



# Communication Logging Recorders and Audio Products

Serving the Public Service Sector Since 1967

## JEI Recorder Audio Connections

JEI Communication Recorders connect to telephone and radio communication sources in a number of ways. Most connections require JEI interfaces (also called couplers) to work properly. These include:

Coupler	Description	Intended for:
TC-1B	Single line Telephone coupler	Analog and DVR-C/D
TC-2/2CA	Multi-line Telephone coupler	Analog and DVR-C/D
TC-3	Handset Telephone coupler	DVR-E
RTC-100T	Single line Telephone coupler	DVR-E
RTC-100R	Radio coupler with R/T mixer	DVR-E
AM-800	4-wire audio mixer for radio	Analog and DVR-C/D
RC-1	Transformer and AC coupled audio line isolator	All

These couplers can be adapted to other systems and situations to meet other requirements.

The ideal recorder input level is in the -15 to -5dBm range. The recorder input impedance is 10K, unbalanced. Couplers convert this to balanced or other formats as needed. Any input level between -20dBm (47mv P-P) and +4dBm (3.55v P-P) is acceptable. Input levels above the desired range will be compressed, which reduces the sound quality.

Care should be taken to establish connections with no audible noise on the line. Any audible noise may have sufficient level to trigger the VOX circuit and cause "dead-air" recordings. This situation is especially noticeable in remote radio setups. Be aware of public address systems integrated with radio operations, as these setups can be very noisy.

### Telephone Connections

The user decides whether they want to record all conversations on a particular phone line or a particular phone extension. For example, if a company has 25 phone lines and 8 extensions, it might be more effective to connect to phone sets or workstations rather than incoming phone lines. The phone set connection is accomplished by the use of a multi-line phone coupler. By connecting to phone workstations, all calls to that workstation are captured no matter how many phone lines are in the hunt group. When connecting to the workstation, it is a simple matter to identify a user with a phone and particular conversation with that workstation. This connection method makes searching for audio files much simpler.

Recorders can also be connected via couplers directly to incoming phone lines at the punch down block. This connection method is necessary for certain operations. Microphones can be connected either through a coupling device or directly with the proper wiring setup. Contact JEI for wiring assistance.

Connecting the recorder to the telephone system requires a **Single Line** or **Multi-Line Coupler**. The specific coupler required depends on your phone system and your recording needs. The couplers also provide the "beep" tone during recording, a legal notification requirement in most states.



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## *Recording all calls on a single phone line*

### **Single Line Telephone Coupler**

Connect to the incoming phone line before the Switch (PBX) using a JEI TC-1B or RTC-100T coupler. A telephone technician must install a phone outlet (USOC #RJ-11C jack) from the incoming analog telephone line to the recorder. This connection allows for automatic recording of all conversations to/from any phone in the facility that uses that one phone line. The coupler triggers recording when it senses a drop in line voltage. One advantage the coupler has over others is it will begin recording from the first telephone ring. This information can be used to assess operator response time.

Notify the Phone Company that you are connecting this coupler to the telephone system. They will want to know the following:

- FCC Registration #HGV-270-17663-RC-N
- Ringer Equivalence 0.7

Plug the JEI coupler in the jack. We suggest that you connect the coupler to the phone before connecting to the DVR. Also, we suggest you mount the coupler to the wall to prevent damage to the coupler. Plug the coupler cable into an open channel on the back of the DVR. You are ready to record.

Note: The recorder will run continuously if the coupler is plugged into the recorder but not connected to the phone line. For this reason, we recommend that the coupler not be plugged into the recorder until properly connected to the telephone system.

## *Recording all calls on a phone extension*

METHOD 1 - Connect after the Switch (PBX) to a single-line extension using JEI **TC-1B** or **RTC-100T** coupler. A telephone technician installs a phone outlet (USOC #RJ-11C jack) that taps into the extension block of a particular analog handset<sup>1</sup>. This method is used infrequently because of the requirements of digital PBX and digital handsets.

METHOD 2 - Connect at the Handset/Headset using JEI **TC-2CA** or **TC-3** coupler. The user can make this connection without the assistance of a telephone technician. This coupler is specifically designed for multi-line phone sets.

Disconnect the handset cord from the telephone base and plug the cord into the RJ14 receptacle on the JEI coupler. Plug the short cord on the coupler into the RJ14 receptacle on the telephone base (the connector slot used for the handset cord). Plug the long cord from the coupler into any open port on the back of the DVR. The cord from the coupler to the DVR can be extended hundreds of feet to accommodate long distances between the DVR recorder and the phone workstation. Contact JEI for wiring instructions. Peel off the adhesive backing on the coupler to attach the coupler to the side or underneath of the telephone or desktop. The coupler can be hidden from view.

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<sup>1</sup> Some phone systems transmit a digital signal from the switch (PBX) to the handset. These systems require a Digital-to-Analog Converter (DAC). Call JEI with the PBX manufacturer name and model number to check DAC availability.



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Note that the wiring sets provided with the couplers should not to be tampered with or extended without JEI wiring assistance. Two of the wires in the cables provide power to the coupler and should not to be connected to the recorder or phone system in error. It is very important that any extensions of wiring take into account the unique pin-outs for each wire and its purpose. When installing wiring extensions, care must be taken to maintain wire color codes from junction to junction. Do not cross any wires in the set from end to end.

On some modern digital phones, the handset stays "live" even when placed in the cradle. If this condition exists, room noises will be picked up and recorded by the recorder. The condition can be stopped or prevented by installing a proximity switch. The proximity switch, provided with the TC-2CA, will mute the signal when the handset is in the cradle.



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## *Two-Way Radio Connections*

Connecting a recorder to a two-way radio system requires one of two couplers. The coupler required depends on your radio system and your recording needs. Connection methods vary depending on the make and model of the base station or remote station in use.

### *Recording at the Remote Station*

The **RC-1** is used to connect the DVR to a remote station. You have a remote station if your radio transmitter is NOT near the station.

Suggested methods of connection to the remote station:

- Remote (RTO) Line Connection - The recorder can be connected to the remote line, if available.
- Unswitched Audio Outlet (Audio A Connection) - Many remote control stations are equipped with an outlet for connecting an amplifier or remote speaker for monitoring both transmit and receive audio. If available, this outlet provides an excellent point for connecting to the DVR.
- V.U. Meter Connection - If a V.U. meter is in use for monitoring both transmit and receive audio, connection can often be made at this point with the RC-1.

Plug the coupler into the desired channel on the back of the recorder. You are ready to record.

### *Recording at the Base Station*

An **AM-800** or an **RTC-100R** is used to connect the recorder to a base station. The coupler mixes the base radio microphone and speaker audio to record both parts of radio conversations on a single recorder channel. Connect the 'receive' cable to the base radio speaker circuit. This is an isolated input so polarity is un-important.

Connect the 'transmit' connection to the microphone circuit of the base radio. The microphone circuit should be alive only when the PTT circuit is activated.

Plug the coupler into the desired channel on the back of the recorder.

Monitor Receiver - If it is not possible to make a satisfactory connection to the base station, it may be necessary to use a separate monitoring receiver. Connection can be made directly across the speaker terminals. The volume control of the receiver should be secured so that it cannot be moved after the proper level has been set.