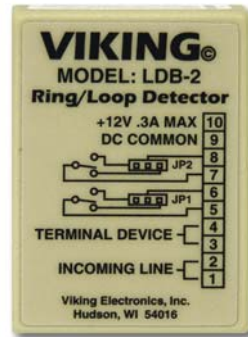


## *Provide a Contact Closure on Ringing or Off-Hook*

The **LDB-2** Ring/Loop Detector monitors an analog phone line for ringing or an in-use condition. A built-in relay can be activated when either of these conditions are detected. This is ideal for monitoring line status or for providing a visual indication of such.

When monitoring for ring, an internal pot can be adjusted to allow the relay closure to stay on steady, or follow standard ring cadence.

The **LDB-2** comes complete with a 12 VDC power adapter, and can also provide 12V DC power through its auxiliary 12V DC output terminals.



### Features

- Detects ring voltage and loop connect
- Screw terminal connections
- Wall mountable with foam tape (included) or screws (not included)
- Auxiliary 12V DC output
- Adjustable time-out for relay closure
- Two sets of relay contacts provided
- Selectable NO (normally open) or NC (normally closed) relay contacts
- Limited two year warranty

### Applications

- Control a strobe light for ring indication
- Provide relay closures on ring and off-hook
- Trigger a security camera
- Trigger a tape recorder
- Phone "In Use" indicator

### Specifications

**Power:** 120V AC to 12V DC adapter provided  
**Dimensions:** 2.9" x 2.1" x 1.0" (74mm x 53mm x 25mm)  
**Shipping Weight:** 0.86 lbs (0.4 kg)  
**Environmental:** -15° F to 130° F (-26° C to 54° C) with 5% to 95% non-condensing humidity  
**Contact Rating:** .5A @ 125V AC/1A @ 30V DC  
**Maximum Current Draw Auxiliary 12V DC Output:** 350mA  
**Minimum Loop Current:** 15 mA  
**Minimum Ring Voltage:** 40Vrms  
**Ringer Equivalence:** 0.5 A REN  
**Connections:** 10 pin screw terminal block

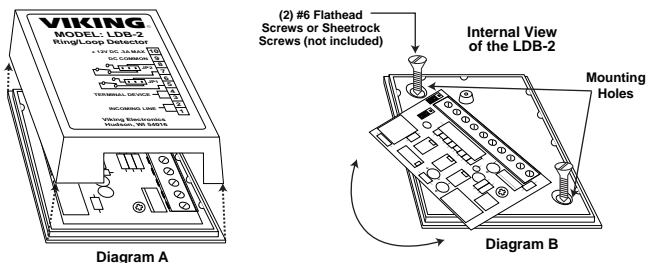
# Installation

## A. Mounting

The LDB-2 is designed to be wall mounted using the included foam tape or with screws as follows:

<b>Step 1.</b>	Unsnap the plastic cover (see <b>Diagram A</b> ) and remove the top screw holding the circuit board.
<b>Step 2.</b>	Loosen the bottom screw and rotate the circuit board to the left, exposing the two mounting holes in the base (see <b>Diagram B</b> ).
<b>Step 3.</b>	EScrew the base to the wall, etc. using (2) #6 flathead or sheetrock screws.

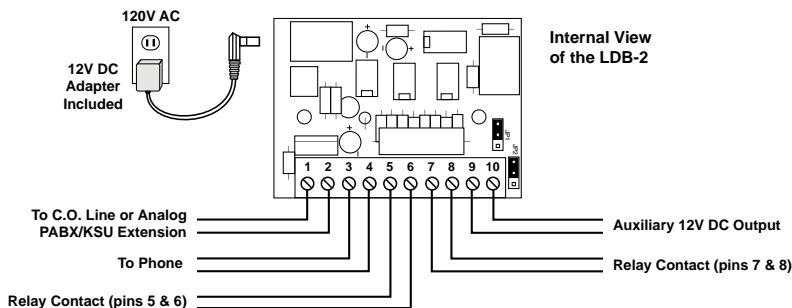
**Note:** Make sure the screw heads are fully driven into the base to avoid shorting the circuit board leads.



## B. Wiring



**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.



## C. Ring Detection Only

Connect the incoming line to terminal block positions 3 and 4. No connection to terminal block positions 1 and 2 is required. In this manner, the LDB-2 can monitor for ringing any place along the ringing line.

## D. Ring and Loop Detection

If the application requires loop as well as ring detection, the LDB-2 must be placed between the phone line and the terminal device to be monitored. Connect the incoming line to terminal block positions 1 and 2 and connect the terminal device to positions 3 and 4, as shown in the diagram above.

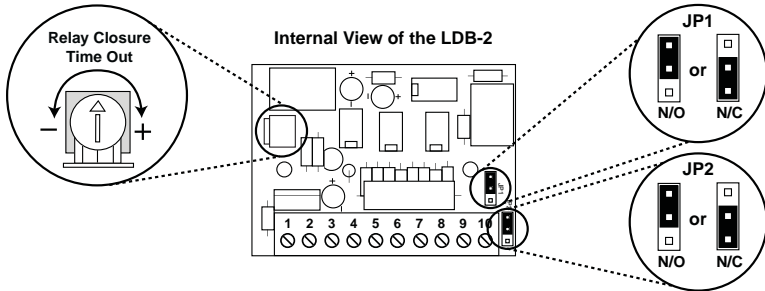
## E. Relay Contacts

Relay contacts are available at terminal block positions 5,6 and 7,8. If the contacts are driving an inductive load, be sure to place a suppression device at the load to snub any high voltage spikes.

## F. Auxiliary 12V DC Output

12V DC is available for low current applications. The positive side is available at terminal position 10, and the negative side is at position 9. Once all the line and load connections have been made, plug in the 120 V AC wall adapter, and replace the cover.

## Programming



### A. Adjustable Relay Closure Time Out

The time out POT (see diagram above) can be adjusted from 2 to 6 seconds. Turn the time out POT counter clockwise to decrease the closure time. Turn it clockwise to increase the closure time. When monitoring for ring, turning the time out POT fully counter clockwise will allow the relay closure to follow standard ring cadence, turning it fully clockwise will allow the relay closure to be maintained during the entire off time of the ring signal. When monitoring for loop, the relay closure will be maintained while off-hook and will time out following an on-hook.

### B. Relay Contact Selections

The relay contacts located at terminal positions 5,6 and 7,8 can be set for normally open (N/O   ) or normally closed (  ) by repositioning JP1 and JP2 respectively.

## Operation

### A. Ring Detection Only

With the **LDB-2** in the ring detection mode, incoming ring will activate two relay contacts. The contacts can be independently configured to be either normally open or normally closed. Once ringing is detected it will remain activated for an adjustable time of 2-6 seconds. During the activation time, if ringing stops, the relay will remain activated for the balance of the set time.

### B. Ring and Loop Detection

With the **LDB-2** in the ring and loop detection mode, incoming ring will activate two relay contacts. The contacts can be independently configured to be either normally open or normally closed. Once ringing is detected it will remain activated for an adjustable time of 2-6 seconds. During the activation time, if ringing stops, the relay will remain activated for the balance of the set time. Additionally, the **LDB-2** will detect an off-hook condition. If the device goes off-hook at any time, either with or without ringing, the relay will activate and remain activated for the duration of the off-hook condition.

# Warranty

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

Our Technical Support is available for assistance Monday to Friday 8:00am - 5:00pm 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 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. 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 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.

## 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 (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. 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: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 LDB-2 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 LDB-2 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 LDB-2, for repair or warranty information, 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.

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.