



# TECHNICAL Practice

**TELECOM SOLUTIONS FOR THE 21ST CENTURY**

<p><b>LS-911</b>  <b>Analog Emergency Line Sharing Device</b>          August 15, 2008</p>
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## Analog Line-Sharing Device for IP PBX's, VoIP Phone Systems

The **LS-911** Line Seizure device offers a cost-effective, reliable method of handling 911 emergency calls for IP PBX's and networked phone systems. Designed to be hooked up to an FXO port, it lets you enjoy the advantages of conventional analog 911 service, including traceability and 911 callback, without having to dedicate an analog line exclusively for this purpose.



The analog line, normally used by a fax machine, card reader or other analog device, is disconnected in the event of a 911 call, and the **LS-911** intelligently handles the priority emergency call in the shortest time possible after reconnection to the phone line.

A special 911 recall feature maintains the availability of the line in the event the emergency call is disconnected, so 911 personnel can call back to reestablish the connection.

### Features

- Routes both incoming and outgoing calls
- Gives priority to emergency devices
- Incoming calls routed to one of two ports by distinctive ring or quick callback
- Status LED displays mode of operation
- Provides a busy signal to the phone port when an emergency device is in use
- Store-and-forward and rerouting dialer functions available
- Emergency callback function maintains line availability for 911 callback
- Normal and fast dialing speeds

Phone... 715.386.8861

<http://www.vikingelectronics.com>

### Applications

- IP PBX or VoIP Phone System sharing analog phone line with:
  - Fax machine
  - ATM
  - Card reader
- Emergency phone (ie: Viking **1600A Series**) sharing line with above devices



### Specifications

- Power:** 120VAC / 12VDC 500mA UL listed adapter provided
- Dimensions:** 133mm x 89mm x 44mm (5.25" x 3.5" x 1.75")
- Shipping Weight:** .9 kg (2 lbs)
- Environmental:** 0° C to 32° C (32° F to 90° F) with 5% to 95% non-condensing humidity
- Talk Battery:** 35V DC
- Connections:** 6 screw terminals

# 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 through Friday 8am - 5pm central 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 PO 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 (within 10 days of purchase):

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. This number is valid for fourteen (14) calendar days from the date of issue.
3. After obtaining the R.A. number, return the approved equipment to your distributor, referencing the R.A. number. 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.**

## 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, whichever 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.

**NO OTHER WARRANTIES.** 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.

**EXCLUSION OF CONSEQUENTIAL DAMAGES.** 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.

**EXCLUSIVE REMEDY AND LIMITATION OF LIABILITY.** 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.

## 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:AAEQ##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:AAEQ##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 LS-911 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 LS-911 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 LS-911, 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

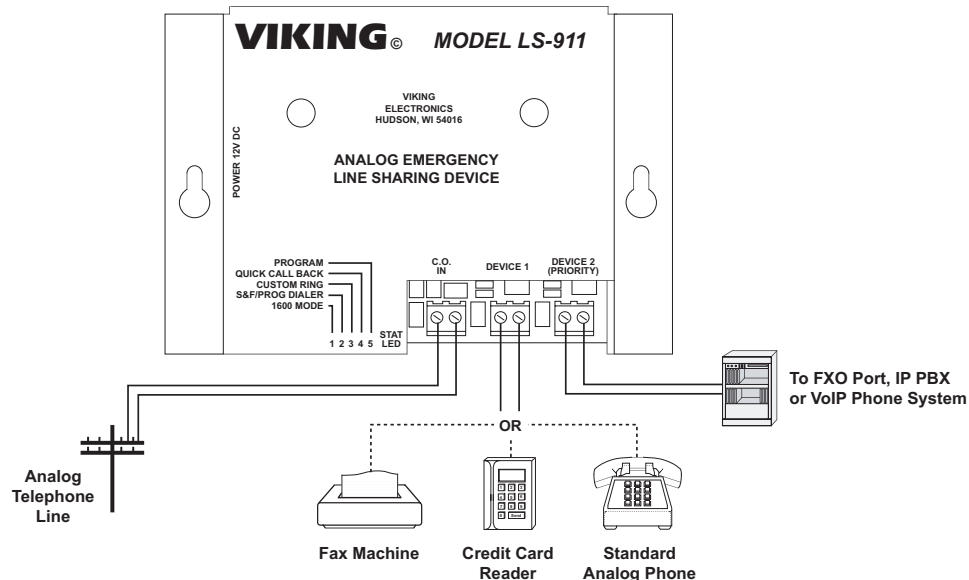
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, 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

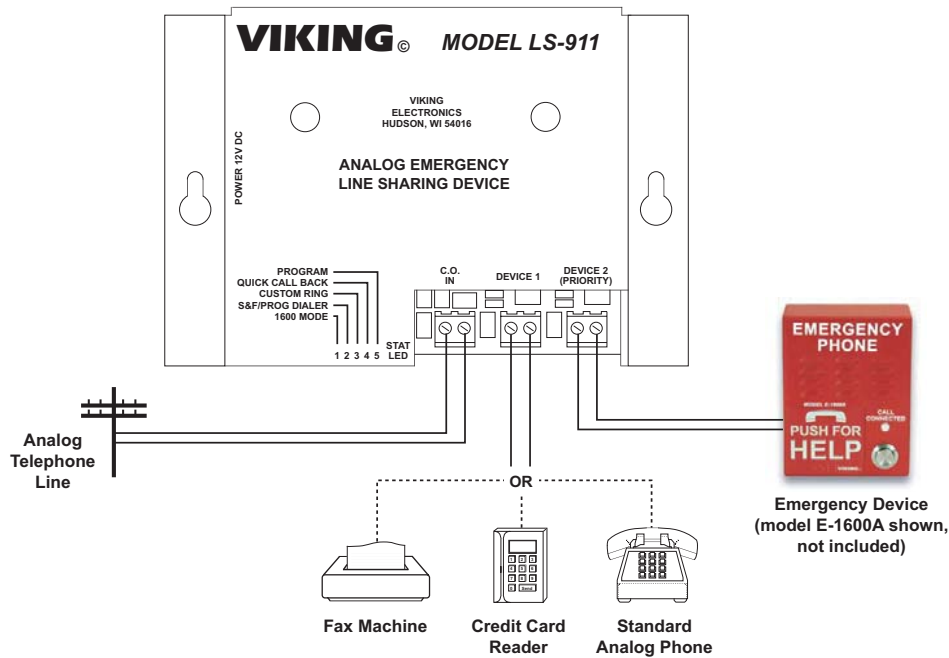


**IMPORTANT:** Electronic devices are susceptible to lightning and power station electrical surges from both the AC outlet and the telephone line. It is recommended that a surge protector be installed to protect against such surges. Contact Panamax at (800) 472-5555 or Electronic Specialists Inc. at (800) 225-4876.

## A. Analog 911 Service for Networked Phone System



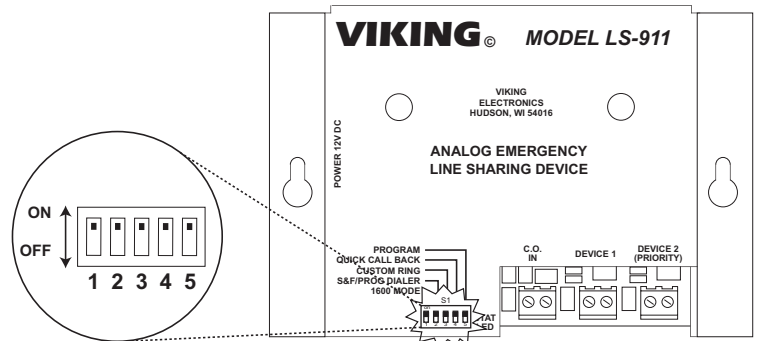
## B. Analog Emergency Phone Application



## A. DIP Switch Programming

**Note:** For a description of dipswitch function, see the Operation section. With the 1600 mode DIP switch OFF, the LS-911 looks to DIP switch 2 to determine how the dialer operates. DIP switch 1 takes precedence over DIP switch 2, however, so that if DIP switch 1 is on, the unit does not dial, but just produces ringback for 12 seconds until it gives the line to the 1600 so it can dial the number programmed in its memory. See **Operation** section E for a description.

Switch	ON/OFF	Description
1	OFF	1600 mode disabled
1	ON	1600 mode enabled
2	OFF	Store-and-forward dialer
2	ON	Re-routing dialer
3	OFF	Custom ring disabled
3	ON	Custom ring enabled
4	OFF	Quick callback disabled
4	ON	Quick callback enabled
5	OFF	Run mode
5	ON	Program mode



## B. Touch Tone Programming

<b>Step 1</b>	Move DIP switch 5 to the PROGRAM position (ON).
<b>Step 2</b>	Go off-hook on the DEVICE 2 (PRIORITY) port. A double beep will indicate that programming has been entered. <b>Note:</b> If the DEVICE 2 (PRIORITY) port is connected to an IP PBX or VoIP phone system and it is not easy to go off-hook on this port, you can unplug the LS-911 from the FXO port and plug an analog telephone into the DEVICE 2 (PRIORITY) port for the purpose of touch tone programming. When finished with programming, remove the analog telephone and plug the LS-911 back into the FXO port.
<b>Step 3</b>	Program as shown in section C.
<b>Step 4</b>	To exit touch tone programming, hang up the DEVICE 2 (PRIORITY) phone.
<b>Step 5</b>	Move DIP switch 5 to the RUN position (OFF).

## C. Quick Programming Features

Features	Enter Digits	- then -	Memory Location
Re-routing dialer number (1-32 digits*) .....	<b>1-32 digits</b>	<b>+</b>	<b>#00</b>
To add a * at any point in the dialing string .....	<b>**</b>		
To add a # at any point in the dialing string .....	<b>*#</b>		
Set dialing speed to normal (120ms on/off, factory setting) .....	<b>*1</b>		
Set dialing speed to fast (50ms on/off) .....	<b>*2</b>		
To add a four second pause at any point in the dialing string* .....	<b>*7</b>		
To add a one second pause at any point in the dialing string* .....	<b>*8</b>		
911 callback timer (1-9 minutes, 0=10 seconds, factory set to 2 minutes) .....	<b>1 digit</b>	<b>+</b>	<b>#10</b>
Clear re-routing dialer phone number from memory and set all programming features back to factory settings .....	<b>###</b>		

\* Special features such as a pause, a touch tone \* and a touch tone # count as a single digit.

# Operation

## A. LED Status

LED Status	Operation
Lit Up	Power is applied to the LS-911
Flash	The LS-911 is active
Flash After Ring	In the Quick Call Back Mode, the LED will continue to flash for 20 seconds
Flash After Dev2 (priority) Hangup	The LED will continue to flash until the 911 Call Back timer has elapsed

## B. Outbound Calls with the LS-911 Idle

When the **LS-911** is idle, the Status LED will be lit solid, and both ports are connected to an internally generated 35V DC talk battery. If a device attached to the DEVICE 1 port goes off-hook, the phone line will be switched to the DEVICE 1 port. If the device attached to the DEVICE 2 (PRIORITY) port goes off-hook, the phone line will be switched to the DEVICE 2 (PRIORITY) port.

## C. Outbound Calls with Recent Call Activity

If a device attached to the DEVICE 1 port goes off-hook and the DEVICE 2 (PRIORITY) port is not actually in use or being reserved by the 911 Call Back timer, the phone line will be switched to the DEVICE 1 port. Otherwise, the DEVICE 1 port gets a busy signal.

If a device attached to the DEVICE 2 (PRIORITY) port goes off-hook and the DEVICE 1 port was recently in use (within 12 seconds), the **LS-911** first produces dial tone and waits for the customer dialing sequence to be completed, and then starts producing ringback tones. In the meantime, in the background without the user hearing, it starts interrogating for dial tone every 2 seconds. When dial tone is detected, it seizes the phone line and dials either whatever the user just dialed (store and forward dialer) or the number that has been programmed into its memory (rerouting dialer). It then releases the line and switches the DEVICE 2 (PRIORITY) port to the CO line, allowing the call to proceed normally.

If the device on the DEVICE 2 (PRIORITY) port goes off-hook and the DEVICE 1 port is already in use, the DEVICE 1 port is disconnected and receives a busy signal. From this point on, the DEVICE 2 (PRIORITY) call is handled as described in the previous paragraph.

## D. 911 Call Timer

When the DEVICE 2 (PRIORITY) port goes back on-hook, the programmable 911 Call Timer is started. Until this timer elapses, the **LS-911** holds the DEVICE 2 (PRIORITY) port switched to the CO line, so that a return call from 911 personnel rings immediately at the DEVICE 2 (PRIORITY) port. During the time the 911 Call Timer is running, the device connected to the DEVICE 1 port will get a busy signal if it goes off-hook.

## E. 1600 Mode (DIP Switch 1)

Dipswitch 1 selects the 1600 mode, which is designed to allow an emergency phone to share a line with a non-emergency device like a fax machine. The emergency phone is programmed to pause for 12 seconds after it goes off-hook to allow for the maximum amount of time it might take to get dial tone on the line. During this pause, the **LS-911** produces ringback tones to reassure the caller that their call is proceeding. When the pause time is up, the **LS-911** switches the line to the DEVICE 2 (PRIORITY) port so the emergency phone can dial its programmed number.

## F. Store-and-Forward Dialer / Re-Routing Dialer (DIP Switch 2)

When configured as a store-and-forward dialer, the **LS-911** stores up touch tones as they are dialed by the user. When no more touch tones are received, the **LS-911** looks for dial tone and then dials back the same digits just dialed by the user.

As a rerouting dialer, the **LS-911** stores up touch tones just as the store-and-forward dialer does, but when no more touch tones are received, it dials the number programmed in its memory (see **Programming** section **C. Quick Programming Features**) rather than the touch tones dialed by the user.

## G. Custom Ring (DIP Switch 3)

Custom Ring Switching relies on “Distinctive” or “Custom Ring” services provided by your local telephone company as a way of routing incoming calls. Any call with a custom ring cadence will be routed to the DEVICE 2 (PRIORITY) port. Inbound calls with standard ring cadence will be routed to the DEVICE 1 port. The **LS-911** accepts both double and triple custom ring cadences as custom.

## H. Quick Call Back Mode (DIP Switch 4)

To use the Quick Call Back mode, call into the **LS-911** from another phone line, listen for a single ring back tone and hang up. Wait 6 seconds, then call back into the **LS-911** within 20 seconds. The **LS-911** will route the incoming call to the DEVICE 2 (PRIORITY) port instead of defaulting to the DEVICE 1 port.

## I. Touch Tone Programming Mode (DIP Switch 5)

To enter touch tone programming, move Dipswitch 5 to the ON position and go off-hook on the DEVICE 2 (PRIORITY) port. See **Programming** section **B. Touch Tone Programming**.



**Product Support Line...715.386.8666**

**Fax Back Line...715.386.4345**

Due to the dynamic nature of the product design, the information contained in this document is subject to change without notice. Viking Electronics, and its affiliates and/or subsidiaries assume no responsibility for errors and omissions contained in this information. Revisions of this document or new editions of it may be issued to incorporate such changes.