

## Warranty

The Model TAP-1 Interface is covered by a 2 year warranty to be free from defective workmanship and materials. In the event that the TAP-1 needs repair, you must call us to get an authorization, and then carefully pack and ship it to us. You will pay for shipping to us and we will pay for return back to you, UPS ground. No free repairs will be made if the defect was caused by misuse, weather conditions, or other cause, except for defective workmanship or materials. THERE ARE NO EXPRESSED OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE WARRANTY HERE MADE.

# TAP-1

## Telephone Audio + Power Interface



## User Guide

06/06

## Introduction

TAP-1 lets you attach an analog telephone to your consumer or laboratory grade audio equipment or PC sound card using standard RCA audio input and output jacks. There are three jacks on the front of TAP-1. The RJ-11 "phone" jack is the electrical equivalent to the wall jack that you would typically plug your telephone into. Technically speaking, TAP-1 provides up to 70 milliamps of -48 volts DC to power your telephone and then separates the telephone audio signal into transmit and receive voice paths. This is similar in function to the line card on a telephone company central office switching system. The RCA jacks provide high quality transmit and receive voice paths to your audio equipment.

The rear panel of the TAP-1 has three adjustments which are accessible with a small, flat blade screwdriver. The *input level* adjustment controls the volume of the signal going through TAP-1 and into the phone. The *output level* adjusts the volume from the phone to your audio equipment. The *null adjustment* is used to fine tune the transmit / receive separation between the telephone and the TAP-1. This is commonly referred to as trans-hybrid loss or echo return loss.

## Connection

- 1) Connect a telephone to the front panel RJ-11 jack. DO NOT CONNECT THIS JACK TO A TELEPHONE LINE.
- 2) Connect a signal source (CD player, D/A converter, signal generator...) to the *input* jack.
- 3) Connect the TAP-1 *output* jack to the input of your equipment (amplifier line input, tape recorder input, oscilloscope...).
- 4) Plug in the supplied AC adaptor and apply power.
- 5) Adjust the line input and line output volume controls to suit your application.

## Features

### Electrical:

#### RJ-11

AC Impedance:	510 ohms
DC series resistance:	480 ohms
DC Voltage:	-48VDC (open circuit)
DC Current Max:	70 mA (short circuit)
Trans-Hybrid Loss:	> 50 dB at 1 kHz
Hybrid Null Adjust:	Rear panel recessed control

### Input

Connector:	Gold plated RCA jack
Impedance:	600 ohms
Level:	Rear panel recessed control
Bandwidth:	60 Hz - 15 kHz ( $\pm 3$ dB) 120 Hz - 8 kHz ( $\pm 1$ dB)

### Output

Connector:	Gold plated RCA jack
Impedance:	600 ohms
Level:	Rear panel recessed control
Bandwidth:	180 Hz - 12 kHz ( $\pm 3$ dB) 300 Hz - 6 kHz ( $\pm 1$ dB)

### Physical:

Housing:	ABS plastic
Size:	1.6" high x 5.1" wide x 5.2" deep
Weight:	1 pound
Power:	18 VAC, 160 mA 120 VAC, UL approved transformer

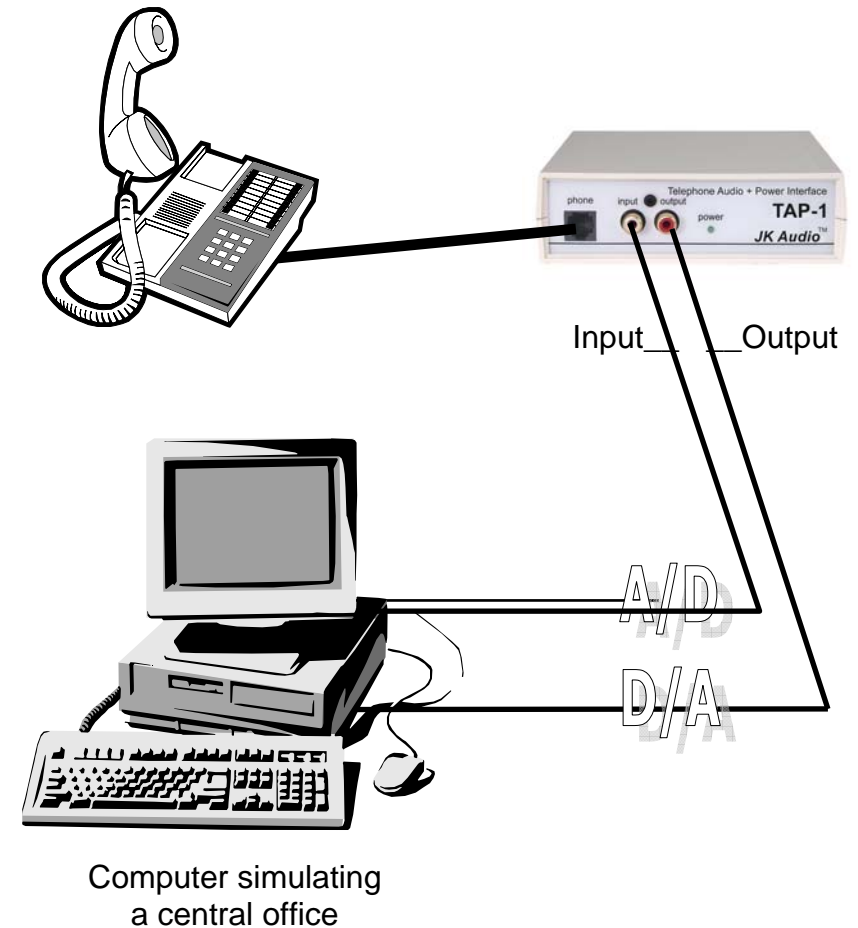
## Hybrid Null Adjust (optional)

The null adjustment allows you to manually optimize the relationship between the hybrid in your telephone and the hybrid in the TAP-1. In most applications, this can be left at the factory setting, or set once and then left alone. If however you are concerned with transmit / receive isolation then you should follow this procedure:

- 1) With a telephone connected and in the off-hook position, play a sine wave, noise source, or other suitable signal into the TAP-1 line input jack. Be sure to cover the microphone of the handset to prevent the acoustical signal from traveling from the receiver to the microphone.
- 2) Observe the signal on the output jack of the TAP-1 using a meter, oscilloscope, or amplifier and speaker.
- 3) Adjust the null control to find the minimum (the point where the signal bottoms out, or is reduced to near zero). The null adjust is a ten-turn control. Keep turning in one direction or the other to find the null or until you hear or feel a click. The click means you are at the end of travel and you must reverse directions.

## Applications

- A single TAP-1 can be used in applications such as:
- + Phone testing and evaluation,
  - + Training ASR algorithms for phone line use,
  - + Simulating phone based services without actual connection to a phone line.

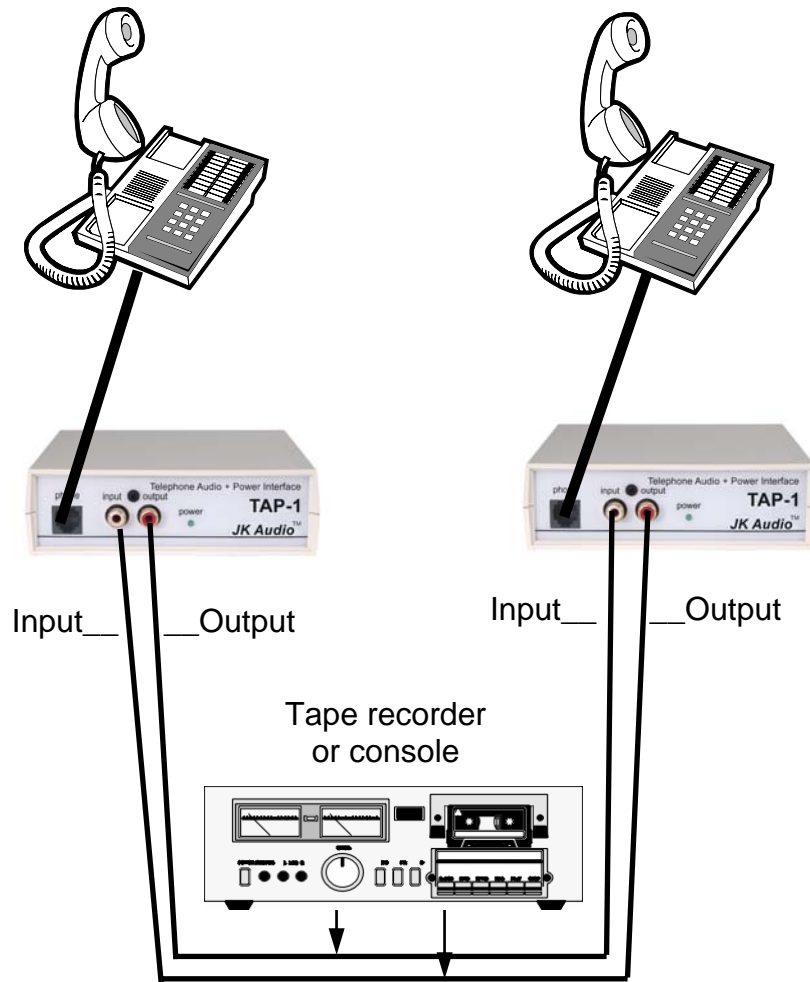


Service Simulator Example

## Applications

Two TAP-1s can be used in applications such as:

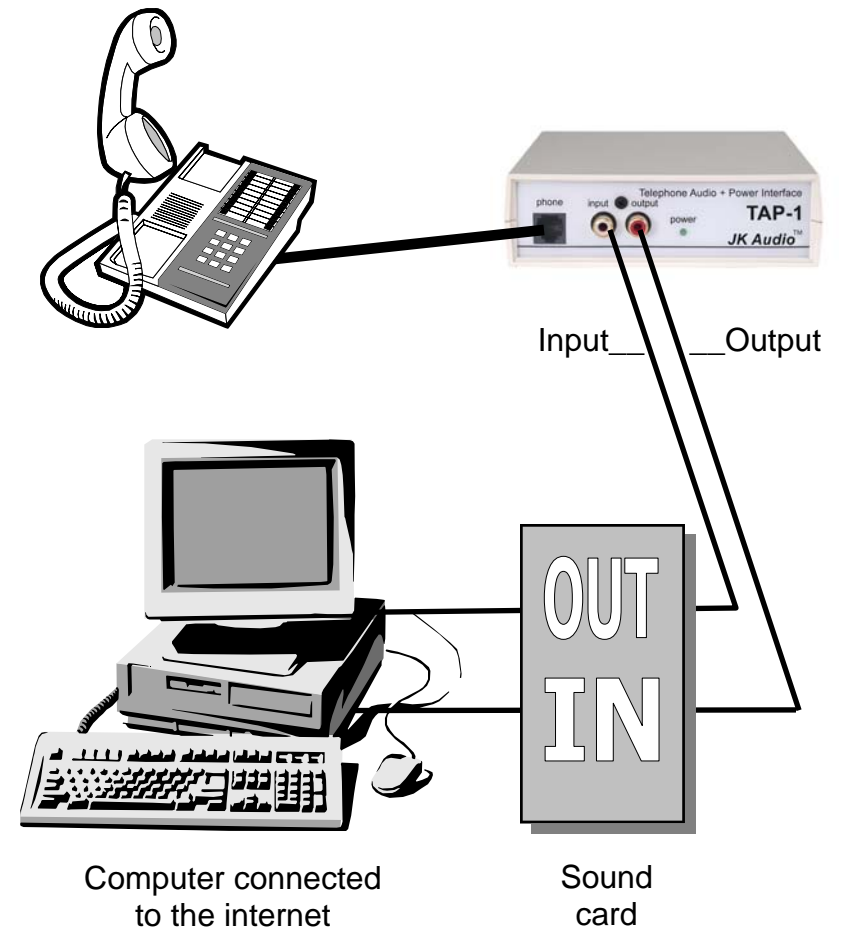
- + Hardwired, telephone based intercom
- + Getting real "telephone bandwidth" recordings from TV studio telephones.



TV Studio Example

## Applications

A single TAP-1 can also be used for internet telephone use to give you the feel of a real telephone while talking over the net. If you use a cordless telephone you can walk around your office or home without being tied to your computer.



Internet Telephone Example