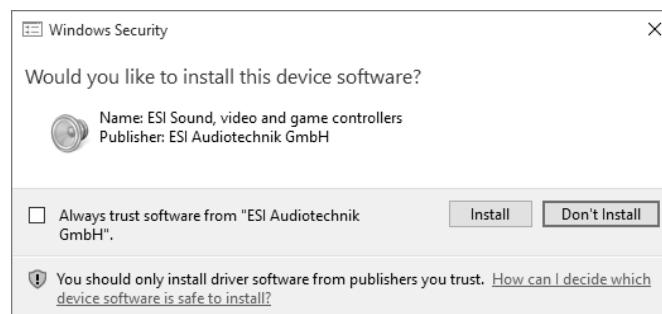
included Installation DVD, by double clicking on it. When launching the installer, Windows might display a security message. Make sure to allow the installation. After that, the following dialog on the left will appear. Click *Next* and then the dialog on the right will appear:



Now click *Install*. Files are now being copied. After some time an additional dialog will appear:

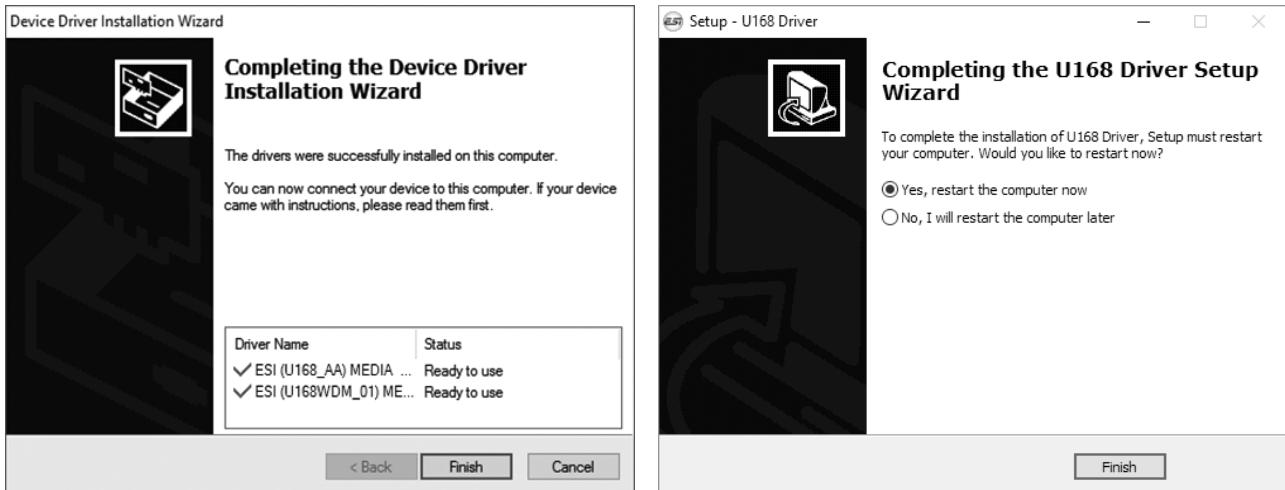


Confirm this by clicking *Next*. Again some files are being copied and typically you will be prompted with a Windows Security message like this:



Confirm it by clicking *Install*. After a while the installation then will be completed and the following dialog will appear:





Once you see the window on the left, click *Finish*. In many cases, the window on the right appears then. We strongly suggest to select *Yes, restart the computer now* and then click *Finish*.

You can connect U168 XT to your computer anytime if not done yet and switch it on. Windows will automatically setup the system so you can use the device.

To confirm the completion of the installation after rebooting the system, please check if the orange color ESI icon is displayed in the taskbar notification area as shown below.



If you can see it, the driver installation has been completed successfully.

### 2.3.2 Installation under Mac OS X

To use U168 XT under Mac OS X, you need to install the driver from the included Installation DVD from the *Mac OS X* folder or from newer driver download from our website, which is recommended.

The driver and control panel gets installed by double clicking on the .dmg file and then in the window that opens again double clicking on the installer. After that follow the instructions on your screen. At the end of the installation, we recommend to reboot your system.

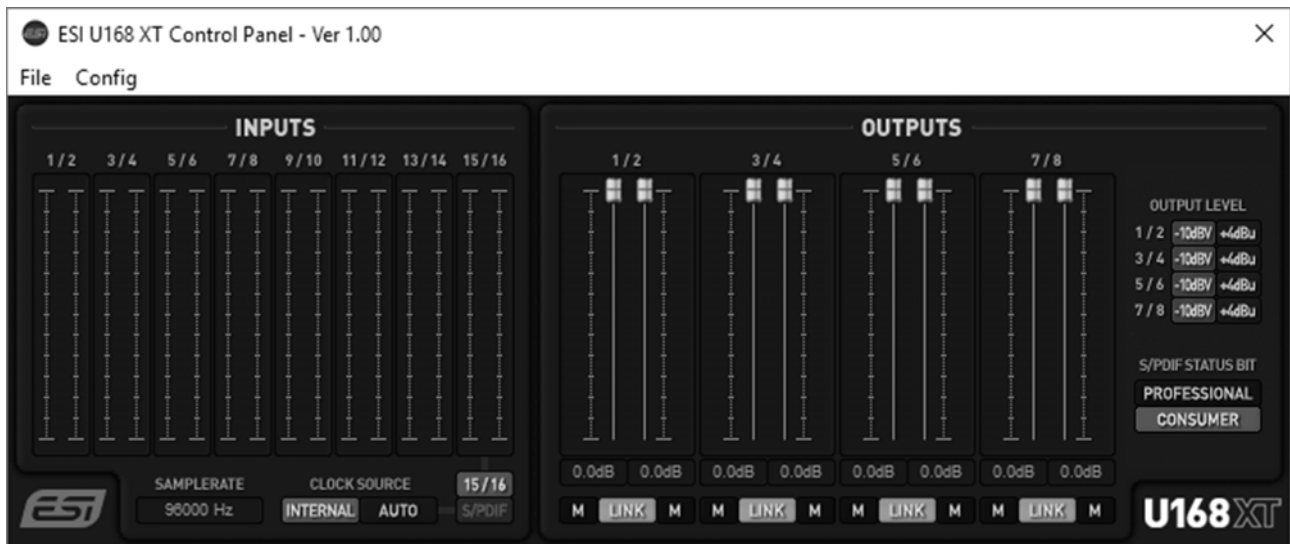
If the installer does not launch via a double click, click on it with the right mouse button (or hold the ctrl-key on your keyboard while clicking with the left mouse button) and then choose *Open* and then *Open* again.

Controlling some of the basic options of U168 XT under Mac OS X can also be done via the *Audio MIDI Setup* utility from Mac OS X (from the folder *Applications > Utilities*).

### 3. Control Panel

This chapter describes the U168 XT Control Panel and its functions.

Under Windows, to open the control panel double click on the ESI icon in the task notification area. Under Mac OS X, there is an icon in the *Applications* folder. The following dialog will appear:



The panel has the following functions and sections:

#### INPUTS

The main part of the **INPUTS** section contains signal level meters for every physical input channel.

Under it, the current **SAMPLERATE** is displayed.

Under **CLOCK SOURCE** you can select the clock source for the digital audio processing. By default it is set to *INTERNAL* which means that U168 XT is generating the master clock and sample rate. If set to *AUTO*, then U168 XT can either get its master clock from the S/PDIF input (when enabled and a signal is connected to it) or switch automatically back to generating its own master clock.

Next to that you can choose the physical analog inputs *15/16* or the digital *S/PDIF* input as a signal source for the input channels 15 / 16.

#### OUTPUTS

The main parts of the **OUTPUTS** section contains volume control sliders and signal level meters for each playback channel. Under each channel is a button that allows you to mute playback for that channel (*M*). With the *LINK* button you can choose if you want to control the left and right playback channels simultaneously.

Under **OUTPUT LEVEL** you can switch between *+4dBu* to set the output level of each individual line output pair optimized for balanced audio signals to +4dBu studio standard level or *-10dBV* to set the output level optimized for unbalanced audio signals to -10dBV consumer/HiFi standard level.

The **S/PDIF STATUS BIT** section allows you to define if the S/PDIF output signal is sent with a status bit for *PROFESSIONAL* or *CONSUMER* signals.

### 3.1 Latency settings

Under Windows via *Config > Latency* in the Control Panel it is possible to change the latency setting (also called “buffer size”) for the driver of U168 XT. A smaller latency is the result of a smaller buffer size and value. Depending on the typical application (e.g. for playback of software synthesizers) a smaller latency is an advantage. At the same time, the best latency setting indirectly depends on the performance of your system. For recording applications, a typical latency buffer size between 4 and 8ms is standard, a value displayed typically inside your audio application. Note that the latency has to be setup before launching the audio application using U168 XT.

Under Mac OS X, the latency is depending on the audio application and usually setup there inside the settings of that software.

## 4. Specifications

### **Key Features**

- 16 input / 8 output 24-bit / 96kHz USB 2.0 Hi-Speed Audio Interface
- 16 input channels and 8 output channels available for simultaneous usage
- 4 professional microphone preamps with +48V phantom power support
- 2 Hi-Z high performance instrument inputs with 1/4" connector
- digital coaxial S/PDIF input with RCA connector
- digital coaxial S/PDIF output with RCA connector
- 16 line inputs with balanced 1/4" TRS connectors
- 8 line outputs with balanced 1/4" TRS connectors
- 2 independent headphone outputs with 1/4" stereo phone connector
- separate stereo mix output as master / monitoring output
- integrated monitoring mixer controlled on front panel
- 16 channel MIDI I/O with one MIDI input and one MIDI output
- powered by included DC (12V) power supply
- dimensions roughly 45.0cm x 14.5cm x 4.5cm

### **Audio Specifications**

- supports up to 24-bit / 96kHz
- A/D Converter:
  - 107dB (@ -60dBFS A-Weighted)
  - 20Hz to 20kHz, +/- 0.02dB frequency response
- D/A Converter:
  - 112dB (@ -60dBFS A-Weighted)
  - 20Hz to 20kHz, +/- 0.02dB frequency response

### **Compatibility**

- supports Windows Vista, Windows 7, Windows 8.1 and Windows 10 with ASIO 2.0, MME, WDM and DirectSound (incl. EWDM / DirectWIRE)
- supports Mac OS X (10.7 and above) via CoreAudio USB audio driver

## 5. General Information

### Trademarks

ESI, U168 and U168 XT are trademarks of ESI Audiotechnik GmbH. Windows is a trademark of Microsoft Corporation. Other product and brand names are trademarks or registered trademarks of their respective companies.

### The FCC and CE Regulation Warning

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. Caution : Any changes or modifications in construction of this device with are not expressly approved by the party responsible for compliance, could void the user's authority to operate equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. If necessary, consult an experienced radio/television technician for additional suggestions.

### Correspondence

For technical support inquiries, contact your nearest dealer, local distributor or ESI support online at [www.esi-audio.com](http://www.esi-audio.com). Please also check our extensive Knowledge Base with Frequently Asked Questions, installation videos and technical details about our products in the support section of our website.

### Disclaimer

All features and specifications subject to change without notice.

Parts of this manual are continually being updated. Please check our web site [www.esi-audio.com](http://www.esi-audio.com) occasionally for the most recent update information.