



TECHNICAL Practice

TELECOM SOLUTIONS FOR THE 21ST CENTURY

LLA-4
<i>Four Line Long Loop Adapter (Off Premise Extensions)</i>
March 30, 2005

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 line into a standard 48V line with powerful 20HZ sine wave ring signal.

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

Phone... 715.386.8861

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**

info@vikingelectronics.com

<http://www.vikingelectronics.com>

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: 44mm x 483mm x 127mm (1.75" x 19.0" x 5.0")
Shipping Weight: 3.18 kg (7 lbs)
Environmental: 0°C to 32°C (32°F to 90°F) with 5% to 95% non-condensing 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: (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 individual-ly 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.**

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.

Viking's sole responsibility shall be to repair or replace (at Viking's option) the material within the terms stated above. VIKING SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OF ANY KIND INCLUDING INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING DIRECTLY OR INDIRECTLY FROM ANY BREACH OF ANY WARRANTY EXPRESSED OR IMPLIED, OR FOR ANY OTHER FAILURE OF THIS PRODUCT. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation may not apply to you.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY EXCLUDED BEYOND THE ONE YEAR DURATION OF THIS WARRANTY. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

FCC REQUIREMENTS

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the bottom 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.

This unit is hard wired to the telco service using screw terminals as shown in the installation section.

The FIC for this equipment is OL13C.

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 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, 2002, the REN for this product is part of the product identifier that has the format: US: AAAEQ##TXXXX. The digits represented by the ## 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.

If this equipment 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 necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact Viking Electronics, 715-386-8666, www.vikingelectronics.com. 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.

This equipment is not user repairable.

Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

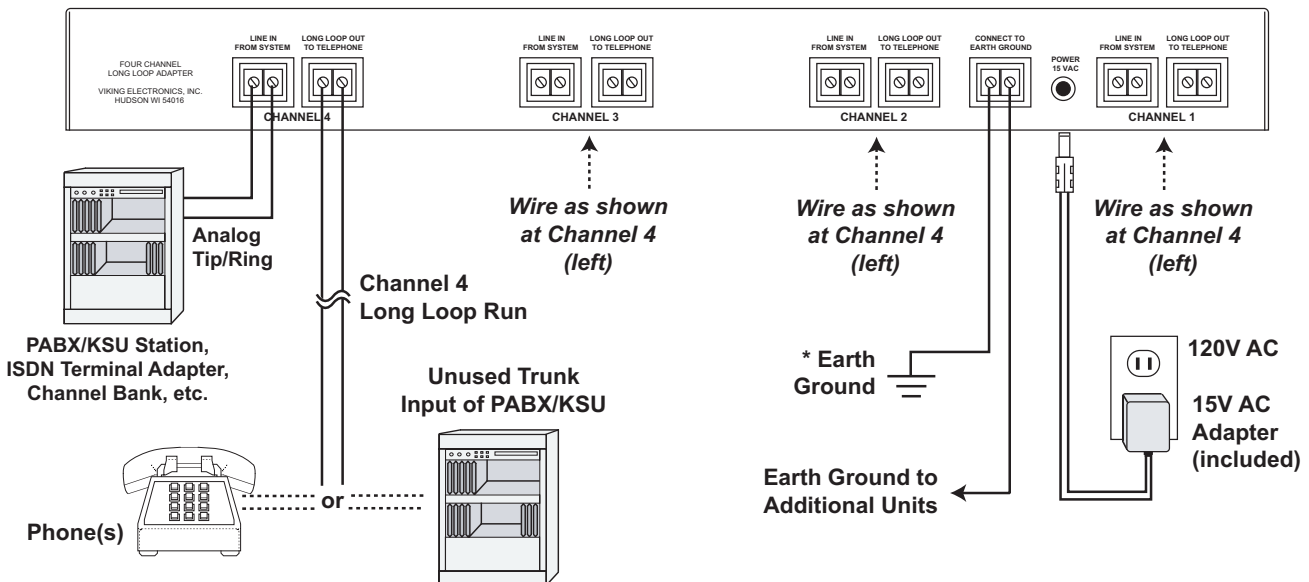
If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this equipment does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or qualified installer.

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

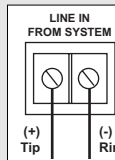


*** Note:** To increase surge protection, and to give the long loop runs an earth ground reference, fasten a wire from the screw terminal to Earth Ground (grounding rod, water pipe, etc.).

Programming

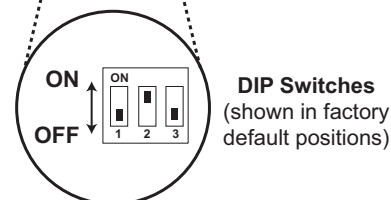
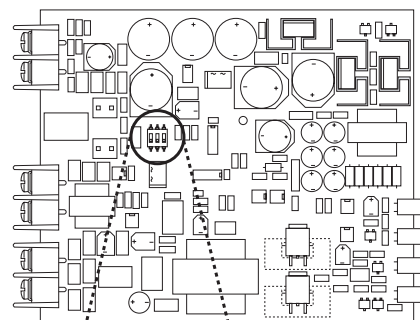
There are three DIP switches on each of the four **LLA-4** printed circuit boards to allow for different ringing protocols for each channel.

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



DIP Switch 2	DIP Switch 3	Description
OFF	OFF	Ring OFF - Incoming ringing is not passed through the unit.
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. Note: Not recommended if Caller ID is being used.

Internal View of the LLA-4



DIP Switches
(shown in factory default positions)



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 in 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 in hook, the **LLA-4** channel will release the system line.

The front panel LEDs operate as follows for each of the four channels:

- 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.

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.