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# TELESWITCH

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*Installation and  
Operations Manual*

## **Teleswitch Installation and Operations Manual**

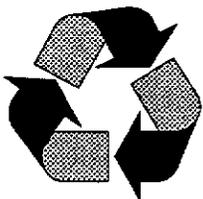
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This manual was written and designed by Renee Gibson.

*Gentner Part No. 800-002-001 (Rev. B1)  
November 1993*



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This manual was printed entirely on recycled paper.

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## **Introduction**

Thank you for purchasing Gentner's Teleswitch. This product has been designed for years of dependable service.

The Teleswitch allows you to easily select any telephone line at random and route it to a single line telephone hybrid. It can be operated in any of the following modes:

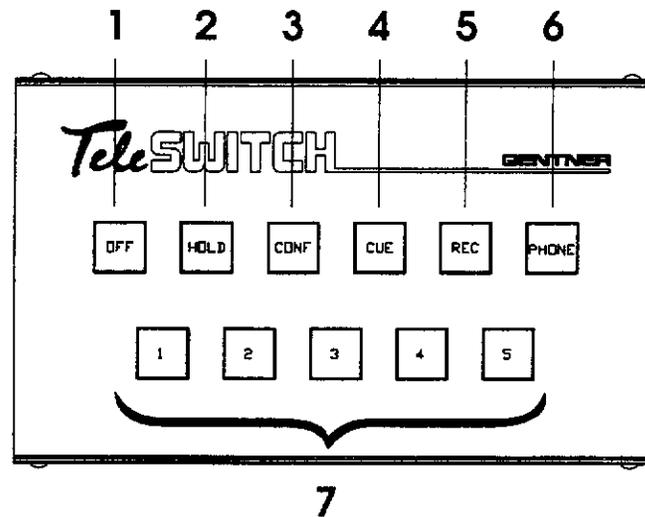
- Use it with your existing telephone system.** The incoming telephone lines can be connected to Teleswitch first, then routed to the telephone system. Calls can be answered on your telephone system and when you want to route that call to the hybrid, Teleswitch can "steal" the call.
- Use it with your existing EKSU or PBX telephone system** by connecting extensions from your telephone system to Teleswitch. Calls are answered on your telephone system then transferred to Teleswitch. If your PBX has the capability, you can assign Direct Inward Dialing (DID) numbers to the extensions, making it possible to call in directly to Teleswitch. Talk to your PBX supplier or local telephone company for more information on DIDs.
- LINK/SHARE.** You can link two or more Teleswitch units together, putting them in separate rooms, and share the same five lines. A call put on hold by one Teleswitch can be picked up by another Teleswitch. This is typically used for screening calls.
- LINK/SEPARATE.** You can link two or more Teleswitch units together, putting them all in the same room, and route 10 or more telephone lines to one telephone hybrid.
- Conferencing.** By connecting two Teleswitches to one or two Digital Hybrids, you maintain better level control and greatly improved audio quality with your telephone conferences. VIP guests are better protected from accidental disconnection.

To receive the full benefit of the Gentner Teleswitch, we recommend that you read this manual thoroughly before beginning installation.

We welcome and encourage your comments so that we can continue to improve our products. Please call, fax or write us at the location listed below. Technical Support is available if needed, at the number listed.

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## Product Description



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Figure 1

### Teleswitch Front Panel Controls

#### Front Panel Controls

1. **OFF.** Use this button to hang up *all active calls*.
2. **HOLD.** Pressing this button places *all active calls* on hold. Callers on hold will hear hold audio connected to the HOLD AUDIO connector (13).
3. **CONF.** This is used to put Teleswitch in conference mode. Conference mode routes all active calls to one hybrid. CONF and PHONE modes can be used together to route all active calls to the telephone set.
4. **CUE.** This button is used to activate the CUE function on a Gentner Digital Hybrid II, III, SPH5 or SPH5E. CUE switches to an alternate send audio source for the hybrid.
5. **REC.** Use this button to activate the record function on a Gentner Digital Hybrid II, III, SPH5 or SPH5E.
6. **PHONE.** When pressing this button, all active calls will be routed to a telephone connected to the PHONE jack (23) on the back panel of the Teleswitch. Pressing the button again routes the selected line(s) to the HYBRID jack.
7. **LINE buttons (1-5).** Press the line button to answer a call or take the call off hold. In non-conference mode, pressing a line button makes it active and hangs up the previous line. If you are in conference mode, press the button again to hang up the line.

<b>LAMP STATUS INFORMATION</b>	
OFF	When lit, no calls are on the Teleswitch.
HOLD	This button lights momentarily when pressed. The line you put on HOLD will flash slowly.
CONF	When in Conference mode, this light will be on solid.
CUE	The light will be lit solid when you are in CUE mode.
REC	This light will be lit solid while you are recording.
PHONE	This will be lit solid when you are routing calls through the telephone set. Press again to disable the PHONE mode and extinguish the light.
LINE BUTTONS	A Line button will flash rapidly to indicate an incoming call. A slow, steady flash indicates the call on that line is on hold. A steady light indicates an active call on that line. A dimly lit Line button indicates the line is in use by someone else within your telephone system. The Line button will extinguish on sensing loop drop.

**Figure 2****Lamp Status Information**

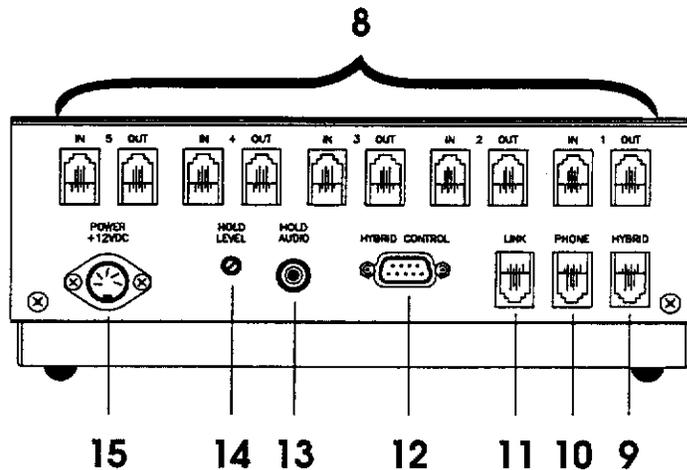


Figure 3

### Teleswitch Back Panel Connections

#### Back Panel Connections

8. **LINE IN** connectors. Each LINE IN connector is used to connect a telephone line or extension to the Teleswitch.

**LINE OUT** connectors. Each LINE OUT connector is used to loop the line to an additional Teleswitch or telephone system.

9. **HYBRID** jack. Connects Teleswitch to your Hybrid LINE jack. Use a standard RJ-11C modular telephone cable.

10. **PHONE** jack. This jack is used to connect a standard telephone set to the Teleswitch. Calls can be taken on the telephone set by pressing the PHONE button (6) on the front panel. The call will not be processed by the hybrid in this mode, and cannot be placed on air until it is taken off phone mode. In this mode, the telephone can also be used to dial an outgoing call.

**IMPORTANT!** A single Teleswitch cannot be operated in PHONE and HYBRID mode simultaneously. In LINK/SEPARATE mode, you can have one or more calls on PHONE mode on one Teleswitch, and calls routed to the hybrid through the second Teleswitch. Refer to the Link/Separate section on page 12 for instructions on using a second Teleswitch to screen calls.

11. **LINK** jack. This jack is used to link two or more Teleswitches together for either sharing or separating lines, depending on your installation method.

12. **HYBRID CONTROL**. This DB-9 connector will interface the Teleswitch to your telephone hybrid unit's REMOTE control connector.

13. **HOLD AUDIO** jack. Connects hold audio from a CD player, cart machine, program audio, etc., to the Teleswitch.
14. **HOLD LEVEL** control. Use this control to adjust the listening level of the hold audio.
15. **POWER +12 VDC** jack. The 12 VDC power transformer connects to the Teleswitch through this port. (Specified at order: either 117 VAC standard or 234 VAC.)

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## Installation

### Check Shipment and Unpack

Gentner is not responsible for product damage incurred during shipment. You must make claims directly with the carrier. Inspect your shipment carefully for obvious signs of damage. If damage is evident, retain the original box and packing material for inspection by the carrier. Contact your carrier immediately.

Your Teleswitch comes in one box containing the Teleswitch unit, Wall Transformer power supply, DB-9 connector with hood, this Installation and Operations Manual and a Product Warranty Card.

Before proceeding, we encourage you to read through this manual to familiarize yourself with the options available for installation and operation.

### Items Required for Installation

- A telephone set.
- Telephone line and set cords.
- Your hold audio source, if used. (Must have a ¼" RCA phone jack.)
- DB-9 to DB-25 connector to connect Teleswitch to the digital hybrid. (This can be ordered through Gentner or customer-built according to the pin out chart on page 16.)
- A telephone hybrid. (Best performance will be obtained when using Gentner's digital hybrids.)
- Solder equipment if your application uses Link/Separate Lines.

### Begin Making Connections

Follow the installation steps for the application you will be using. Installation is quite simple and will be completed in a short time.

There are three possible application methods. Each requires a slightly different installation. Determine the application for your Teleswitch, and install according to the instructions provided for each:

- Normal operation** when one Teleswitch is used. (See "Connections for Single Teleswitch Operation" on page 7.)
- Link/Share Lines** used when connecting two Teleswitches for screening capability. (See page 9.)
- Link/Separate Lines** used when connecting two Teleswitches. (See page 12.)

- Conferencing** used with two Teleswitches and one or two hybrids for best audio quality when combining multiple callers together. (See page 15.)

## Connections for Single Teleswitch Operation

**CAUTION:** Do not connect the wall transformer until instructed to do so. Follow all instructions as listed below, in sequence.

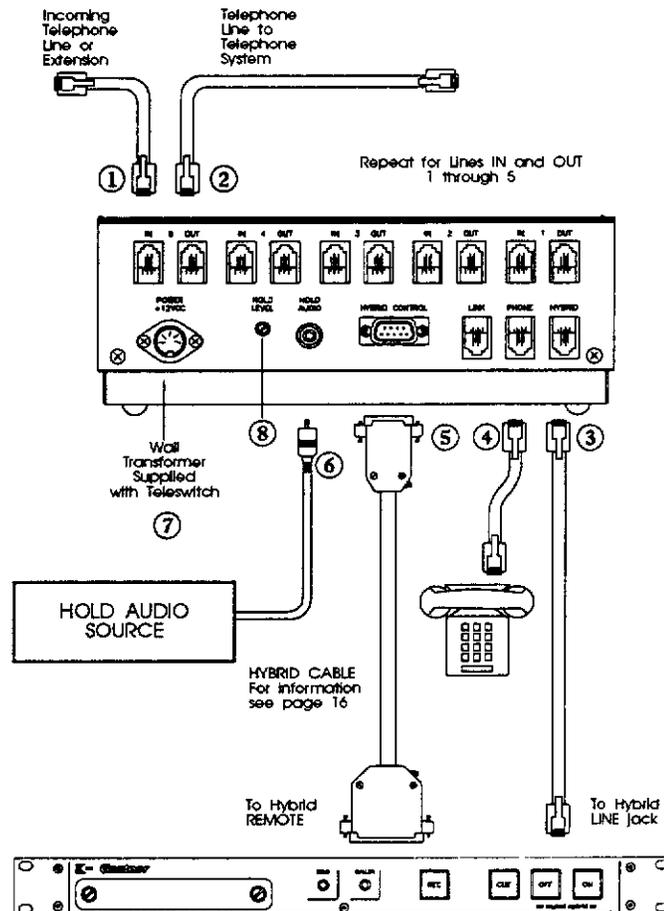


Figure 4

### Single Teleswitch Connections

Following the installation instructions below, you will be able to connect your Teleswitch in the *basic configuration*. This basic configuration does not permit simultaneous on-air and screening functions. Use the drawing in Figure 4 as a guide. The numbers in parentheses in the instructions below refer to the numbered connectors in the drawing. (LINK/SHARE, LINK/SEPARATE and CONFERENCING connections are shown on pages 9 through 15.)

1. Connect the incoming telephone lines to the IN (1) connections 1 through 5 using standard RJ-11C modular telephone connector/cords.

2. Connect the OUT (2) connections 1 through 5 to your telephone system using standard RJ-11C modular telephone connector/cords.
3. Connect a standard RJ-11C modular telephone connector/cord between the HYBRID jack (3) of Teleswitch and the LINE jack of the telephone hybrid.
4. Connect a standard RJ-11C modular telephone connector/cord between a standard telephone set and the PHONE jack (4) of Teleswitch.

**IMPORTANT!** A DB-9 to DB-25 hybrid cable is required to connect the Teleswitch to your telephone hybrid. If this cable was ordered as an option with your system, it has been pre-made to Gentner specifications according to your hybrid type. If the hybrid cable is to be customer supplied, refer to the pin out chart on page 16 of this manual and locate the telephone hybrid you are using. Make the cable to the exact specifications listed. **Also**, refer to the same chart to see if a dip switch or jumper change is required for your hybrid. If required, make the dip switch or jumper change indicated. Refer to your hybrid manual for further information, if necessary.

5. Connect the HYBRID CABLE between the HYBRID CONTROL connector (5) of Teleswitch and the REMOTE connector of the hybrid.
6. Connect a cable with phono connectors between the audio output of the hold audio source and the HOLD AUDIO connector (6) of Teleswitch.
7. A dip switch or jumper change *on your hybrid* may be required. Refer to the chart on page 16. Locate your hybrid type, and make the dip switch or jumper change indicated. Refer to your hybrid manual for further information, if necessary.
8. After all connections have been made, connect the wall transformer to the POWER jack (7) of Teleswitch and plug the wall transformer into an electrical outlet.
9. From a near-by phone, call the Teleswitch. It should be close to Teleswitch so you can maintain the connection while adjusting the hold level from the back panel of Teleswitch.
10. When the line begins ringing, press the line button that is flashing rapidly on the front panel of Teleswitch, then answer the call by picking up the telephone hand set. Place the call on hold by pressing the HOLD button on the front panel.
11. While listening on the other telephone, adjust the HOLD LEVEL control (8) of Teleswitch with a small screwdriver until the desired listening level is achieved.

## Using EKSU or PBX Telephone Extensions

You can use Teleswitch to route extensions from your telephone system if the extensions meet the following requirements:

- DC Battery (loop current)
- 2-wire Tip/Ring analog signal

Telephone calls can be answered on your telephone system and transferred to Teleswitch. If your PBX has the capability, you can assign Direct Inward Dialing (DID) numbers to the extensions, making it possible to call in directly to Teleswitch. Talk to your PBX supplier or local telephone company for more information.

## Link/Share Lines

This installation method is required if you want to screen calls and have calls on-air simultaneously.

**IMPORTANT!** The LINK line and the five OUT lines that connect to the second Teleswitch must be 4 wire telephone cords.

Do not connect power to the Teleswitch until instructed to do so in step 8 below.

Using the drawing in Figure 5 as a guide, make connections for Link/Share Lines as instructed below. The numbers in parentheses in the instructions below refer to the numbered connectors shown on Figure 5.

1. Connect the telephone lines to IN (1) connections 1 through 5 using standard RJ-11C modular telephone connector/cords.
2. Connect 4-conductor standard RJ-11C modular telephone connector/cords between the OUT (2) connections 1 through 5 of the first Teleswitch to the IN (1) connections 1 through 5 of the second Teleswitch. (Line 1 OUT must connect to Line 1 IN; Line 2 OUT to Line 2 IN, etc.)
3. Connect a 4-conductor RJ-11C modular telephone connector/cord between the LINK jack (3) of the first Teleswitch to the LINK jack of the second Teleswitch.
4. Connect a standard RJ-11C modular telephone connector/cord between the LINE jack (4) of the telephone hybrid and the HYBRID jack of the Teleswitch.
5. Connect a standard RJ-11C modular telephone connector/cord between a standard telephone set and the PHONE jack (5) of Teleswitch.



**IMPORTANT!** A DB-9 to DB-25 hybrid cable is required to connect the Teleswitch to your telephone hybrid. If this cable was ordered as an option with your system, it has been pre-made to Gentner specifications according to your hybrid type. If the hybrid cable is to be customer supplied, refer to the pin out chart on page 16 of this manual and locate the telephone hybrid you are using. Make the cable to the exact specifications listed. **Also**, refer to the same chart to see if a dip switch or jumper change is required for your hybrid. If required, make the dip switch or jumper change indicated. Refer to your hybrid manual for further information, if necessary.

6. Connect the **HYBRID CABLE** between the **REMOTE** connector of the hybrid and the **HYBRID CONTROL** connector (6) of Teleswitch. (An additional telephone hybrid may be connected to the second Teleswitch, if desired, by repeating this step.)
7. Connect a cable with phono connectors between the audio output of the hold audio source and the **HOLD AUDIO** (7) connector of Teleswitch.
8. After all connections have been made, connect the wall transformers for both Teleswitch units to the **POWER** jacks (8) of both Teleswitches and plug the wall transformers into electrical outlets.
9. Call Teleswitch using a separate telephone. It should be close to Teleswitch so you can maintain the connection while adjusting the hold level from the back panel of Teleswitch.
10. When the line begins ringing, press the line button that is flashing rapidly on the front panel of Teleswitch, then answer the call by picking up the telephone hand set. Place the call on hold by pressing the **HOLD** button (2) on the front panel. (See Figure 1 on page 2.)
11. While listening on the telephone, adjust the **HOLD LEVEL** control (9) of Teleswitch with a small screwdriver until the desired listening level is achieved.

## Link/Separate Lines

This application uses two Teleswitch units to provide 10-line capacity to a single hybrid. The numbers in parentheses in the instructions below refer to the numbered connectors in Figure 7.

**WARNING!** The LINK/SEPARATE application requires an internal solder bridge change. No power should be applied until the chassis has been reclosed following the solder bridge change *and* until instructed to apply power in step 10 below.

Using the drawing in Figure 7 as a guideline, make connections for Link/Separate Lines as follows:

1. Open the Teleswitch by removing the bottom cover.
2. With the Teleswitch upside-down, locate the jumpers marked E108, E109, E110 and E111. They are approximately 25% in from the left side of the board and about one inch from the bottom edge of the board. Solder a bridge across E108 and E109, then across E110 and E111 as shown in the diagram below.

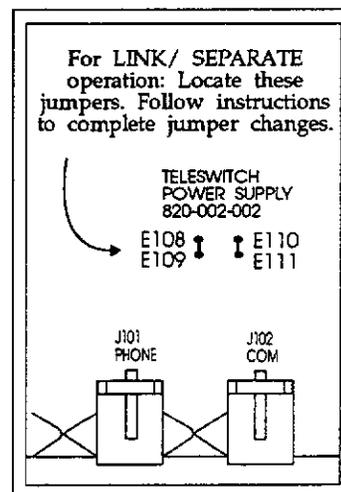


Figure 6

### Jumper Changes

3. Repeat steps 1 and 2 for the second Teleswitch. Reattach the bottom covers for both units.
4. Make the phone line connections to IN 1 through 5 connectors (4) on both Teleswitches.
5. Connect a standard RJ-11C modular telephone connector/cord between the LINE jack of the telephone hybrid and the HYBRID jack (5) of Teleswitch.
6. Connect a standard RJ-11C modular telephone connector/cord between a standard telephone set and the PHONE jack (6) of Teleswitch.

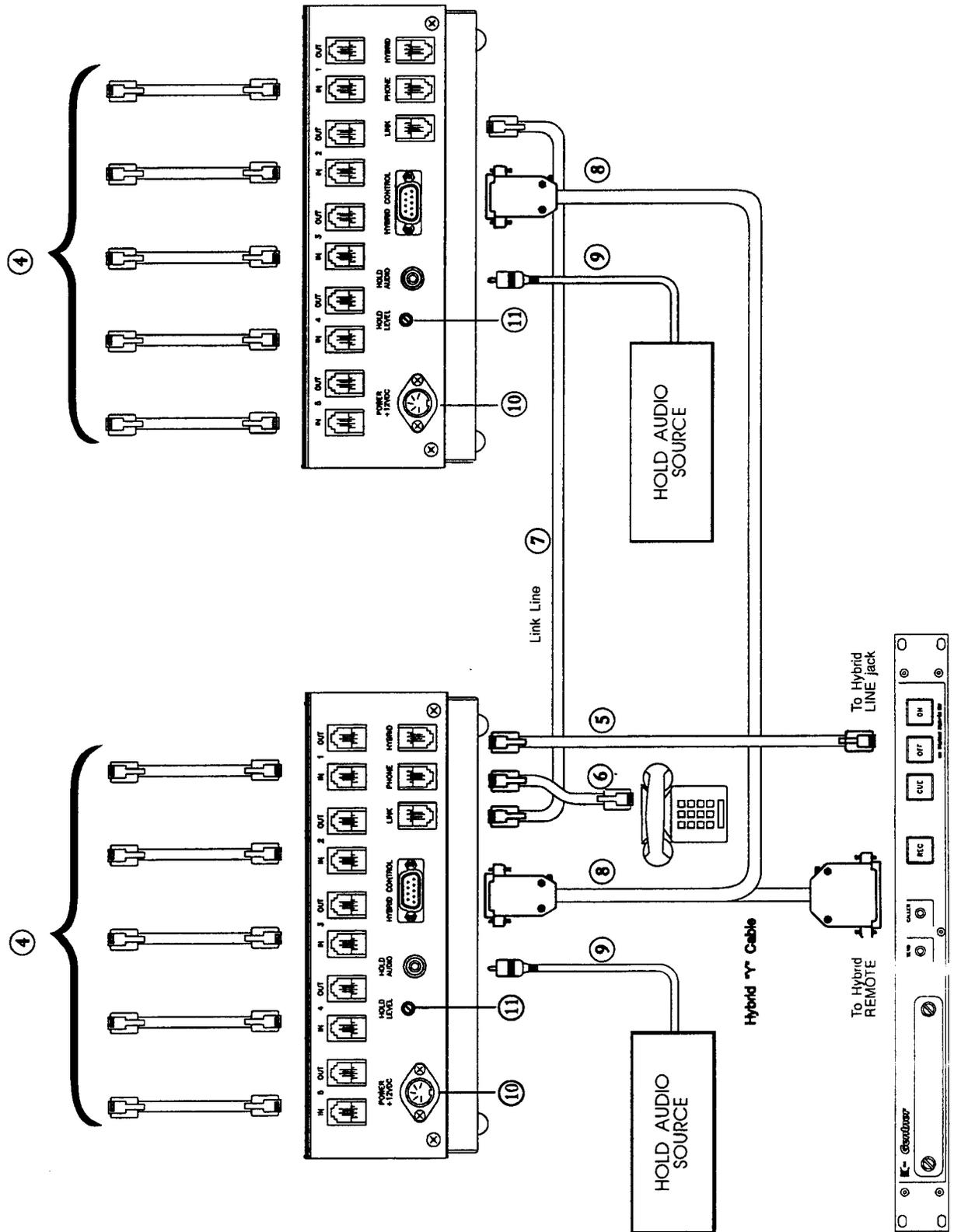


Figure 7

Connections for Link/Separate Lines

7. The LINK line that connects to the second Teleswitch *must* be a 4-wire telephone cord. Connect the modular telephone connector/cord between the LINK connectors (7) of both Teleswitches.

**IMPORTANT!** A "Y" connector containing two DB-9 connectors and a DB-25 connector is required to connect both Teleswitches to your telephone hybrid. If this cable was ordered as an option with your system, it has been pre-made to Gentner specifications according to your hybrid type. If the hybrid cable is to be customer supplied, refer to the pin out chart on page 16 of this manual and locate the telephone hybrid you are using. Make the cable to the exact specifications listed. **Also**, refer to the same chart to see if a dip switch or jumper change is required for your hybrid. If required, make the dip switch or jumper change indicated. Refer to your hybrid manual for further information, if necessary.

8. Connect the hybrid cable between the REMOTE connector of the hybrid and the HYBRID CONTROL (7) connectors of each Teleswitch.
9. Connect a cable with phono connectors between the audio output of the hold audio source and the HOLD AUDIO connector (9) of Teleswitch.
10. After all connections have been made, connect the wall transformers to the POWER jacks (10) of both Teleswitches and plug the wall transformers into electrical outlets.
11. Call Teleswitch "1" using a separate telephone. It should be close to Teleswitch so you can maintain the connection while adjusting the hold level from the back panel of Teleswitch.
12. When the line begins ringing, press the line button that is flashing rapidly on the front panel of Teleswitch then answer the call by picking up the telephone hand set. Place the call on hold by pressing the HOLD button (2) on the front panel. (Refer to Figure 1.)
13. While listening on the telephone, adjust the HOLD LEVEL control (11) of Teleswitch "1" with a small screwdriver until the desired listening level is achieved.
14. Repeat steps 11 through 13 for Teleswitch "2".

## **Conferencing Applications**

Best conferencing results will be obtained by using Gentner's model G2500 Super Hybrid with your Teleswitch. The G2500 uses unique loop connections for quick, multiple hybrid interconnections. Its superior telephone echo cancellation and AGC routines provide crisp, clear separation of send and receive audio. The G2500 also provides an internally generated audio mix-minus, eliminating the need for a mix-minus connection from the console. Contact Gentner Technical Support at (801) 975-7200 for more information.

Although the Teleswitch has a conference mode, it does have its limitations when connected to DH I and I Hybrids. It provides a "button-mash" conference; i.e., it parallels the telephone lines. This works reasonably well for local calls that have approximately the same level. The problem you may encounter is that the caller audio from the first caller is starting out towards the second caller, 20 or 30 dB down, and vice-versa. This is due to telephone line losses. Other problems are caused by the complex impedance being more difficult for the hybrid to adapt to. The hybrids are cross-connected through the REMOTE connectors as described in the hybrid's manual. Special cables and connections are used when using two Teleswitch units and two hybrids in this application.

If your application requires the use of two Teleswitches and two digital hybrids, contact Gentner Technical Support at (801) 975-7200 for information on how to make the connections.

Benefits of the dual hybrid conferencing option are:

- Excellent audio between the callers, because line loss is eliminated.
- Separate level controls on the console allows you to make level adjustments when necessary.
- Protects the guest from accidental disconnection.

# Making the Hybrid Cable

The cable required for connecting your telephone hybrid to your Teleswitch(es) must be custom-made according to length requirements and your hybrid type. Gentner can supply this cable. Order by the part number, as indicated on the chart below. If you chose to make the cable on-site, it must be configured exactly as indicated on the chart below strictly following pin out information and connector types.

**IMPORTANT!** To insure that your hybrid works properly, set the dip switch or jumper on the hybrid according to the instructions in the diagram below.

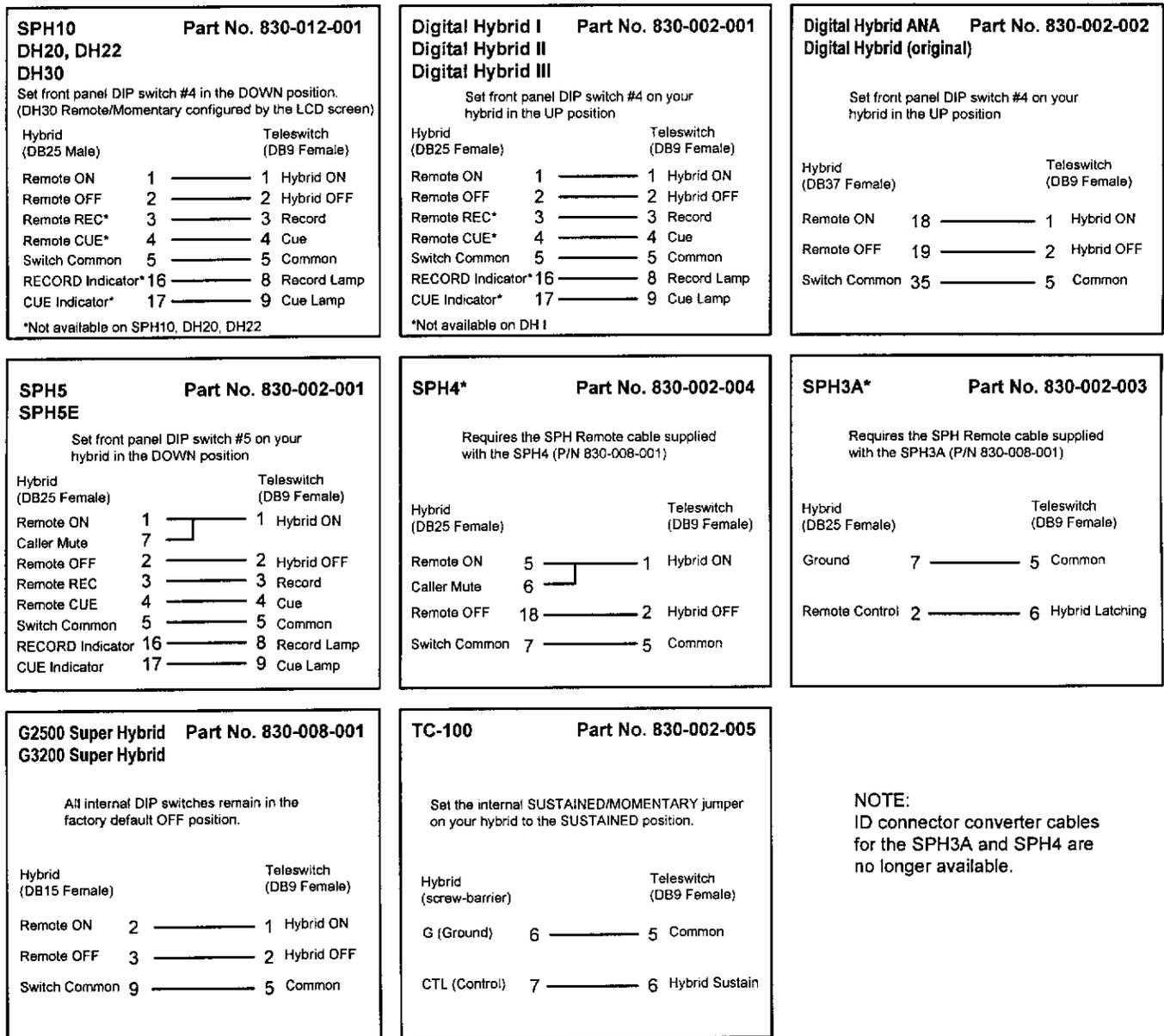


Figure 8

Hybrid Cable Pin Out Information

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## Operation

### Answer a Call through the Hybrid

**HYBRID** mode: Answer an incoming call by pressing the rapidly flashing line button. The call is automatically handled through the hybrid.

### Screening Calls

Answer the call in **PHONE** mode on the telephone connected to the screener's Teleswitch. After obtaining the screening information, place the call on **HOLD**. The on-air Teleswitch will then be used to place the caller on-air in the **HYBRID** mode by pressing the correct line button.

### Answer a Call on the Telephone

**PHONE** mode: A telephone set must be connected to the Teleswitch via the **PHONE** jack. To answer an incoming call off-air, lift the handset of the telephone, press the **PHONE** button then press the rapidly flashing Line button. To use the telephone connected to the **PHONE** jack, press the **PHONE** button.

### Make a Call

You must have a telephone set connected to the **PHONE** jack. Press the **PHONE** button then an unused Line button (1-5). Place the call from the telephone set. This is useful for having private conversations or making telephone calls.

### Switching from Hybrid Mode to Phone Mode

If you want to take the call on the handset (and off the hybrid), press the **PHONE** button then the line button. All active calls on the Teleswitch will be routed to the handset when in this mode. (The call cannot be handled by the hybrid and the telephone at the same time.) Toggle out of **PHONE** mode by pressing the **PHONE** button again. This places the call through the hybrid.

### Place a Call on HOLD

Press the **HOLD** button and all active calls will be placed on hold. Lines on hold will show a steady, slow flash on their respective Line button. Calls on hold hear hold audio connected to the **HOLD AUDIO** jack. If the caller hangs up while on hold, Teleswitch will automatically drop that line on sensing loop drop.

### Take a Call off HOLD

Calls on hold will flash at a slow, steady rate. To take a call off hold, press its Line button. If you have two Teleswitches sharing lines, a call put on hold by one Teleswitch can be taken off hold by the other Teleswitch. If the caller hangs up while on hold, Teleswitch will automatically drop that line on sensing loop drop.

### Disconnect a Call

The **OFF** button disconnects *all active calls*. If you are on one active line, the **OFF** button will disconnect the call. Use caution when you are in **CONF** mode, as all calls not on hold *will be disconnected* when the **OFF** button is pressed.

**Conference Calls**

Press the CONF button, then as many of the line buttons as required to combine the callers together in conference mode. To safely disconnect actively conferenced callers, press only the line button of the line you wish to dump. To disconnect *all* actively conferenced callers, press the OFF button.

*NOTE: The performance of the conference depends on the hybrid you are using. To achieve good conference performance, Gentner recommends that you use a Gentner Digital Hybrid and limit your conference to two calls at a time.*

*The best conferencing is obtained by using Gentner's G2500 Super Hybrids. Refer to "Conferencing" beginning on page 15 for more information.*

**Using CUE**

To use the CUE button, you must be using either a Gentner Digital Hybrid II or III, SPH5 or SPH5E. This feature allows you to talk to the caller off the air. See the hybrid's Operation Manual for more information.

**Using REC**

To use the REC button, you must be using either a Gentner Digital Hybrid II or III, SPH5 or SPH5E. This feature allows you to record the telephone conversation on a tape recorder. See the hybrid's Operation Manual for more information.

**Alternate use of the CUE and REC button**

If you want to use these buttons for other operations such as a delay dump or to start a recorder, or reset a timer, the CUE pin (4) or REC pin (3) on the REMOTE connector can be connected to your contact closure device. This alternate use is particularly useful if your hybrid does not support Cue or Record functions. Refer to Figure 8 on page 16 for pin out information.

**Steal a Call from your Telephone System**

If a line is in use by the telephone system, the line button will be dimly illuminated. To steal the call, press the line button.

You can steal a call from your telephone system only if you have connected the telephone lines to Teleswitch first and then routed the telephone lines from the OUT jacks of Teleswitch to your telephone system.

**Front Panel Lights****Function Buttons (top row)**

**OFF:** When lit, no calls are on the Teleswitch.

**HOLD:** No light is associated with pressing this button.

**CONF:** When the Conference mode is in use, this light will be on solid to warn you against accidental disconnection by pressing the HOLD button. See Conference Calls above regarding safe disconnection of calls while in Conference mode.

**CUE:** The light will be lit solid when you are in Cue mode.

**REC:** This light is lit solid when the Record function is in use.

**PHONE:** The light is lit solid when you are using the telephone set.

#### **Line Buttons (bottom row)**

**Rapidly flashing:** An incoming call is ringing into the Teleswitch.

**Slow steady flash:** The call on that line button is on hold.

**Steady light:** An active call is on that line.

**Dimly lit:** That line is in use by someone else within your telephone system.

# Troubleshooting

- **Symptom:** The connected hybrid turns on, but will not turn off.

**Cause:** The hybrid cable is not wired properly.

**Solution:** Wire the hybrid cable for the hybrid you are using, per Figure 8 on page 16.
- **Symptom:** The connected hybrid will not turn on or turn off.

**Cause:** The hybrid cable is not wired properly.

**Solution:** Wire the hybrid cable for the hybrid you are using, per Figure 8 on page 16.
- **Symptom:** The connected hybrid turns on momentarily, but then turns off.

**Cause:** The hybrid is not configured for momentary ON/OFF.

**Solution:** Set the DIP switch or jumper per Figure 8 on page 16.
- **Symptom:** Two Teleswitches are LINKED together but they do not work together

**Cause:** LINK line is disconnected or not connected properly.

■ **Solution:** Connect LINK lines using a 4-conductor standard modular telephone connector/cord.
- Symptom:** Two Teleswitches are sharing lines but they do not work together.

**Cause:** The cords connecting the two Teleswitches are reversed.

**Solution:** Wire the cords so that pins 2, 3, 4 and 5 of the OUT jack connect to pins 5, 4, 3, and 2 of the IN jack, respectively.

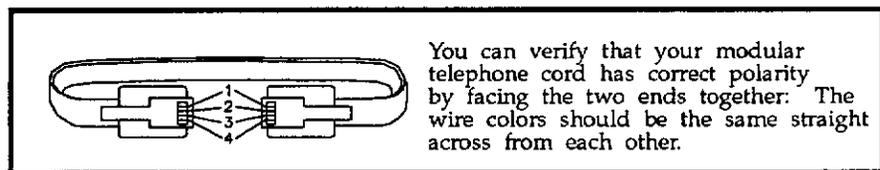


Figure 9

Modular Cord Pin Out Configuration

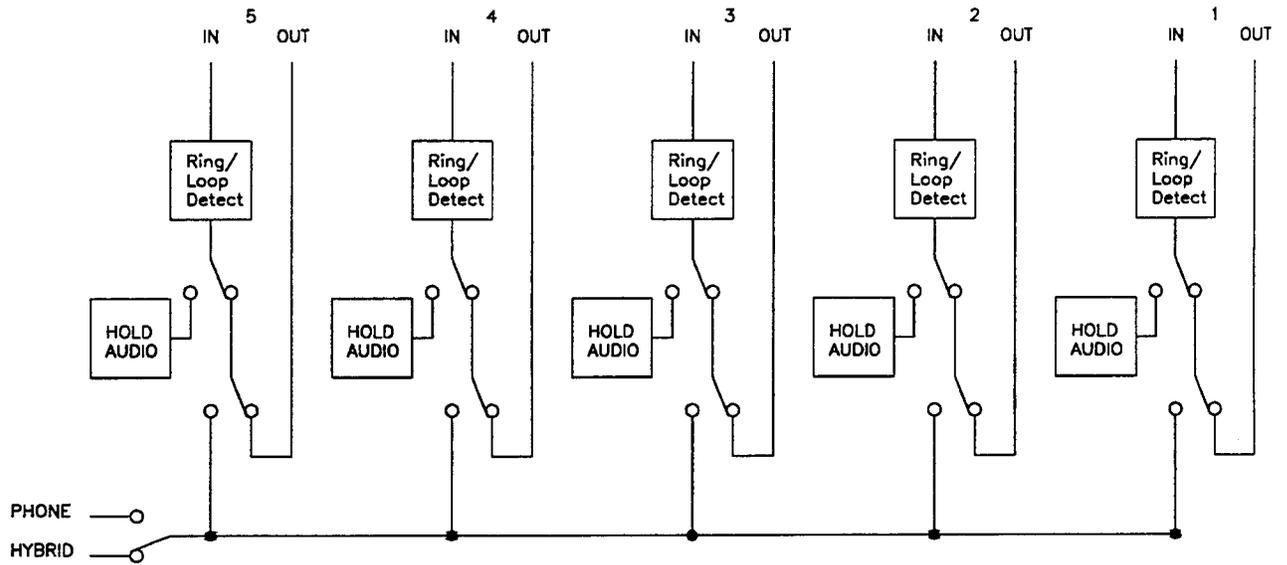


Figure 10

Teleswitch Block Diagram

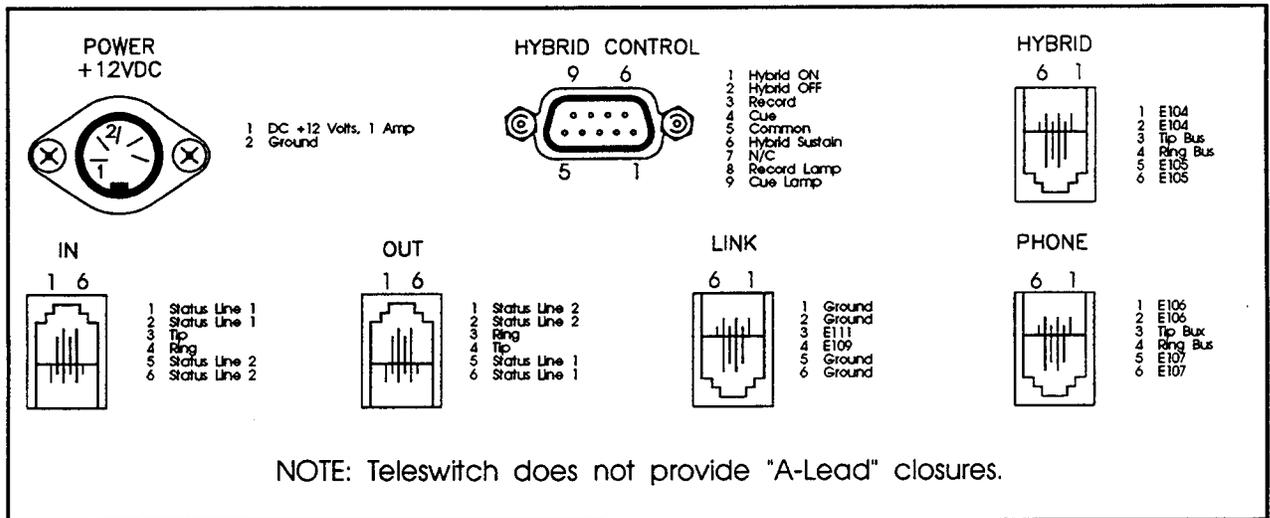


Figure 11

Pin Out Information for Teleswitch Connectors

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## **Warranty**

GENTNER COMMUNICATIONS CORPORATION (Manufacturer) warrants that this product is free of defects in both materials and workmanship. Should any part of this equipment be defective, Manufacturer agrees, at its option, to:

A. Repair or replace any defective part free of charge (except transportation charges) for a period of one year from the date of the original purchase, provided the owner returns the equipment to the Manufacturer at the address set forth below. No charge will be made for parts or labor during this period;

B. Furnish replacement for any defective parts in the equipment for a period of one year from the date of original purchase. Replacement parts shall be furnished without charge, except labor and transportation.

This Warranty excludes assembled products not manufactured by Manufacturer whether or not they are incorporated in a Manufacturer product or sold under a Manufacturer part or model number.

### **THIS WARRANTY IS VOID IF:**

A. The equipment has been damaged by negligence, accident, act-of-God or mishandling, or has not been operated in accordance with the procedures described in the operating and technical instructions; or,

B. The equipment has been altered or repaired by other than Manufacturer or an authorized service representative of Manufacturer; or,

C. Adaptations or accessories other than those manufactured or provided by Manufacturer have been made or attached to the equipment which, in the determination of Manufacturer, shall have affected the performance, safety or reliability of the equipment; or,

D. The equipment's original serial number has been modified or removed.

NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, APPLIES TO THE EQUIPMENT, nor is any person or company authorized to assume any warranty for Manufacturer or any other liability in connection with the sale of Manufacturer's products.

Manufacturer does not assume any responsibility for consequential damages, expenses or loss of revenue or property, inconvenience or interruption in operation experienced by the customer due to a malfunction in the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period.

In case of unsatisfactory operation, the purchaser shall promptly notify Manufacturer at the address set forth below in writing, giving full particulars as to the defects or unsatisfactory operation. Upon receipt of such notice, Manufacturer will give instructions respecting the shipment of the equipment, or such other matters as it elects to honor this warranty as above provided. This warranty does not cover damage to the equipment during shipping and Manufacturer assumes no responsibility for such damage. All shipping costs shall be paid by customer.

This warranty extends only to the original purchaser and is not assignable or transferable.

**Gentner Communications Corporation • 1825 Research Way • Salt Lake City, Utah 84119**

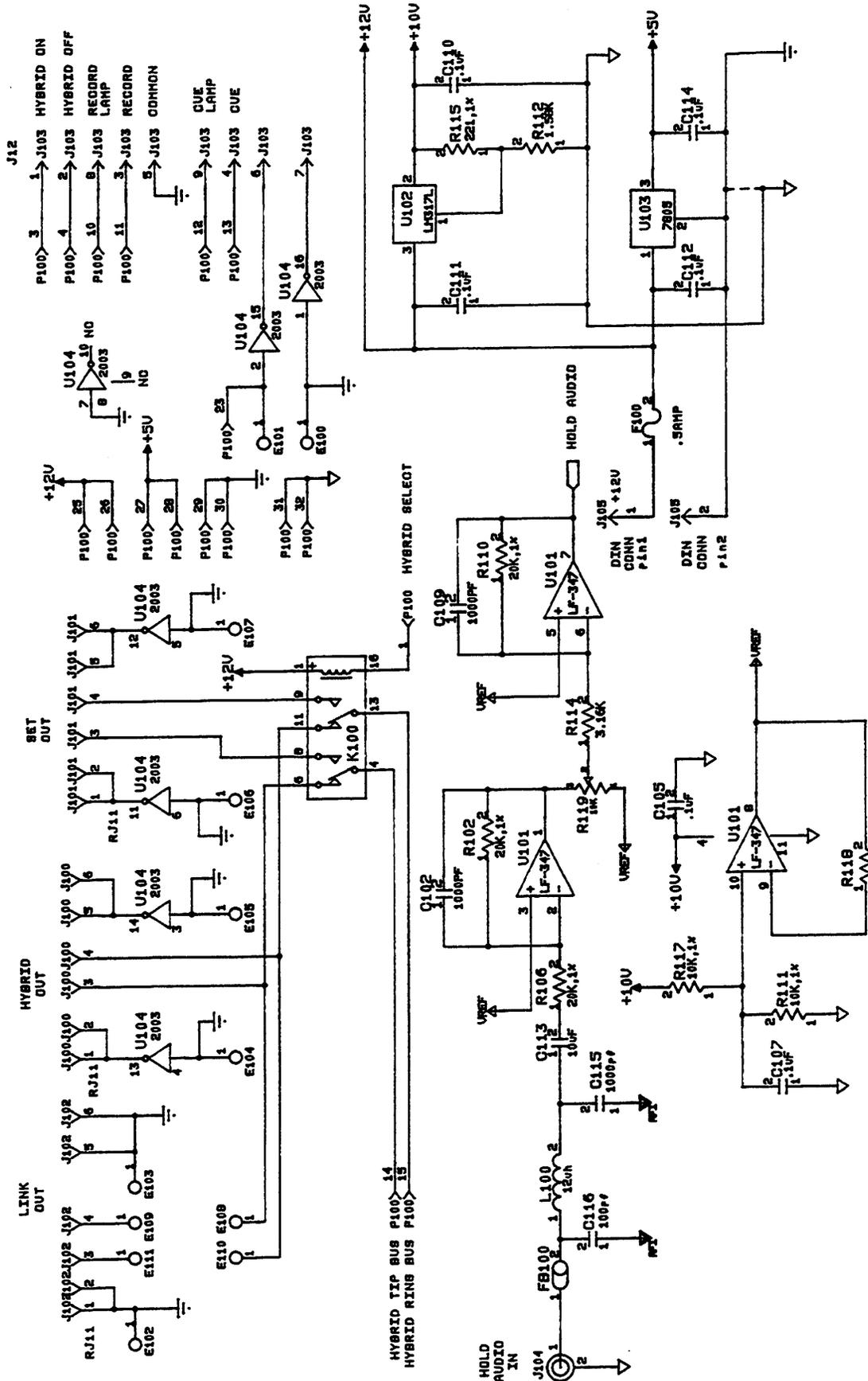
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## Specifications

Dimensions	8.9" W x 3.5" H x 6.1" D 22.6 w x 8.9 H x 15.8 D cm
Weight	2.9 lbs. (1.3 kg) dry weight 5 lbs (2.3 kg) shipping weight
Power source	DC 12V, 3 pin DIN connector, regulated
Power consumption	9 Watts
Input Connectors	
Hold Audio Input	-10 dBm nominal 10 kohms, unbalanced phono jack
Telephone line inputs	Passive; line switching relays, RJ-11C jacks Telephone battery required.
Telephone line outputs	Passive; line switching relays, RJ-11C jacks
HOLD Auto disconnect:	Disconnect on loop drop
Hybrid Control:	DB-9 male connector
ON	Open collector 100 milliamps, 48 VDC
OFF	Open collector 100 milliamps, 48 VDC
SUSTAIN	Open collector 100 milliamps, 48 VDC
REC	Switch closure, 500 milliamps (resistive), 200 VDC (resistive)
CUE	Switch closure, 500 milliamps (resistive), 200 VDC (resistive)

## ***Schematics***

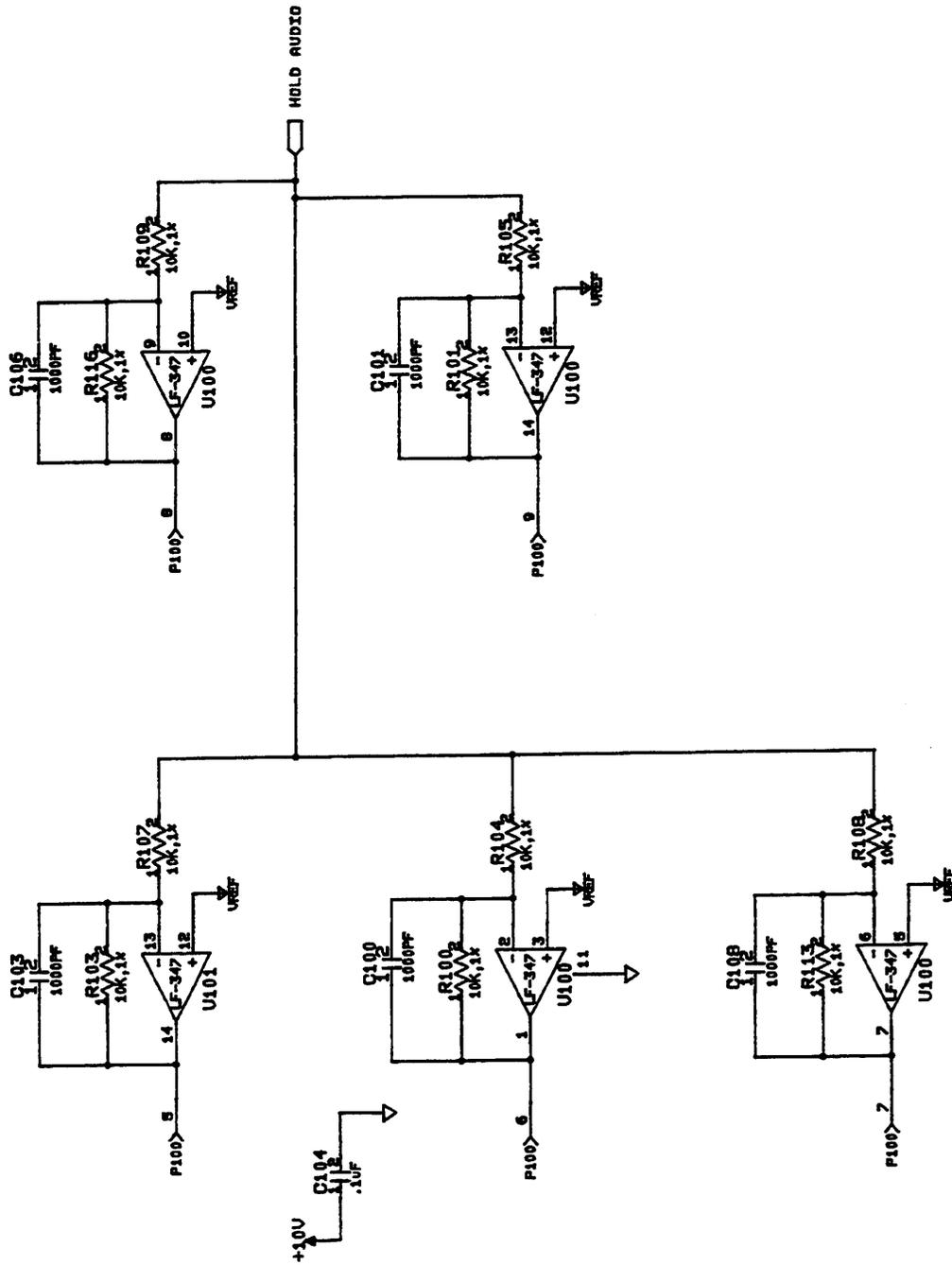
A full set of working schematics is included immediately following this page.



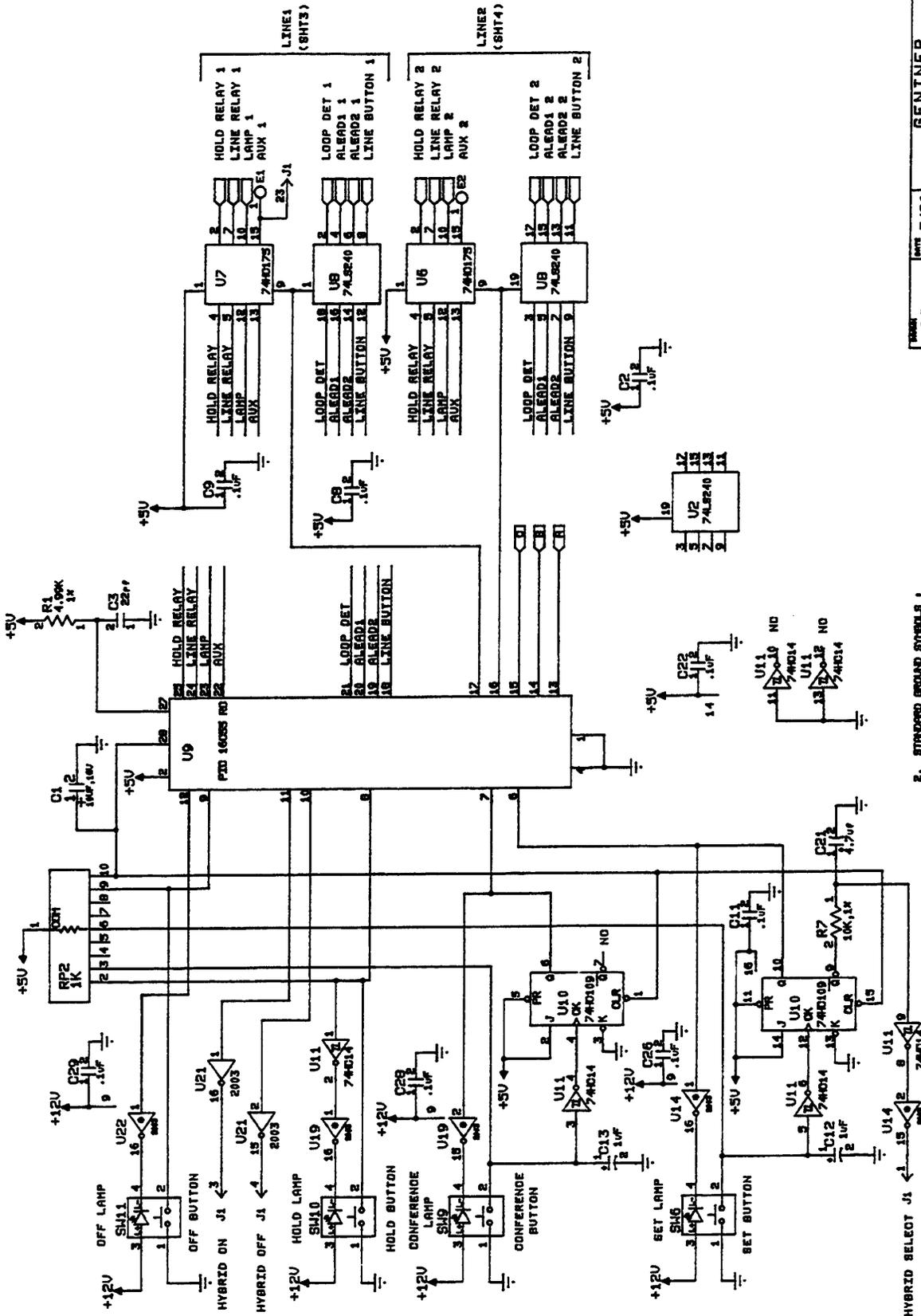
2. STANDARD GROUND SYMBOLS :
- ⊥ DIGITAL GND
  - ▽ ANALOG GND
  - ▷ R.F.I. GND
  - ▽ A SPECIAL GND

NOTES: UNLESS OTHERWISE SPECIFIED:  
 1. RESISTANCE VALUES ARE EXPRESSED IN OHMS, "K" DENOTES 1000 OHMS.  
 CAPACITANCE VALUES ARE EXPRESSED IN MICRO FARADS, (UF).  
 INDUCTOR VALUES ARE EXPRESSED IN MICRO HENRIES, (UH).

DATE	7/90	GENTNER ELECTRONIC SEPARATION
DESIGNED BY		
APPROVED BY		
DATE		TITLE
DATE		TELESWITCH
DATE		POWER SUPPLY
DATE		ELECTRICAL SCHEMATIC
DATE		SHEET 1 OF 2
DATE		REV. NO. 710-002-002
DATE		REV. A1



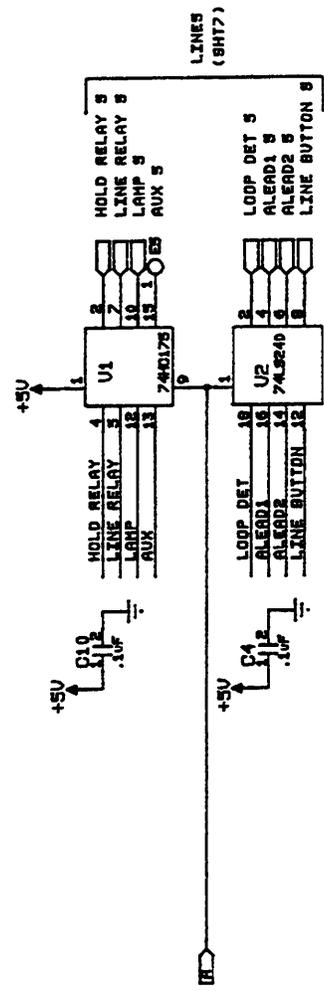
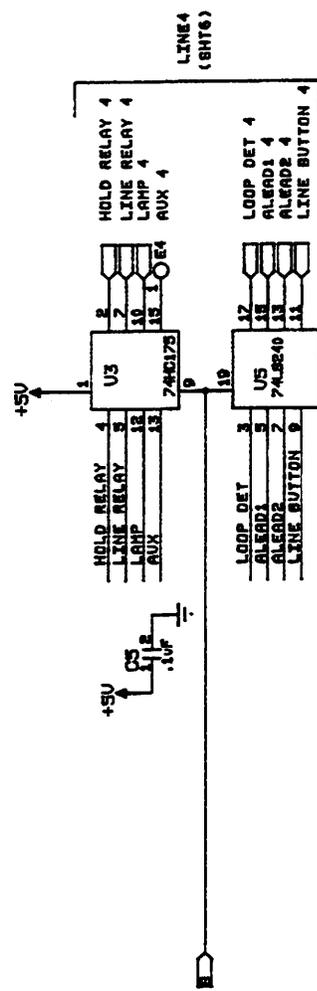
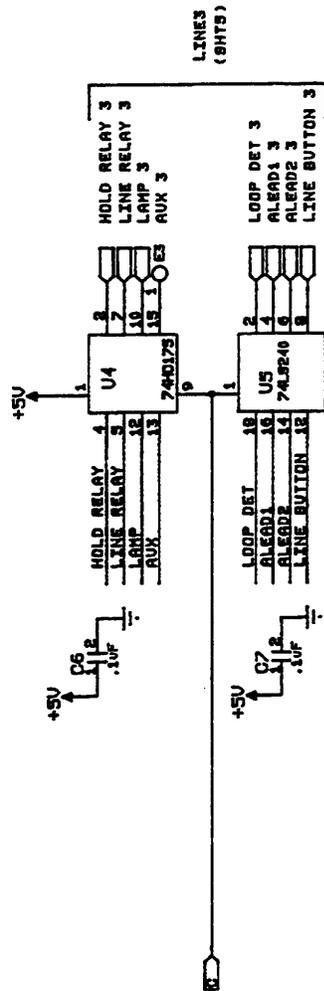
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TELESWITCH POWER SUPPLY	
SHEET 2 OF 2	REV. A1
PART. NO. 710-002-002	



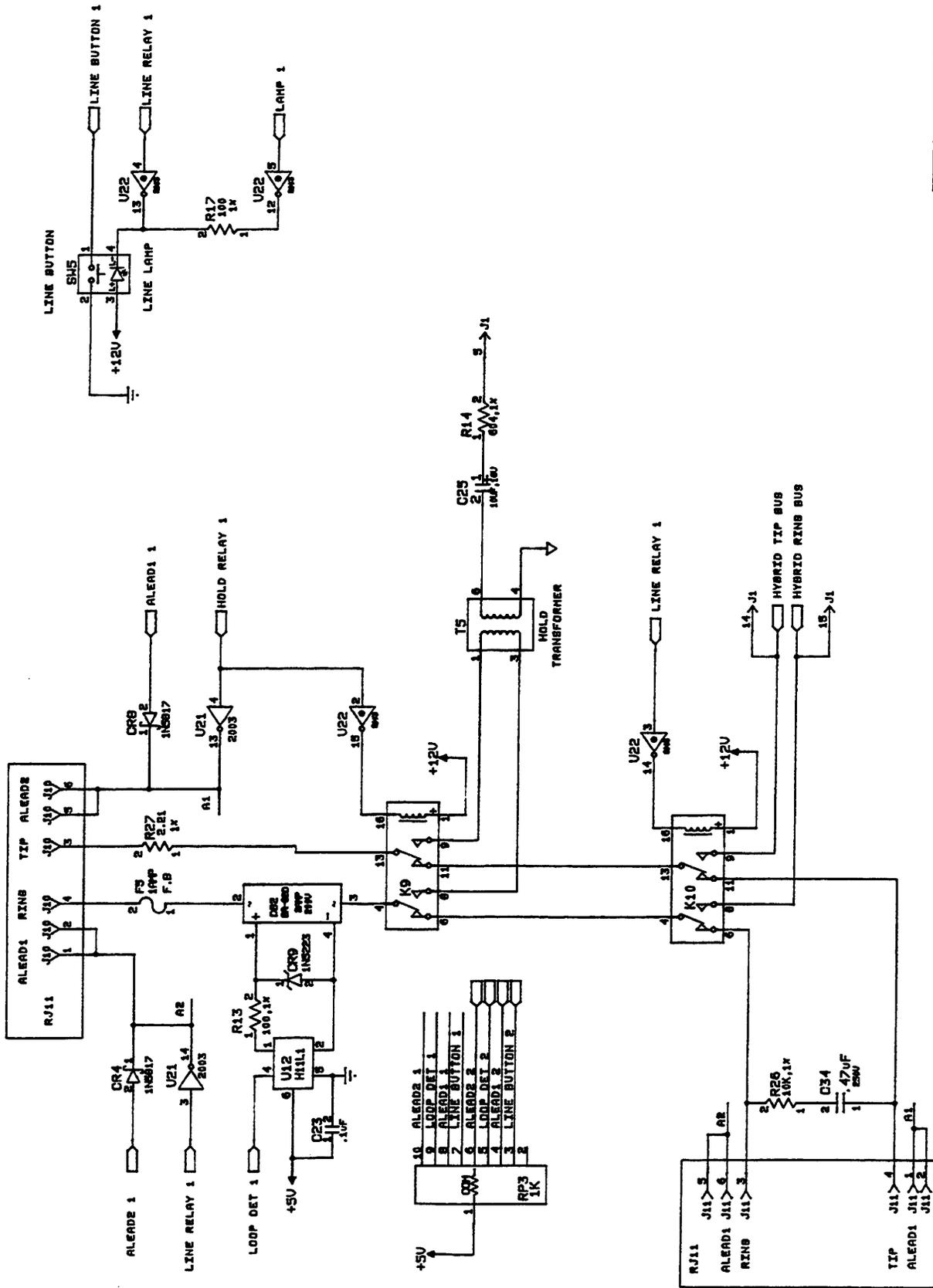
GENTNER SERIES		DATE 7/90	
TELESWITCH		TITLE	
ELECTRICAL SCHEMATIC		SHEET 1 OF 7	
PROJ. NO. 710-002-001		REV. A1	
DESIGNED BY	DRAWN BY	DATE	DATE
CHECKED BY	APPROVED BY	DATE	DATE
DIMENSIONS IN INCHES		DO NOT SCALE	
UNLESS OTHERWISE SPECIFIED		RESISTANCE VALUES ARE EXPRESSED IN OHMS, "K" DENOTES 1000 OHMS.	
CAPACITANCE VALUES ARE EXPRESSED IN MICRO FARADS, (UF).		INDUCTOR VALUES ARE EXPRESSED IN MICRO HENRIES, (MH).	

2. STANDARD GROUND SYMBOLS:
- ⊕ DIGITAL GND
  - ⊖ ANALOG GND
  - ⊕ R.F.I. GND
  - ⊖ SPECIAL GND

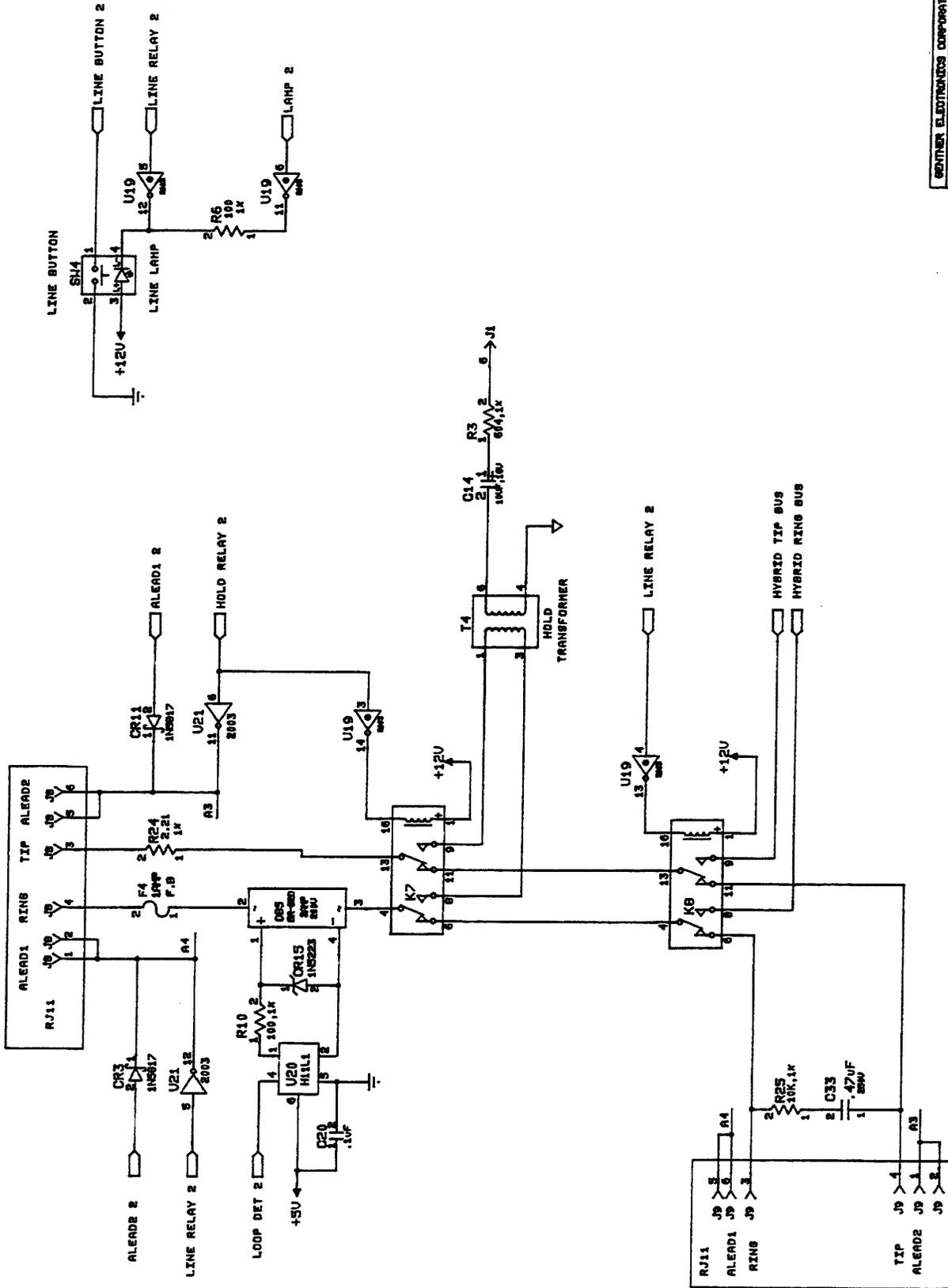
NOTES: UNLESS OTHERWISE SPECIFIED:  
 1. RESISTANCE VALUES ARE EXPRESSED IN OHMS, "K" DENOTES 1000 OHMS.  
 CAPACITANCE VALUES ARE EXPRESSED IN MICRO FARADS, (UF).  
 INDUCTOR VALUES ARE EXPRESSED IN MICRO HENRIES, (MH).



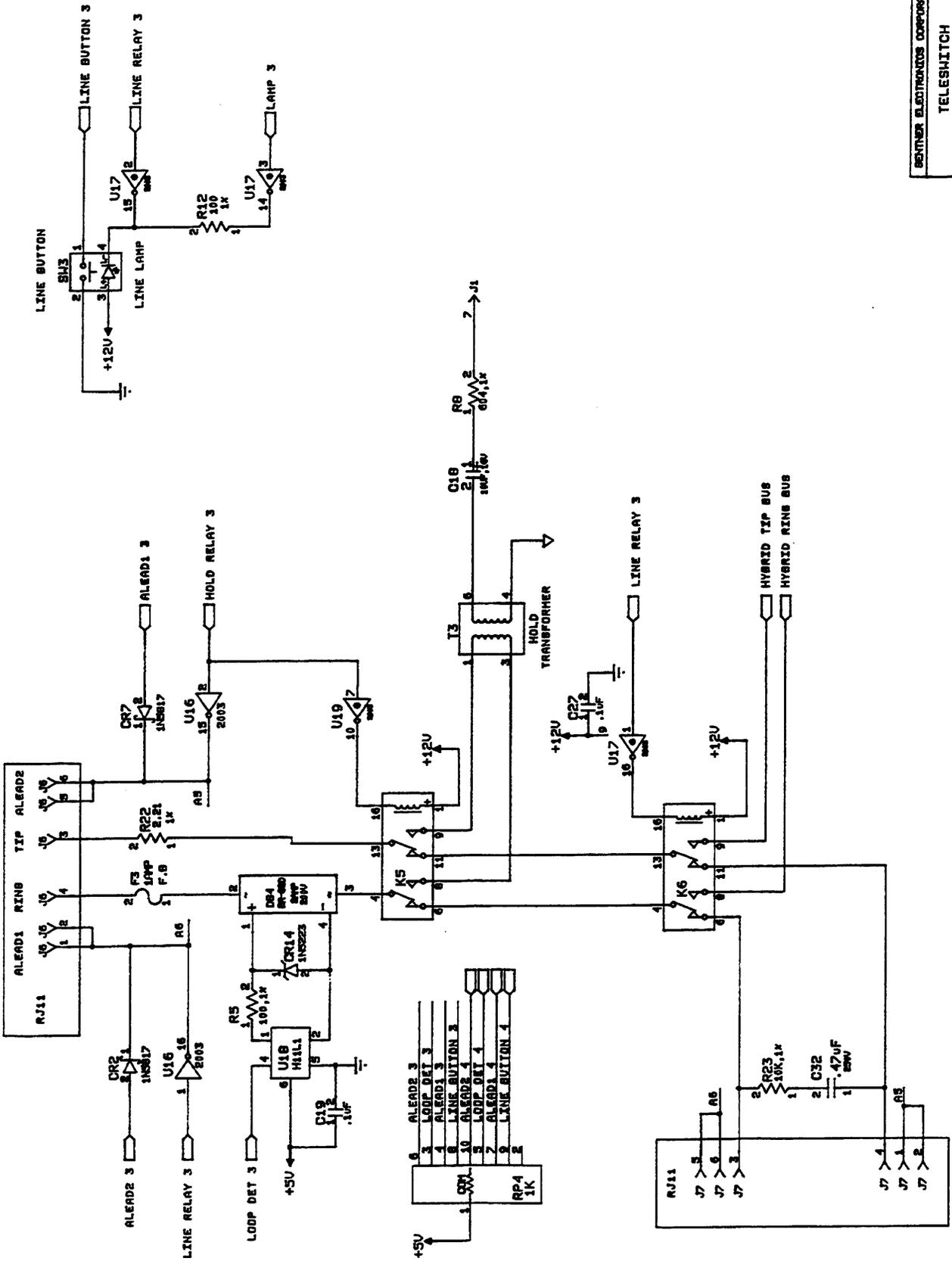
BENTON ELECTRONICS CORPORATION	
TELESWITCH	
SHEET 2 OF 7	REV. A1



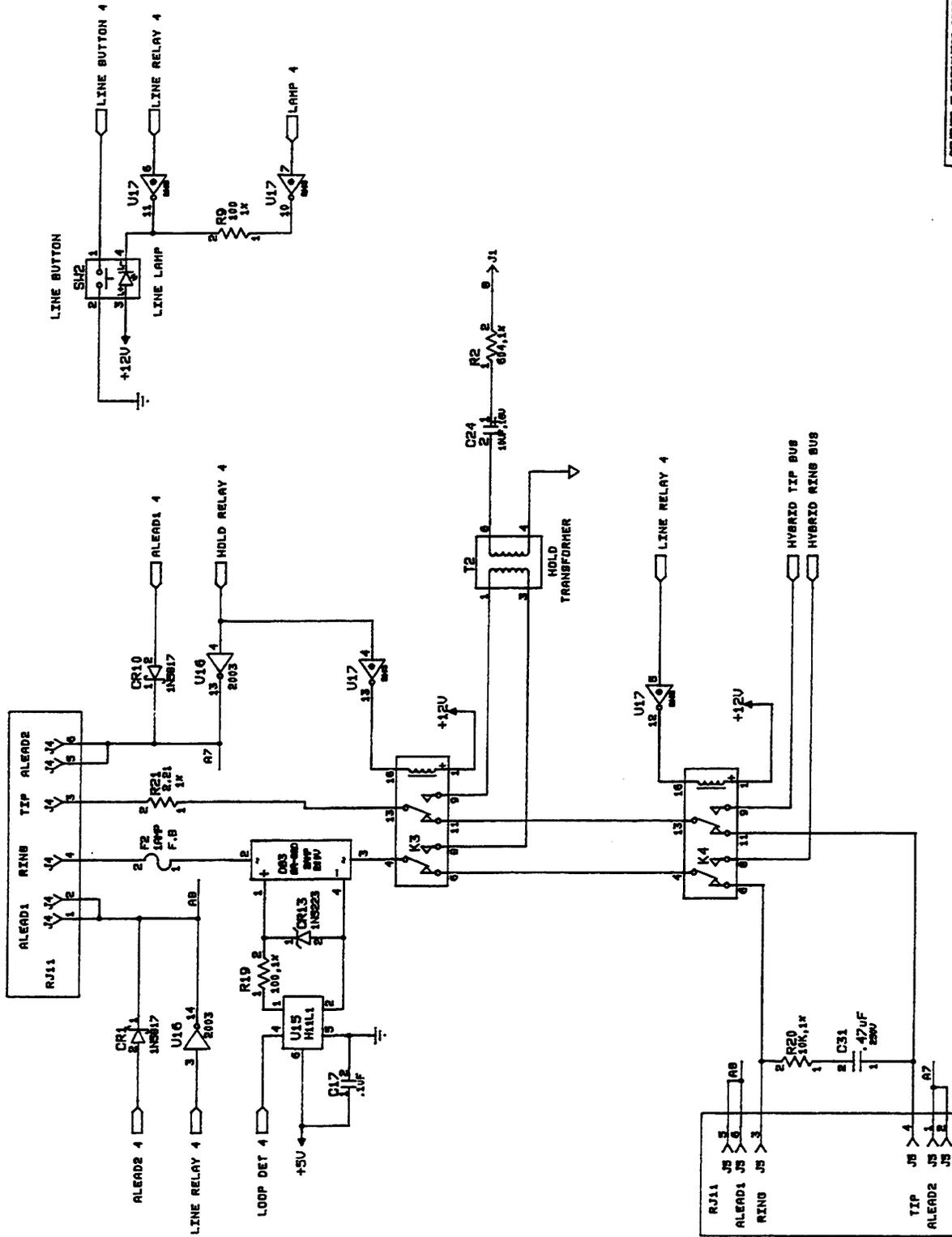
SEWEN ELECTRONICS CORPORATION	
TELESWITCH	
SHEET 3 OF 7	REV. A1
DWG. NO. 710-002-001	



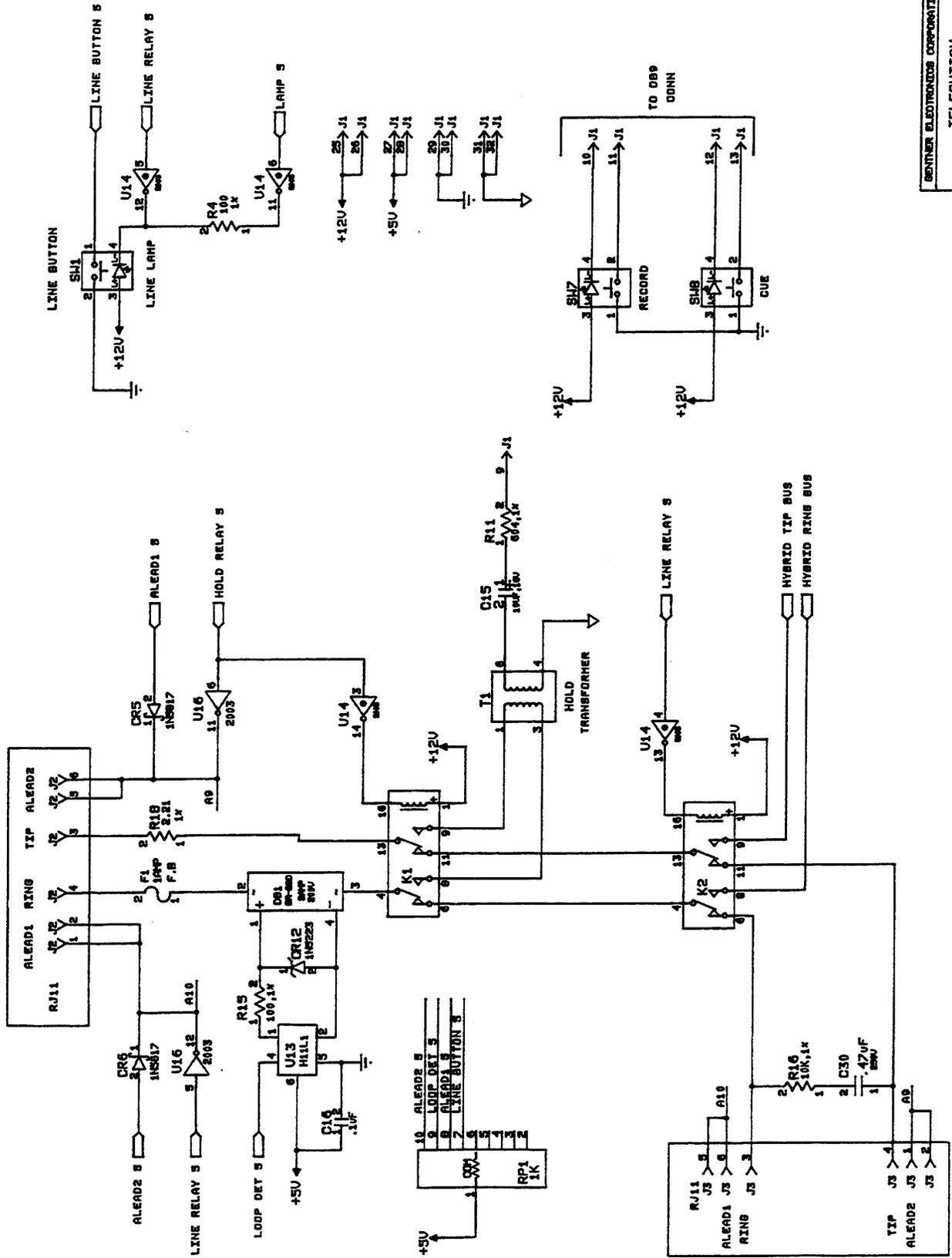
GENTNER ELECTRONICS CORPORATION	
TELESWITCH	
SHEET 4 OF 7	REV. 107, 710-002-001
	REV. A1



SANTNER ELECTRONICS CORPORATION	
TELESWITCH	
SHEET 8 OF 7	REV. R1
	PAR. NO. 710-002-001



GENTNER ELECTRONICS CORPORATION	
TELESWITCH	
SHEET 6 OF 7	REV. NO. 710-002-001
	REV. A1



GENERAL ELECTRONICS CORPORATION	
TELESWITCH	
SHEET 7 OF 7	REV. NO. 710-002-001
	REV. A11