

Digidesign

882|20 I/O Audio Interface

Installation Guide

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Communications & Safety Regulation Information

Compliance Statement

The model 882/20 I/O complies with the following standards regulating interference and EMC:

- FCC Part 15 Class A
- EN55103 – 1, environment E4
- EN55103 – 2, environment E4
- AS/NZS 3548 Class A
- CISPR 22 Class A

Radio and Television Interference

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.

Communications Statement

This equipment has been tested to comply with the limits for a Class A digital device. Changes or modifications to this product not authorized by Digidesign, Inc., could void the Certification and negate your authority to operate the product. This product was tested for CISPR compliance under conditions that included the use of peripheral devices and shielded cables and connectors between system components. Digidesign recommends the use of shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices.

Safety Statement

This equipment has been tested to comply with USA and Canadian safety certification in accordance with the specifications of UL Standards; UL813 and Canadian CSA standard; CSA C22.2 No.1-M90. Digidesign Inc., has been authorized to apply the appropriate UL & CUL mark on its compliant equipment.

Important Safety Instructions

When using electric or electronic equipment, basic precautions should always be followed, including the following:

- Read all instructions before using this equipment.
- To avoid the risk of shock, keep this equipment away from rain water, and other moisture. Do not use this equipment if it is wet.
- The equipment should only be connected to the correct rating power supply as indicated on the product.
- Do not attempt to service the equipment. There are no user-serviceable parts inside. Please refer all servicing to authorized Digidesign personnel.
- Any attempt to service the equipment will expose you to a risk of electric shock, and will void the manufacturer's warranty.
- The product should be connected only to the correct power supply as indicated on the product.

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Using the 882/20 I/O

The 882/20 I/O™ is an 8-channel digital audio interface which features 20-bit analog-to-digital, and 20-bit digital-to-analog converters for superior dynamic range, reduced noise floor, and the capability to work with the full 24-bit mixing, editing, processing, and mastering environment of Pro Tools.

The 882/20 I/O can be used in two ways:

- ◆ As a 20-bit Audio Interface for a Pro Tools 24, or Pro Tools III-PCI system
- ◆ As a stand-alone 2-channel, 20-bit audio converter

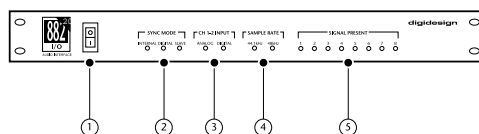
This User's Guide explains each of the indicators and connectors on the front and back panels of the 882/20 I/O. It also explains how to use the 882/20 I/O with a Digidesign Pro Tools system, as well as how to use it as a stand-alone 20-bit audio converter in your studio.

882/20 I/O Interface

The following section explains all of the connectors and indicators on the front and back panels of the 882/20 I/O Interface and how they are used.

882/20 I/O Front Panel

The 882/20 I/O has the following front panel indicators, moving from left to right:



Front panel of the Digidesign 882/20 I/O

1. Power

This switch applies power to the 882/20. The “I” position is on. The “O” position is off.

2. Sync Mode

The Sync Mode LEDs indicate which sample rate clock reference is currently used by the analog-to-digital converters (ADCs) and the digital-to-analog converters (DACs).

Internal This is the 882/20 I/O standard setting. In this mode, the 882/20 I/O sample rate is generated by its internal crystal oscillator (whose frequency is determined by the Sample Rate setting in the Session Setup window). Internal mode should be active whenever the 882/20 I/O is not synchronized to an external clock source.

Digital This setting indicates that a S/PDIF word clock signal is the source for the 882/20 I/O sample rate. This is the setting you would use for inputting material from DAT machines or other S/PDIF digital devices.

To use the 882/20 I/O digital input and output as an effects send and return to a digital effects device, you should set the 882/20 I/O to Internal Sync Mode. You should then set the digital effects device to accept an external digital clock (from the 882/20 I/O) so it synchronizes with Pro Tools.

In an expanded system, the system clock is carried by the Audio Interface connected to the first Pro Tools card in your system. This Audio Interface will act as the master interface in your system, and all other Audio Interfaces will be slaved to it. Only the master interface allows you to set the Sync Mode. Slaved interfaces do not allow this parameter selection.

▲ Because some digital audio devices do not output proper clock when they are not playing back, leaving the 882/20 I/O in Digital Sync Mode may cause Pro Tools audio playback quality to suffer, or to play back at the wrong pitch. If you are using digital I/O, reset the Sync Mode from Digital to Internal after inputting material.

Slave This LED is lit when the 882/20 I/O sample rate is synchronized to another Digidesign Audio Interface or synchronization peripheral. In this mode, the sample rate of the slave interface is derived from the frequency of the incoming master clock signal present at the Slave Clock (256x) port. The 882/20 I/O automatically switches to this mode when a Slave Clock Out signal from another Digidesign Interface, Universal Slave Driver, Video Slave Driver, or SMPTE Slave Driver is connected to its Slave Clock In port.

In expanded Pro Tools systems, the Super Clock output of the master Audio Interface locks all other interfaces together with sample accuracy, keeping all signals phase-synchronous.

* When slaving to a Digidesign Universal Slave Driver, Video Slave Driver, or SMPTE Slave Driver, set the clock source to Internal. The Audio Interface will automatically switch to Slave mode when it detects the 256x input clock.

3. Ch 1–2 Input

This LED indicates the format (analog or digital) of the audio input signal to channels 1 and 2. In Pro Tools, you choose analog or digital input for these two channels in the Session Setup window. Input channels 3 through 8 of the 882/20 I/O are always analog.

4. Sample Rate

These LEDs display the current sample rate of the 882/20 I/O internal crystal oscillator, which can be either 44.1 kHz or 48 kHz. In Pro Tools, this is set in the Session Setup window.

The 882/20 I/O provides the following sample rates:

48 kHz This is a standard sampling rate of many professional audio devices. It is recommended for use with devices that cannot receive digital transfers at 44.1 kHz.

44.1 kHz This is the compact disc standard sampling rate and the Pro Tools default sample rate. To avoid the need for sample rate conversion, you should use this rate when you are recording material that will ultimately be published on a compact disc.

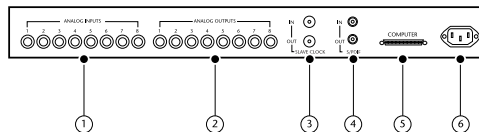
▲ When you are using an external digital source such as a DAT recorder, the front panel of the 882/20 I/O indicates only the internal oscillator sample rate, not that of the external digital source.

5. Signal Present LEDs

These LEDs indicate whether signal is present (above the level of -30 dB) at a given channel's output. These LEDs indicate the presence of channel output signals, not input signals. Input signals are monitored on-screen in the Pro Tools software. The LEDs do not indicate clipping. Clipping is indicated by the on-screen meters in Pro Tools software.

882/20 I/O Back Panel

The 882/20 I/O has the following back panel connectors, moving from left to right:



Back panel of the Digidesign 882/20 I/O

1. Analog Audio Inputs

These are balanced, 1/4-inch TRS jacks for analog audio input connections. The 882/20 I/O analog inputs feature 20-bit analog-to-digital converters.

Input operating levels are switchable between $+4$ dBu and -10 dBV operation. Unbalanced connections are supported with the use of standard 1/4-inch mono phone plugs.

Because input channels 1–2 of the 882/20 I/O are software selectable between analog or S/PDIF digital format, input to these two analog channels is disabled when S/PDIF digital input format is chosen in the Pro Tools Hardware Setup dialog.

The 882/20 I/O analog inputs are factory calibrated at a -14 dB nominal level, referenced to a full code signal. This means that at the nominal reference input level (either $+4$ dBu or -10 dBV), you have 14 dB of headroom before clipping.

2. Analog Audio Outputs

These are balanced, 1/4-inch TRS jacks for analog audio output connections. The 882/20 I/O analog outputs feature 20-bit digital-to-analog converters.

All eight output channels are continuously active. Output operating levels are switchable between +4 dBu and –10 dBV operation. Unbalanced connections are supported with the use of standard 1/4-inch mono phone plugs.

The 882/20 I/O analog outputs are factory calibrated at a –14 dB nominal level, referenced to a full code signal. This means that at the nominal reference output level (either +4 dBu or –10 dBV), you have 14 dB of headroom before clipping.

3. Slave Clock In/Out

The Slave Clock Out jack is a standard BNC type connector that outputs a 256x audio sample rate master Super Clock signal for slaving and synchronizing multiple Digidesign Interfaces and synchronization peripherals together.

The Slave Clock In jack is a standard BNC type connector designed to receive a Slave Clock Out signal from another Digidesign Interface, a Universal Slave Driver™, Video Slave Driver™, or SMPTE Slave Driver™ for synchronizing multiple Digidesign Interfaces and synchronization peripherals together.

When the 882/20 I/O Sync Mode is set to Internal, connecting a valid Slave Clock Out signal to this port will cause the 882/20 I/O to automatically switch to Slave mode. When the 882/20 I/O is the master interface or the first interface in a chain, Digital sync mode overrides the Slave Clock input, and an incoming Slave Clock Out signal will not switch the 882/20 to Slave mode.

Because crucial timing data is passed over these ports, you should use high-quality, 75-ohm RG-59 cables for making connections, and keep total cable length to less than 3 meters between interfaces.

4. S/PDIF Digital Input/Output

The Sony Phillips Digital Interface Format (S/PDIF) is used in many professional and consumer CD players and DAT recorders. The 882/20 I/O S/PDIF jacks are unbalanced, two-conductor, phono (RCA) jacks. Because input channels 1–2 of the 882/20 I/O are software selectable between analog or digital format, input to these two digital channels is disabled when analog input is chosen in the Hardware Setup dialog in Pro Tools. Output is continuously active on the S/PDIF output jack, even if the 882/20 I/O input selector is set to Analog in the Hardware Setup dialog. To avoid RF interference, use 75-ohm coaxial cable for S/PDIF transfers and do not exceed a cable length of 10 meters.

5. 50-pin Interface Connector

This 50-pin connector is used to connect the 882/20 I/O to a MIX card, d24, Disk I/O, or DSP Farm card. The necessary cable is supplied with your Audio Interface. If you plan to connect two 882/20 Interfaces to a MIX card or d24 card, a 16-channel peripheral cable adapter is necessary. (This cable is available from your Digidesign dealer.)

6. Power Input

This connector accepts a standard AC power cable. The Interface is auto power selecting (100 V–240 V), and will automatically work with a standard modular cable to connect to AC power receptacles in any country.

Making Signal Connections to the 882/20 I/O

Depending on how you plan to use the 882/20 I/O, the way you connect it to your studio will vary.

Choosing between +4 dBu and –10 dBV operation modes

The 882/20 I/O can be set to operate at +4 dBu or –10 dBV input and output levels. It is important that you determine which line level mode is appropriate for your studio. In +4 dBu operating mode, the 882/20 I/O is a 20-bit digital audio device capable of producing audio signals at or near +18 dBu. Check the owner's manual for your mixer, power amplifier or effects processor to see if it can handle this load. If it cannot, consider setting the 882/20 I/O to operate at –10 dBV line levels.

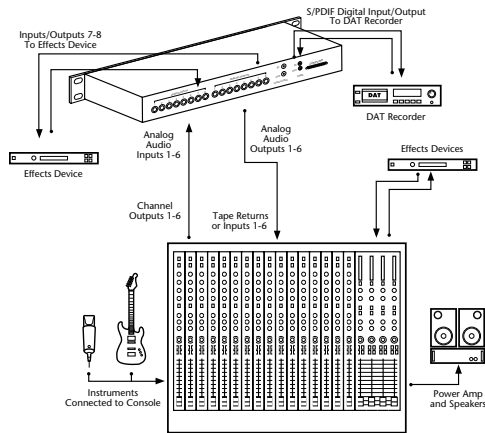
Consider the following when connecting a mixer:

- ◆ If your mixer cannot handle more than 1.5V (RMS) inputs at +4 dBu, then you should set the 882/20 I/O to operate at –10 dBV line level.
- ◆ If your mixer can handle up to 6.15V (RMS) inputs, or has pads or attenuators on its inputs, then you can use the +4 dBu setting on the 882/20 I/O.

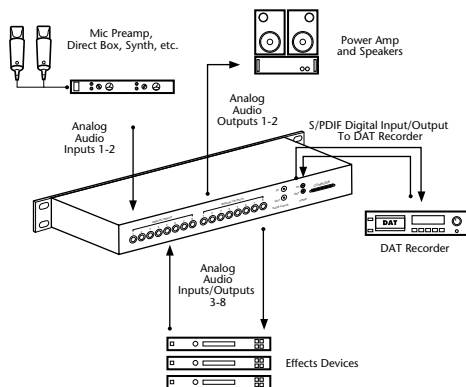
Most manuals contain device input specifications, including whether or not there are pads or attenuators. Consult the manufacturer of your mixer or power amplifier for further information.

Setting Up Your Studio

The following diagrams provide general suggestions for connecting studio gear to your system. The first illustrates a studio setup with the 882/20 I/O connected to a mixing console, with effects and other gear routed into the console as well. The second diagram shows a setup without a mixer, where effects and monitoring gear are connected directly to the 882/20 I/O.



A typical studio configuration with mixer connections



A typical studio configuration without a mixer

Using the 882/20 I/O Interface as Stand-Alone Audio Converter

The 882/20 I/O can be used apart from Pro Tools as a stand-alone 2-channel, 20-bit, analog-to-digital or digital-to-analog converter.

▲ The 882/20 I/O always operates at -10 dBV when in stand-alone mode.

Before you use the 882/20 I/O in stand-alone mode:

- 1 Turn off the 882/20 I/O.
- 2 Do not turn on your computer while the 882/20 I/O is in stand-alone mode. If you do, the 882/20 I/O will stop functioning in stand-alone mode.

To use the 882/20 I/O as a stand alone A/D converter:

- 1 Turn off any digital devices that may send a word clock signal to the 882/20 I/O S/PDIF digital input.
- 2 Turn on the 882/20 I/O. The 882/20 I/O searches briefly for a word clock signal on channels 1–2 of its digital input ports.
- 3 If the 882/20 I/O does not detect word clock, it functions as a stand-alone A/D converter using its internal clock. In this mode you will use analog inputs 1–2 and the S/PDIF output.

▲ In stand-alone mode, the 882/20 only operates at a 44.1kHz sample rate. If you wish to convert analog signals into 48kHz digital audio, you must launch Pro Tools (or any other software which supports the 882/20 I/O) to change the default sample rate.

To use the 882/20 I/O as a stand alone D/A converter:

- 1** Make sure that a digital device providing a word clock signal is connected to the S/PDIF input of the 882/20 I/O and that the device is powered on.
- 2** Turn on the 882/20 I/O. The 882/20 I/O will search for a valid word clock on its S/PDIF input.
- 3** When a valid word clock lock is recognized, the 882/20 I/O will enter digital sync mode and function as a stand-alone D/A converter using the S/PDIF input and analog outputs 1–2.

The 882/20 I/O sample rate is determined by the sample rate that it detects on its S/PDIF input.

To return the 882/20 I/O to Pro Tools-based operation:

- ◆ Turn on your computer.
 - or –
- ◆ If your computer is on, launch Pro Tools.

appendix a

Technical Specifications

General

Analog Inputs/Outputs:

- Balanced/unbalanced 1/4" TRS jacks, software switchable between +4 dBu and -10 dBV line levels

Digital I/O S/PDIF:

- 2 channels; coaxial RCA connectors

Sample Rate:

- 44.1 kHz or 48 kHz, ± 10 ppm

Clock Reference:

- Super Clock (256x) sample clock In/Out; BNC connectors; additional clock references supported via Digidesign's Universal Slave Driver, SMPTE Slave Driver, Video Slave Driver and other optional synchronizers

Nominal Operating Level:

- +4dBu; factory calibrated at 14dB headroom

A/D Specifications

- 20-bit A/D converters, Delta-Sigma

SNR (signal-to-noise ratio):

- ≥ 103 dB (balanced, A-weighted)
- ≥ 100 dB (unweighted)
- @22Hz–22kHz

THD:

- 0.003% @ -1dB, 1kHz; 22 Hz–22 kHz

Maximum Input (in +4dBu mode):

- +18 dBu/channel or 6.15V (RMS)

Frequency Response:

- 22Hz–22kHz, ± 0.5 dB

D/A Specifications

- 20-bit D/A converters, Delta-Sigma

SNR (signal-to-noise ratio):

- ≥ 98 dB (balanced, A-weighted)
- ≥ 96 dB (unweighted)

THD:

- 0.003% @ -1dB, 1kHz; 22 Hz-22 kHz

Maximum Output (in +4 dBu mode):

- +18 dBu/channel or 6.15V (RMS)

Frequency Response:

- 22 Hz-22 kHz, ± 0.5 dB

Physical Specifications

Power requirements:

- 85–264 VAC, 47-63 Hz; 30 VA;
auto-switching

Weight:

- 4.8 lbs (2.2 kg)

Dimensions:

- 1U external rackmount device
19" x 1.75" x 7.5"
(48.26 cm x 4.45 cm x 24.77 cm)