

## Extend Four Analog PABX Station Loop Lengths to 30,000 Feet

- Direct Replacement for Proctor model 46224 Long Loop Adapter

The Viking model **LLA-4** provides four long line and off premise extension (OPX) capabilities for PABX and KSU analog stations, ISDN terminal adapters, channel banks, etc. The long loop adapter converts any four low talk battery voltage or weak ringing analog lines into standard 48V lines with powerful 20HZ sine wave ring signals.

The **LLA-4** is compatible with pulse dialing, touch tone dialing, hook switch flash features, CPC signaling, and Caller ID features. A ground screw terminal allows for improved surge protection and as a earth ground reference for the regenerated lines.



The long loop adapter requires no programming, and can be used as a direct replacement for the discontinued Proctor model 46224 long loop adapter.

### Features

- Convert four analog KSU/PABX stations to standard voltage OPX
- Provides 48 VDC talk battery
- Provides 20 HZ, 10 REN sine wave ringing
- **Passes Caller ID information**
- Passes hook switch flash
- DTMF and pulse dialing compatible
- **Passes CPC signals**
- Electrically isolates PABX station from extended loop
- **Provides additional lightning and surge protection**
- **Selectable ring protocols**

[www.VikingElectronics.com](http://www.VikingElectronics.com)  
Information: 715-386-8861

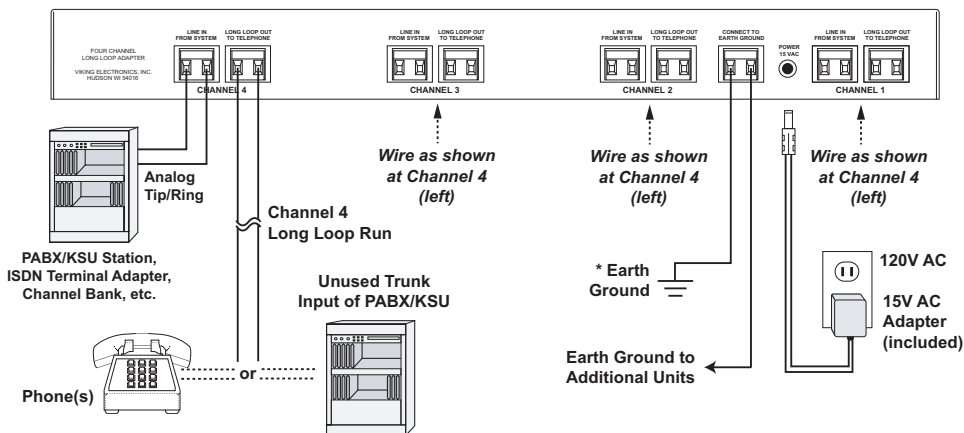
### Applications

- Turn a standard station into an on-premise or off-premise extension (OPX)
- Give any low voltage line or station from an ISDN terminal, KSU, PABX, etc. the talk battery and ringing power of a standard C.O. line
- Convert a polarity reversal DC ring signaling line to a typical 20Hz AC ringing line

### Specifications

**Power:** 120V AC/15V AC 2.2A, UL listed adapter provided  
**Dimensions:** 1.75" x 19 x 5.0" (44mm x 483mm x 127mm)  
**Shipping Weight:** 7 lbs (3.18 kg)  
**Environmental:** 32°F to 90°F (0°C to 32°C) with 5% to 95% noncondensing humidity  
**Talk Battery:** 48 VDC (minimum)  
**Ring Generation:** Sine wave 105 VAC @ 20 HZ (nominal), capable of ringing 10 REN load  
**Dialing:** Pulse (10 pps) and DTMF compatible  
**Hook Switch Flash Timing:** From 200ms to 500ms increased to 500ms  
**CPC Timing:** Duplicates original CPC timing  
**Electrical Isolation:** 1500 VDC  
**Facility Interface Code:** OL13C  
**Audio Loss Through Unit:** 1.3 dB  
**Connections:** (18) removable cage clamp screw terminals

## Installation



\* **Note:** To increase surge protection, and to give the long loop run an earth ground reference, fasten a wire from the screw terminal to Earth Ground (grounding rod, water pipe, etc.).



**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.

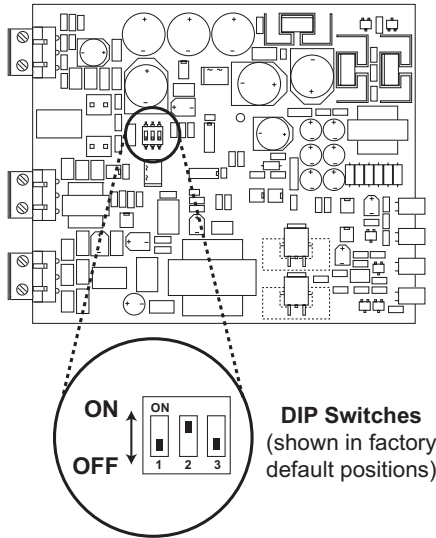
## Programming

There are three DIP switches on each of the four **LLA-4** printed circuit board to allow for different ringing protocols for each channel.

Switch 1	Description	
OFF	Detects typical 20Hz AC ringing (factory default)	
ON	Detects polarity reversal DC ring signaling.  <b>Note:</b> This mode is polarity sensitive. If connected in reverse polarity, the <b>LLA-4</b> will ring continuously. See the diagram at the right for proper polarity.	

Switch 2	Switch 3	Description
OFF	OFF	Ring OFF - Incoming ringing is not passed through the channel.
OFF	ON	The outgoing ring signal will "follow" the cadence of the incoming ring signal.
ON	OFF	A double ring signal will be "filled in" so the outgoing ring will look like one longer ring signal (factory default).
ON	ON	The outgoing ring signal will be "forced" to a full 2 seconds, no matter what the incoming ring signal is. <b>Note:</b> Not recommended if Caller ID is being used.

## Internal View of One Channel of the LLA-4



## Operation

When the **LLA-4** channel is sitting in the idle state, it provides -48VDC talk battery out the long loop screw terminals for the OPX phones (or trunk input).

When the OPX phone goes off hook, the system line is seized, talk path is opened, and system dial tone is passed through the **LLA-4** channel to the OPX phone. Touch Tone or 10pps Pulse digits can now be dialed. If the system provides a CPC signal, it will be passed through the **LLA-4** channel to the OPX phone. When the OPX phone goes back on-hook, the **LLA-4** channel will release the system line.

When ringing is detected from the system, the **LLA-4** channel's internal sine wave ring generator produces a 20Hz 105V AC ring signal to the OPX phone. Re-ring cadence is selectable (see programming). If Caller ID data is received after the first ring, it will be amplified and passed on to the OPX phone. When the OPX phone answers, the **LLA-4** channel will answer the system line, and provide talk path through the unit. If the system provides a CPC signal, it will be passed through the **LLA-4** to the OPX phone. When the OPX phone goes back on-hook, the **LLA-4** channel will release the system line.

The front panel LEDs operate as follows:

**PWR LED** - Lights steady when the unit is powered up, and winks off to show incoming ring signal detection.

**RING LED** - Lights to show re-ring cadence going out of the long loop to the phone.

**IN USE LED** - Lights when the phone is off-hook to show the line is in use.

**CPC LED** - Lights to show a CPC signal is detected and being re-generated out the long loop to the phone.

**Note:** If both the **IN USE** and **CPC LEDs** light, this indicates there is no phone line detected on the **LINE IN FROM SYSTEM** terminals following an off-hook on the **LONG LOOP OUT TO TELEPHONE** terminals.

# Warranty

## IF YOU HAVE A PROBLEM WITH A VIKING PRODUCT, CONTACT VIKING TECHNICAL SUPPORT AT: 715-386-8666

Our Technical Support Department is available for assistance Monday to Friday 8:00am - 5:00pm central time. Before you call, please:

1. Know the model number, the serial number, and what software version you have (see serial label).
2. Have the Product Manual 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. The original product boxes are not designed for shipping - an overpack box is required to prevent damage 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 RA 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 (RA) number will be issued. This number is valid for fourteen (14) calendar days from the date of issue.
3. After obtaining the RA number, return the approved equipment to your distributor. Please reference the RA number on the paperwork being shipped back with the unit(s), and also the outside of the shipping box. The original product boxes are not designed for shipping - an overpack box is required to prevent damage in transit. Once your distributor receives the package, they will replace the product over the counter at no charge. The distributor will then return the product to Viking using the same RA number.
4. The distributor will NOT exchange this product without first obtaining the RA 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.

### TWO YEAR 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 two years from the date of purchase from any authorized Viking distributor. 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 (RA) 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. This warranty does not cover stainless steel surfaces that have not been properly maintained.

**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 LLA-4 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 LLA-4 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 LLA-4, for repair or warranty information, please contact:

**Viking Electronics, Inc., 1531 Industrial Street, Hudson, WI 54016 Phone: (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.

**Product Support: (715) 386-8666**

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.