TECHNICAL
Practice
TELECOM SOLUTIONS FOR THE 21ST CENTURY

Interface Your Voice Paging System with Virtually Any Telecom or IP Phone System

Viking's **FXI-1** universal paging interface allows you to provide paging from virtually any type of phone system instead of from a microphone. You can also provide background music and electronic night bell over the audio system.

The **FXI-1** provides 26V talk battery for interfacing with an **FXO** or unused analog line input/trunk port. With the flip of a switch, the unit can connect to a **FXS** or **PABX** station ring trip port. **No power supply is required in this mode.** In the event that it must be connected to a "dry" 600 ohm paging port, the built-in voice activation (**VOX**) is in control. This configuration is useful when interfacing with systems that do not provide a paging contact closure, such as Panasonic, South Western Bell, Intertel, etc.

In all modes the **FXI-1** provides normally open or normally closed relay contacts to activate the central paging amplifier equipment or connect to an external background music source. After paging, the **FXI-1** auto disconnects on **CPC**, busy signal, silence or default disconnect timer. An electronic night bell over paging feature can be activated from a momentary phone system contact closure (**FXO** and page port mode only).

Features

- Select: **FXO** (loop start), **FXS** (ring trip) or paging port (**VOX** relay) interface mode
- **No power supply required in FXS interface mode**
- Up to 6 units can be powered from one adapter in the **FXO** or **VOX** mode
- 26V DC talk battery for interfacing with **FXO** or unused phone system line input/trunk port
- Floating 600 ohm paging output with volume control
- Normally open or closed relay for external paging amp activation or interfacing the paging amp with an external background music source
- 800 Hz pre-page page tone (on/off)
- Compatible with 24 to 48 volt **FXS** operation
- Calling party control (**CPC**) detection for immediate disconnect
- Busy signal detect disconnect
- 2.5 second **VOX** silence disconnect timer
- Programmable **VOX** trigger sensitivity
- Disconnect timer: 16, 36, 60 seconds or disabled
- Screw terminal block connections
- Wall mount housing: (2) #6x3/4 panhead screws included

Applications

- Integrate your paging system with virtually any POTS, Centrex, Digital or IP phone system
- Suppress background music during paging
- Provides contact closure to activate paging system if not provided by the phone system
- Add pre-page tone to your paging system

http://www.vikingelectronics.com

Specifications

Power: 12-24V DC @ 100mA, 120V AC/12V DC @ 500mA, UL listed adapter included (not required in **FXS** mode)
Dimensions: 111mm x 76mm x 36mm (4.38" x 2.97" x 1.38")
Shipping Weight: .48 kg (1.06 lbs)
Environmental: 0°C to 32°C (32°F to 90°F) with 5% to 95% non-condensing humidity
Relay Contacts: 30V DC@1A, 110V DC@0.3A, 125V AC@0.5A
VOX Minimum Audio Signal to Activate Relay: -28dbm minimum / -25dbm minimum @ 1KHz with VOX sensitivity switch at normal / lower positions
VOX Time Out Disconnect: 2.5 seconds
Default Time Out Disconnect: 16, 36, 60 seconds or disabled
Talk Battery: 26V DC

Warranty

IF YOU HAVE A PROBLEM WITH A VIKING PRODUCT PLEASE CONTACT: VIKING TECHNICAL SUPPORT AT (715) 386-8666

Our Technical Support Department is available for assistance Monday 8am - 4pm and Tuesday to Friday 8am - 5pm central standard time. So that we can give you better service, before you call please:

1. Know the model number, the serial number and what software version you have (see serial label).
2. Have your Technical Practice in front of you.
3. It is best if you are on site.

RETURNING PRODUCT FOR REPAIR

The following procedure is for equipment that needs repair:

1. Customer must contact Viking's Technical Support Department at 715-386-8666 to obtain a Return Authorization (RA) number. The customer MUST have a complete description of the problem, with all pertinent information regarding the defect, such as options set, conditions, symptoms, methods to duplicate problem, frequency of failure, etc.
2. Packing: Return equipment in original box or in proper packing so that damage will not occur while in transit. Static sensitive equipment such as a circuit board should be in an anti-static bag, sandwiched between foam and individually boxed. All equipment should be wrapped to avoid packing material lodging in or sticking to the equipment. Include ALL parts of the equipment. C.O.D. or freight collect shipments cannot be accepted. Ship cartons prepaid to:
   Viking Electronics, 1531 Industrial Street, Hudson, WI 54016
3. Return shipping address: Be sure to include your return shipping address inside the box. We cannot ship to a P.O. Box.
4. RA number on carton: In large printing, write the R.A. number on the outside of each carton being returned.

RETURNING PRODUCT FOR EXCHANGE

The following procedure is for equipment that has failed out-of-box (<u>within 10 days of purchase</u>):

1. Customer must contact Viking's Technical Support at 715-386-8666 to determine possible causes for the problem. The customer MUST be able to step through recommended tests for diagnosis.
2. If the Technical Support Product Specialist determines that the equipment is defective based on the customer's input and troubleshooting, a Return Authorization (R.A.) number will be issued. <u>This number is valid for fourteen (14) calendar days from the date of issue.</u>
3. After obtaining the R.A. number, return the approved equipment to <u>your distributor, referencing the R.A. number.</u> Your distributor will then replace the product over the counter at no charge. The distributor will then return the product to Viking using the same R.A. number.
4. **The distributor will NOT exchange this product without first obtaining the R.A. number from you. If you haven't followed the steps listed in 1, 2 and 3, be aware that you will have to pay a restocking charge.**

<div style="border:1px solid">

LIMITED WARRANTY

Viking warrants its products to be free from defects in the workmanship or materials, under normal use and service, for a period of one year from the date of purchase from any authorized Viking distributor or 18 months from the date manufactured, which ever is greater. If at any time during the warranty period, the product is deemed defective or malfunctions, return the product to Viking Electronics, Inc., 1531 Industrial Street, Hudson, WI., 54016. Customer must contact Viking's Technical Support Department at 715-386-8666 to obtain a Return Authorization (R.A.) number.

This warranty does not cover any damage to the product due to lightning, over voltage, under voltage, accident, misuse, abuse, negligence or any damage caused by use of the product by the purchaser or others. This warranty does not cover non-EWP products that have been exposed to wet or corrosive environments.

<u>NO OTHER WARRANTIES</u>. VIKING MAKES NO WARRANTIES RELATING TO ITS PRODUCTS OTHER THAN AS DESCRIBED ABOVE AND DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

<u>EXCLUSION OF CONSEQUENTIAL DAMAGES</u>. VIKING SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE TO PURCHASER, OR ANY OTHER PARTY, FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL OR EXEMPLARY DAMAGES ARISING OUT OF OR RELATED TO THE SALE OR USE OF THE PRODUCT SOLD HEREUNDER.

<u>EXCLUSIVE REMEDY AND LIMITATION OF LIABILITY</u>. WHETHER IN AN ACTION BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY) OR ANY OTHER LEGAL THEORY, ANY LIABILITY OF VIKING SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT, OR AT VIKING'S OPTION, REFUND OF THE PURCHASE PRICE AS THE EXCLUSIVE REMEDY AND ANY LIABILITY OF VIKING SHALL BE SO LIMITED.

IT IS EXPRESSLY UNDERSTOOD AND AGREED THAT EACH AND EVERY PROVISION OF THIS AGREEMENT WHICH PROVIDES FOR DISCLAIMER OF WARRANTIES, EXCLUSION OF CONSEQUENTIAL DAMAGES, AND EXCLUSIVE REMEDY AND LIMITATION OF LIABILITY, ARE SEVERABLE FROM ANY OTHER PROVISION AND EACH PROVISION IS A SEPARABLE AND INDEPENDENT ELEMENT OF RISK ALLOCATION AND IS INTENDED TO BE ENFORCED AS SUCH.

</div>

FCC REQUIREMENTS

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the side of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive REN's on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of the REN's should not exceed five (5.0) To be certain of the number of devices that may be connected to a line, as determined by the total REN's, contact the local telephone company. For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (*e.g.*, 03 is a REN of 0.3). For earlier products, the REN is separately shown on the label.

The plug used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this FXI-1 does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

If the FXI-1 causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

If trouble is experienced with the FXI-1, for repair or warranty information, please contact:

Viking Electronics, Inc., 1531 Industrial Street, Hudson, WI 54016 (715) 386-8666

If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

Connection to Party Line Service is subject to State Tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

WHEN PROGRAMMING EMERGENCY NUMBERS AND (OR) MAKING TEST CALLS TO EMERGENCY NUMBERS:

Remain on the line and briefly explain to the dispatcher the reason for the call. Perform such activities in the off-peak hours, such as early morning or late evenings.

It is recommended that the customer install an AC surge arrester in the AC outlet to which this device is connected. This is to avoid damaging the equipment caused by local lightning strikes and other electrical surges.

PART 15 LIMITATIONS

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.
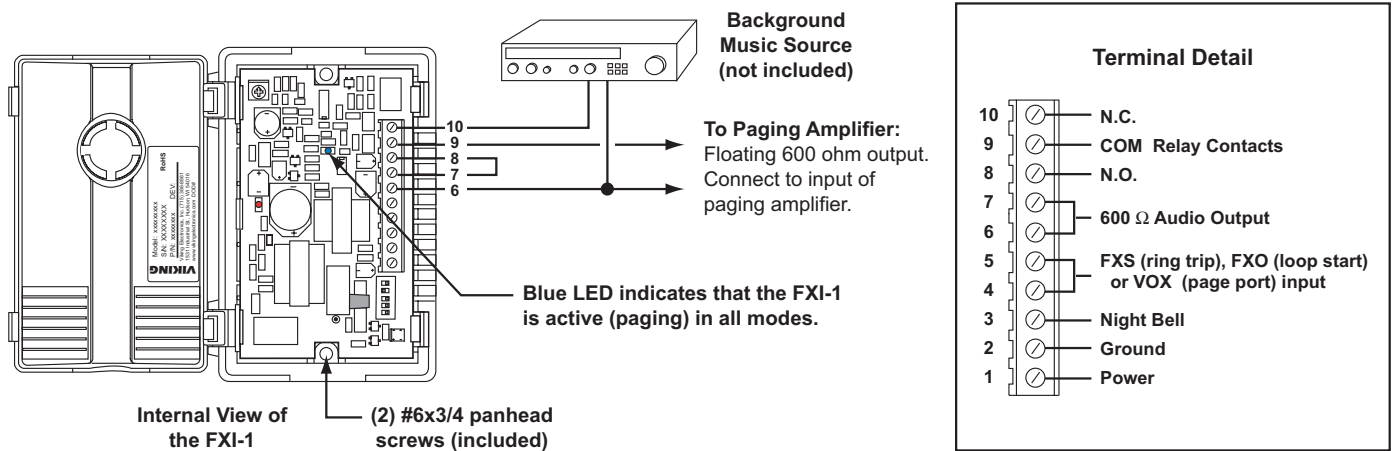
Installation

⚠️ **IMPORTANT:** *Electronic devices are susceptible to lightning and power station electrical surges from both the AC outlet and the telephone line. It is recommended that a surge protector be installed to protect against such surges.*
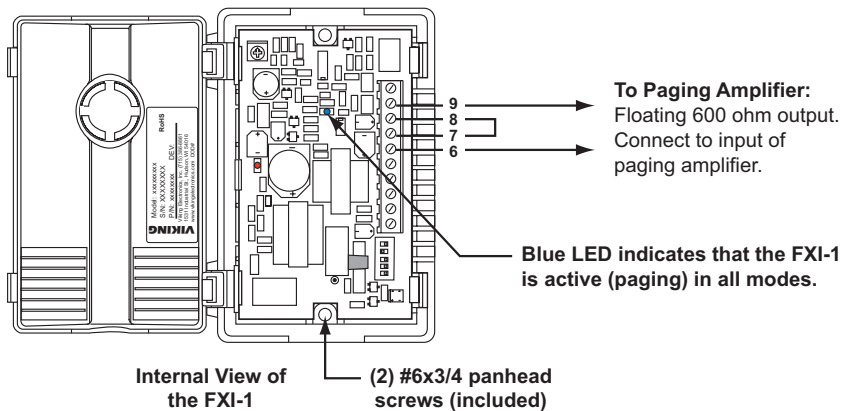
A. Adding Background Music

If background music is not available on the central paging amplifier, the **FXI-1** can be wired as shown below. This application <u>works in all modes</u> and the music is suppressed during paging.

Background Music Source (not included)

To Paging Amplifier: Floating 600 ohm output. Connect to input of paging amplifier.

Blue LED indicates that the FXI-1 is active (paging) in all modes.

Internal View of the FXI-1

(2) #6x3/4 panhead screws (included)

Terminal Detail

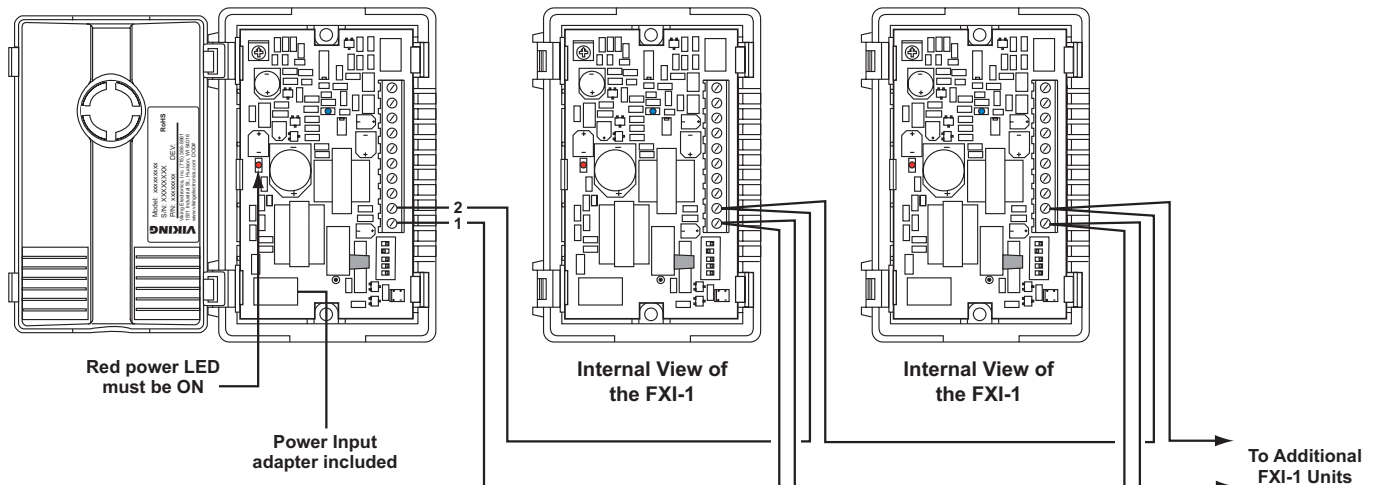| 10 | N.C. |
9	COM Relay Contacts
8	N.O.
7	600 Ω Audio Output
6	
5	FXS (ring trip), FXO (loop start)
4	or VOX (page port) input
3	Night Bell
2	Ground
1	Power

B. Recommended Wiring to Eliminate Idle Noise and Clicks

If the contacts are not used to activate the external paging amplifier, wire as shown to eliminate idle noise and clicks.

To Paging Amplifier: Floating 600 ohm output. Connect to input of paging amplifier.

Blue LED indicates that the FXI-1 is active (paging) in all modes.

Internal View of the FXI-1
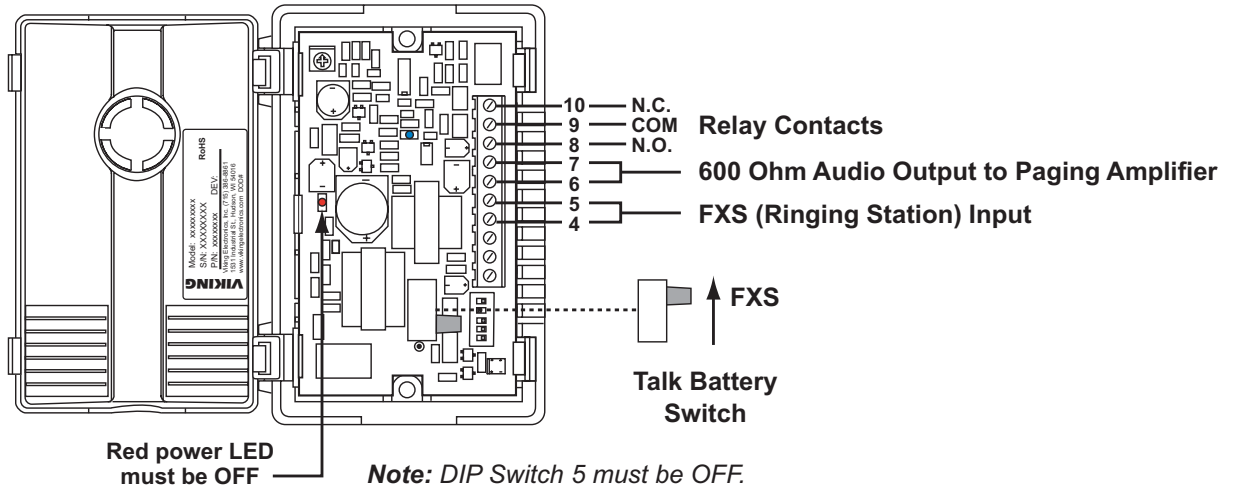
(2) #6x3/4 panhead screws (included)

C. Up to 6 FXI-1 Units Share 1 Power Supply - FXO or VOX (Powered) Mode

Up to 6 **FXI-1** units can be wired as shown below and share a single 12V 500mA adapter. This is useful in the FXO or VOX (powered) mode.
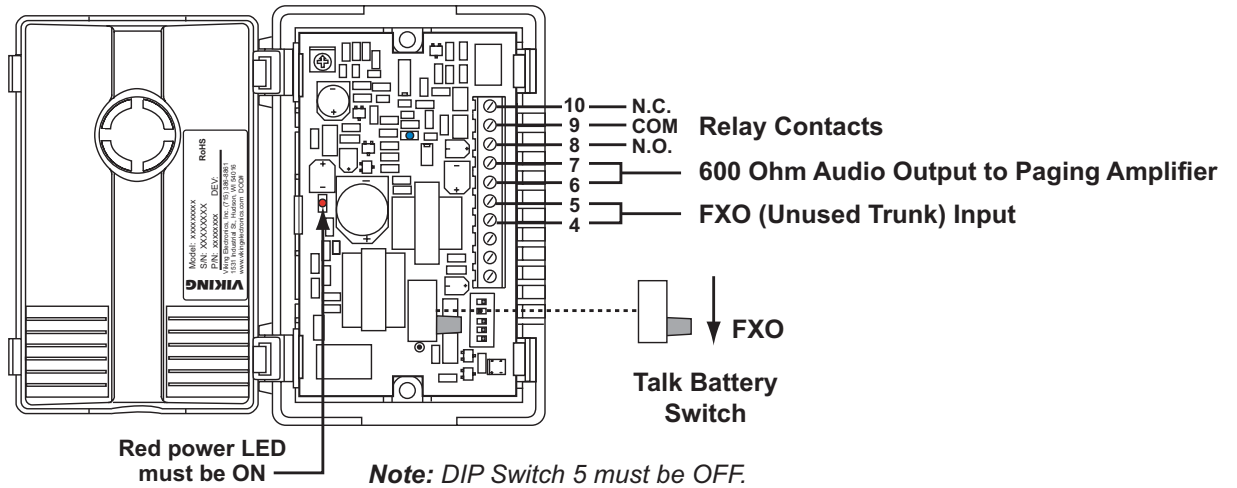
Red power LED must be ON

Power Input adapter included

Internal View of the FXI-1

Internal View of the FXI-1

To Additional FXI-1 Units

D. FXS (Ring Trip) Mode (Do Not Use the Included Power Supply)

**Internal View
of the FXI-1**

10 — N.C.
9 — COM   **Relay Contacts**
8 — N.O.
7
6   **600 Ohm Audio Output to Paging Amplifier**
5
4   **FXS (Ringing Station) Input**

↑ FXS

**Talk Battery
Switch**

**Red power LED
must be OFF**

Note: *DIP Switch 5 must be OFF.*

E. FXO (Loop Start) Mode - Power Required

**Internal View
of the FXI-1**

10 — N.C.
9 — COM   **Relay Contacts**
8 — N.O.
7
6   **600 Ohm Audio Output to Paging Amplifier**
5
4   **FXO (Unused Trunk) Input**

↓ FXO

**Talk Battery
Switch**

**Red power LED
must be ON**

Note: *DIP Switch 5 must be OFF.*

F. VOX (Page Port) Mode - Power Required

Internal View of the FXI-1

10 — N.C.
9 — COM — **Relay Contacts**
8 — N.O.
7
6 — **600 Ohm Audio Output to Paging Amplifier**
5
4 — **600 Ohm Page Port In**

↑ **FXS**

Talk Battery Switch

Red power LED must be ON

Notes: *DIP Switch 5 must be ON. There is no pre-page beep in this mode.*
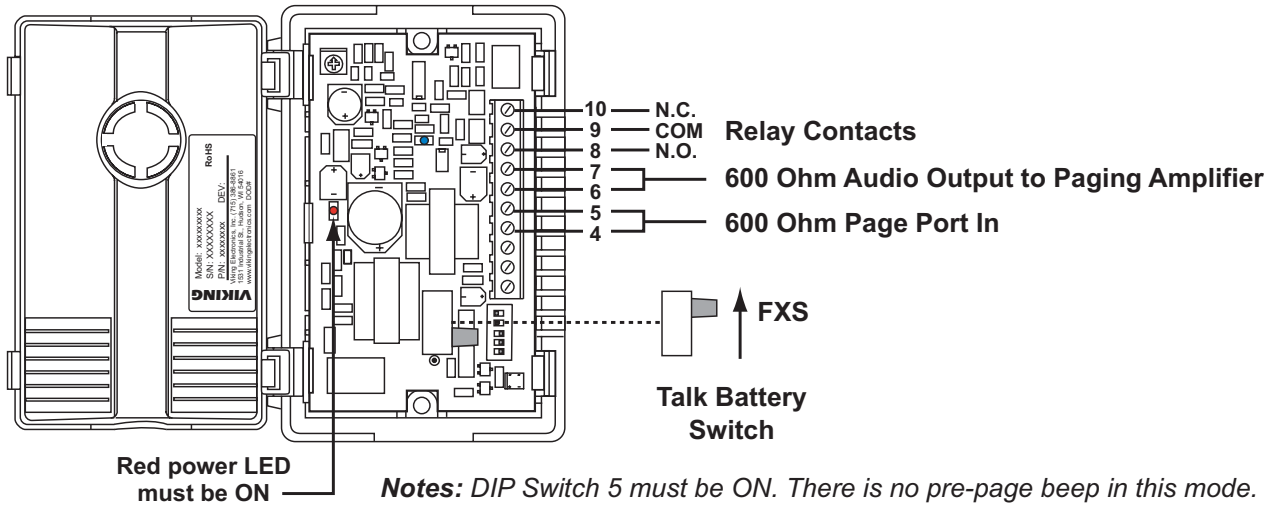
G. Night Bell Over Page - FXO or VOX Modes Only, Power Required

Internal View of the FXI-1

3 — **Phone System N.O.**
2 — **Ring Contact Closure**

Note: *DIP Switch 4 must be ON.*

Red power LED must be ON
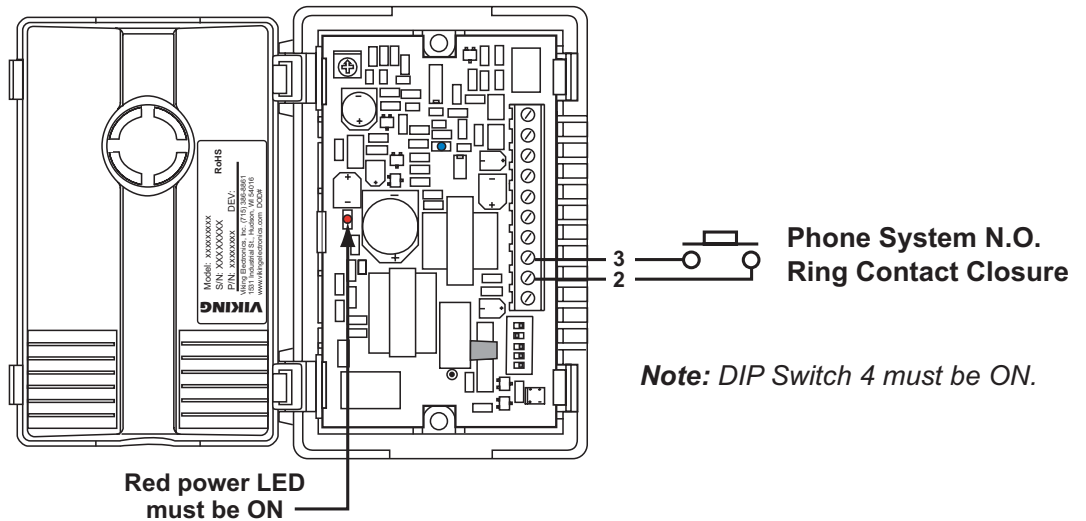
H. Telephone Line Powered Ring Trip Paging and Loud Ringing

1. Loud Ringing as Priority

Internal View of the K-600F

10
9
8

Internal View of the FXI-1

7
6
5
4

To FXS Paging Line Input

FXS

Talk Battery Switch

Incoming Ringing Line — **OR**

To Paging Amplifier Input (600 Ohm)

2. Paging as Priority

To Paging Amplifier Input (600 Ohm)

Internal View of the K-600F

4
3

Internal View of the FXI-1

10
9
8
7
6
5
4

To FXS Paging Line Input

FXS

Talk Battery Switch

Incoming Ringing Line — **OR**
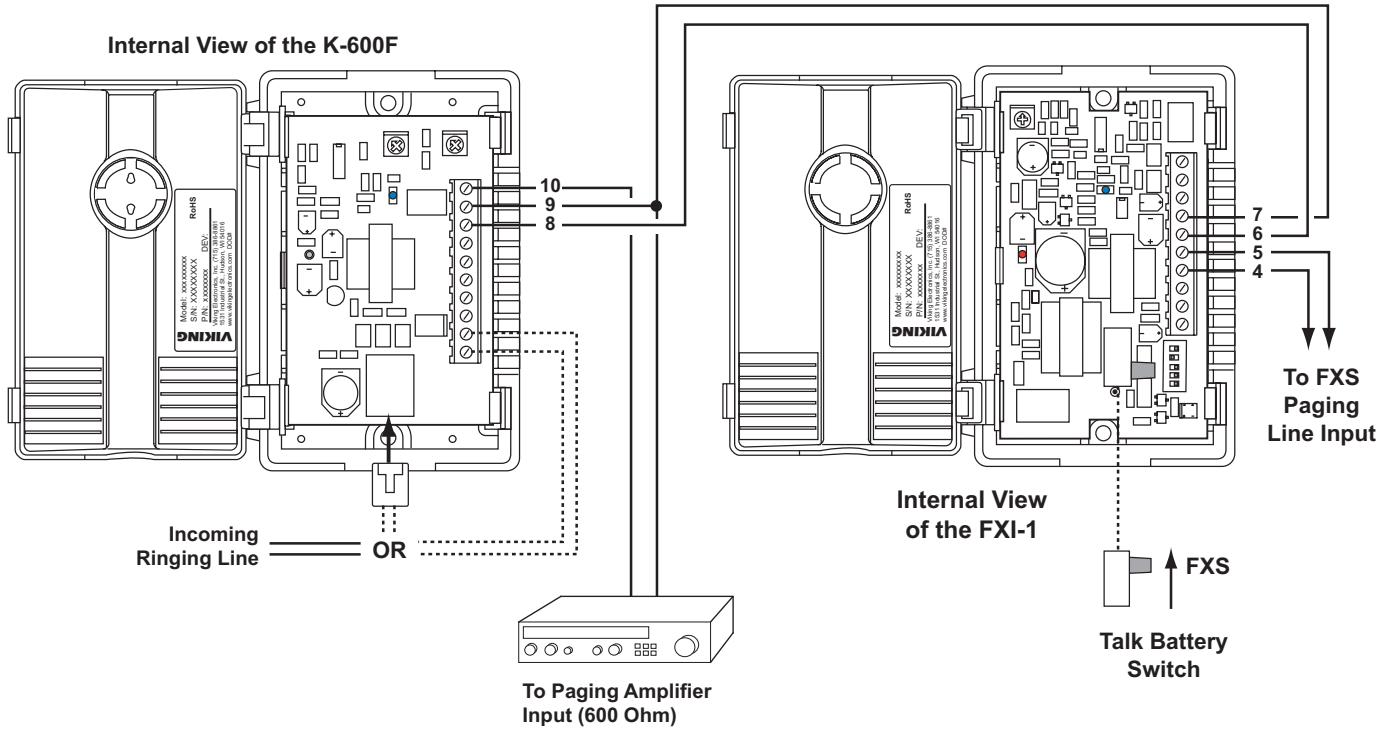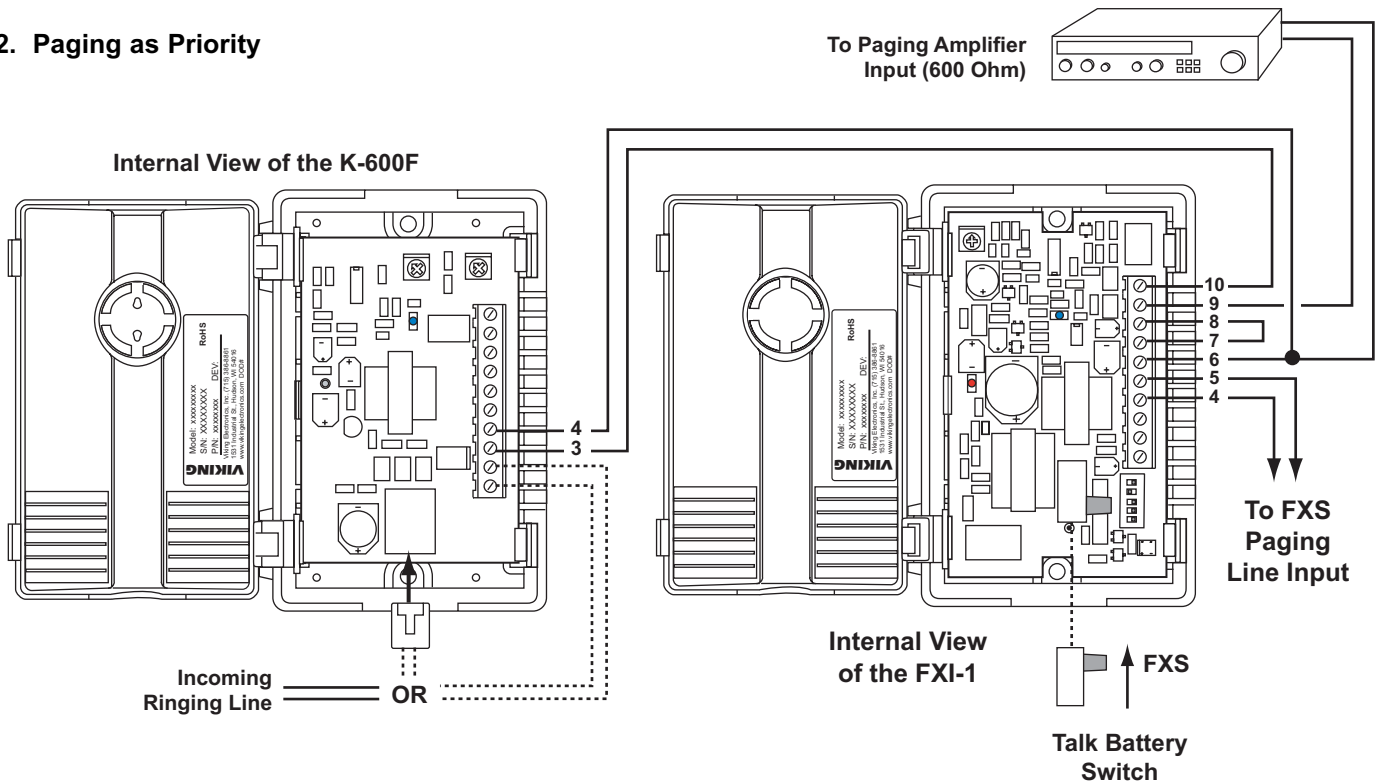
Programming

A. DIP Switch Programming

Switch 1	Switch 2	Description
OFF	OFF	16 second default timer, busy detect off
ON	OFF	36 second default timer, busy detect on
OFF	ON	60 second default timer, busy detect on
ON	ON	Default timer disabled, busy detect on

Switch	Position	Description
3	ON	Lower VOX sensitivity
3	OFF	Normal VOX sensitivity
4	ON	Pre-page and night bell tone on
4	OFF	Pre-page and night bell tone off
5	ON	VOX (600 ohm page port) mode
5	OFF	FXS (ring trip) or FXO (loop start) mode

Internal View of the FXI-1

Master Volume Control

ON   OFF
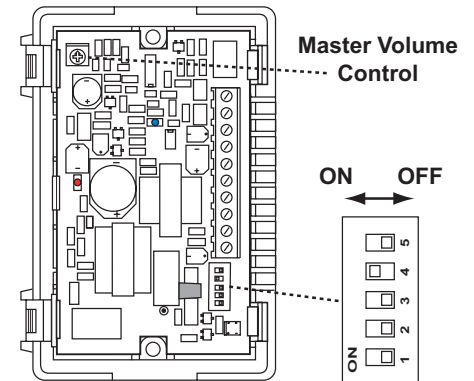
Note: DIP Switches shown in factory default settings.

B. Talk Battery Switch (FXO vs. FXS)

1. FXO

An FXO port is an analog input RJ11 port just like a POTS trunk input on a PABX or key system. An FXO port receives talk battery and ring voltage. In the FXO mode, the **FXI-1** provides 26V talk battery to connect to an FXO port or plain analog phone.

2. FXS

An FXS port is an analog output RJ11 port just like a station port on a phone system or PABX extension. It provides talk battery, dial tone and ring voltage. In the FXS mode, the FXI-1 is triggered by ring voltage to seize the line, it is then powered by the talk battery being provided.

Operation

A. FXS (Ring Trip) Mode

In this mode, the unit is powered by the ringing line and answers after 1 second, activates the relay contacts and provides a pre-page beep if enabled (S1-4 on). If more than 2.5 seconds of silence, a busy tone (default timer >16 seconds), or a CPC are detected, or the default timer expires, the unit releases the relay and drops the line.

B. FXO (Loop Start) Mode

In this mode, the unit waits until loop is detected, then activates the relay contacts and provides a pre-page beep if enabled (S1-4 on). If more than 2.5 seconds of silence or a busy tone (default timer > 16 seconds) is detected, or the default timer expires, the unit releases the relay and provides a 2 second CPC.

C. VOX (Page Port) Mode

In this mode, the unit waits until audio is detected, then activates the relay contacts. If more than 2.5 seconds of silence or a busy tone (default timer > 16 seconds) is detected, or the default timer expires, the unit releases the relay. There is no pre-page beep in this mode.

D. Night Bell Over Page

If the unit is installed in FXO or VOX mode and not currently paging or providing a CPC, a momentary closure on the Night Bell input for 50mS or more will trigger a 1 second pause followed by relay activation, a 1.5 second warble tone, and relay release. A continuous closure on the night bell input causes the 1 second pause, 1.5 second warble tone cycle to repeat until the closure is removed.
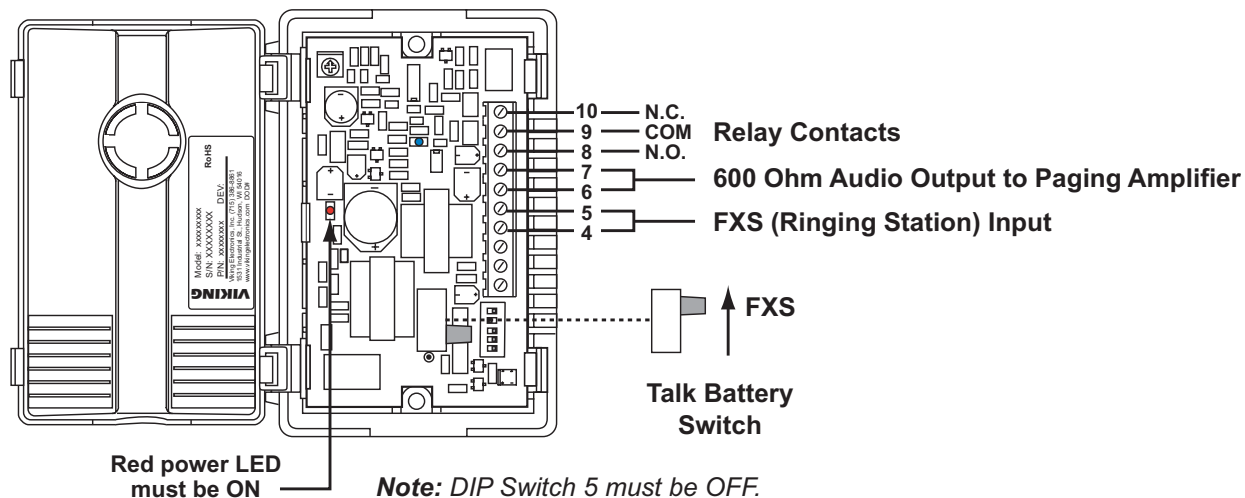
Troubleshooting

Some VoIP products provide a low power ring signal designed for electronic phones that adaptor-powered equipment can detect easily, but line-powered equipment has trouble using to activate a relay.

In this case it is recommended to use FXO (Loop Start) mode if possible by changing to an unused trunk input, otherwise connect the equipment as shown in the special "FXS Power Assist (Ring Trip) Mode".

In this installation, a short page may be heard when the unit is powered on, but will then function as normal.

FXS Power Assist (Ring Trip) Mode - Power Required

Internal View of the FXI-1

10 —— N.C.
9 —— COM   **Relay Contacts**
8 —— N.O.
7
6   **600 Ohm Audio Output to Paging Amplifier**
5
4   **FXS (Ringing Station) Input**

FXS

Talk Battery Switch

Red power LED must be ON

Note: *DIP Switch 5 must be OFF.*