DESIGNED, MANUFACTURED AND SUPPORTED IN THE USA

VIKING
SECURITY & COMMUNICATION

PRODUCT MANUAL

ZPI-4
Four Zone Paging Interface
July 8, 2020

Four Zone Paging Interface

The **ZPI-4** is a four-zone touch tone controlled paging system capable of switching a line level signal (600 ohms) to amplifiers, an amplified signal to 70V speakers, or an amplified signal (200 watts maximum) to 8 ohm speakers.

The **ZPI-4** features balanced audio circuitry throughout for low noise and compatibility with balanced paging system inputs and outputs.There are separate level controls for paging and background music, and background music can be disabled on a per-zone basis. Also provided is a night bell with adjustable volume activated by a dry contact closure or a ringing analog PABX/KSU station.

The **ZPI-4** is compatible with ringing analog PABX/KSU station ports (disconnects on silence, CPC, busy, Touch Tone "#" or time-out) as well as unused trunk inputs, and will interface directly with standard paging ports.

Features

- Touch Tone control of four zones, expandable to 8 zones
- Switches line level signal to amplifiers or amplified signal to speakers (amplifier(s) not included)
- Balanced audio circuitry for low noise
- Night bell warble with adjustable level from contact closure or ringing analog station
- Input provided for background music
- Separate paging and background music level adjustments
- Background music automatically mutes in paged zone(s) in all but single amplifier mode
- All-call and five group call patterns, selected by Touch Tones
- Selectable page alert tone with adjustable level
- Interfaces with ringing analog station ports, paging ports and unused phone system trunk ports
- Disconnects on silence, CPC, busy, touch tone "#" or time-out
- Screw terminals for all input/output connections

Applications

- Multiple zone paging for phone systems with paging ports, unused analog station ports or unused trunk inputs
- Multiple department manufacturing business
- Multi-level warehouse
- Multiple building office complex

www.vikingelectronics.com
Information: (715) 386-8861

Specifications

Power: 120V AC/13.8V AC, 1.25A adapter provided
Dimensions: 211mm x 160mm x 46mm (8.30" x 6.30" x 1.80")
Shipping Weight: 1.5 kg (3.2 lbs)
Environmental: 0° C to 32° C (32° F to 90° F) with 5% to 95% non-condensing humidity
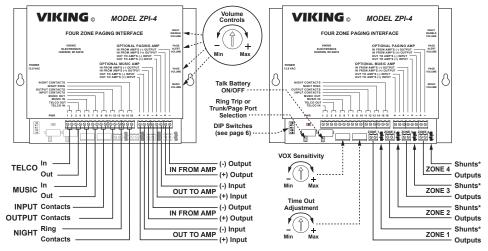**Relay Contacts:** 5 Amps@30V DC/250V AC each (350W@70V, 200W@8Ohm)
REN: 0.5 A
Artificial Talk Battery Voltage: 24V DC
Connections: (32) cage clamp screw terminals

Features Overview

Note: Remove these shunts to eliminate background music for each zone individually (except Single Amplifier Mode).

Installation and Programming

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.
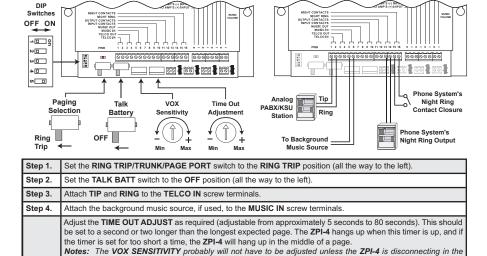
A. System Interface

1. Ring Trip Paging

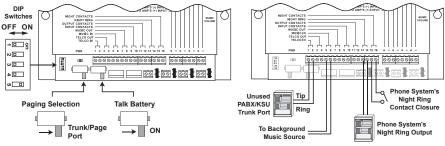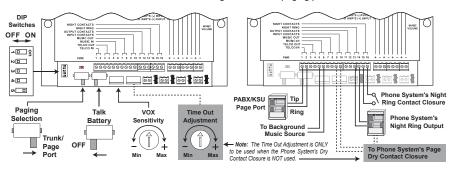| Step 1.	Set the **RING TRIP/TRUNK/PAGE PORT** switch to the **RING TRIP** position (all the way to the left).
Step 2.	Set the **TALK BATT** switch to the **OFF** position (all the way to the left).
Step 3.	Attach **TIP** and **RING** to the **TELCO IN** screw terminals.
Step 4.	Attach the background music source, if used, to the **MUSIC IN** screw terminals.
Step 5.	Adjust the **TIME OUT ADJUST** as required (adjustable from approximately 5 seconds to 80 seconds). This should be set to a second or two longer than the longest expected page. The **ZPI-4** hangs up when this timer is up, and if the timer is set for too short a time, the **ZPI-4** will hang up in the middle of a page. *Notes: The VOX SENSITIVITY probably will not have to be adjusted unless the ZPI-4 is disconnecting in the middle of a page, before the time out or there is a period of silence during a page longer than three seconds and the ZPI-4 does not auto-disconnect. To adjust the VOX SENSITIVITY, turn the POT counter clockwise to decrease the VOX sensitivity and clockwise to increase it. The VOX SENSITIVITY should be increased if the ZPI-4 is auto-disconnecting in the middle of pages, and decreased if it is not auto-disconnecting on busy signals or periods of silence more than three seconds.*
Step 6.	If the phone system provides a contact closure for night ring, connect a pair of wires from this closure to the **NIGHT CONTACTS** screw terminals. If the phone system provides ring signal for night ring, hook up a pair of wires from the phone system night ring output to the **NIGHT RING** screw terminals.
Step 7.	Dial tone and page alert tone may be enabled as shown in DIP switch programming.

2. Paging from an Unused Phone System Trunk Port

*Note: In this mode, the **ZPI-4**'s time out and VOX sensitivity are disabled. The **ZPI-4** will release the trunk as soon as the paging party hangs up.*

Step 1.	Set the **RING TRIP/TRUNK/PAGE PORT** switch to the **TRUNK/PAGE PORT** position (all the way to the right).
Step 2.	Set the **TALK BATT** switch to the **ON** position (all the way to the right).
Step 3.	Attach the unused trunk port to the **TELCO IN** screw terminals.
Step 4.	Attach the background music source, if required, to the **MUSIC IN** screw terminals.
Step 5.	If the phone system provides a contact closure for night ring, connect a pair of wires from this closure to the **NIGHT CONTACTS** screw terminals. If the phone system provides ring signal for night ring, hook up a pair of wires from the phone system night ring output to the **NIGHT RING** screw terminals.
Step 6.	Dial tone and Page alert tone may be enabled as shown in **DIP Switch Programming**.

3. Paging from a Phone System's 600 Ohm Paging Port

Note: You must be able to send Touch Tones through the PABX's paging port for this mode to work.

Note: The Time Out Adjustment is ONLY to be used when the Phone System's Dry Contact Closure is NOT used.

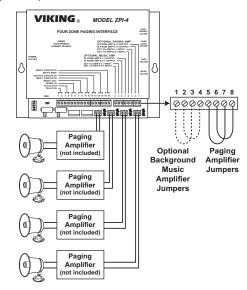| Step 1.	Set the **RING TRIP/TRUNK/PAGE PORT** switch to the **TRUNK/PAGE PORT** position (all the way to the right).
Step 2.	Set the **TALK BATT** switch to the **OFF** position (all the way to the left).
Step 3.	Attach a pair of wires from the paging port to the **TELCO IN** screw terminals.
Step 4.	Attach the background music source, if required, to the **MUSIC IN** screw terminals.
Step 5.	If the phone system provides a page dry contact closure for paging, connect a pair of wires from this closure to the **INPUT CONTACTS** screw terminals of the ZPI-4. In this application, the **ZPI-4**'s time out and VOX sensitivity are disabled. The **ZPI-4** will release the page port as soon as its **INPUT CONTACTS** open. If the phone system does not provide a page dry contact closure, adjust the **TIME OUT ADJUST** as required (adjustable from approximately 5 seconds to 80 seconds). This should be set to a second or two longer than the longest expected page. The **ZPI-4** hangs up when this time is reached, and if the timer is set too short, the **ZPI-4** will hang up in the middle of a page. *Notes: The **VOX SENSITIVITY** probably will not have to be adjusted unless the **ZPI-4** is disconnecting in the middle of a page, before the time out or there is a period of silence during a page longer than three seconds and the **ZPI-4** does not auto-disconnect. To adjust the **VOX SENSITIVITY**, turn the POT counter clockwise to decrease the VOX sensitivity and clockwise to increase it. The **VOX SENSITIVITY** should be increased if the **ZPI-4** is auto-disconnecting in the middle of pages, and decreased if it is not auto-disconnecting on periods of silence longer than three seconds.*
Step 6.	If the phone system provides a contact closure for night ring, connect a pair of wires from this closure to the **NIGHT CONTACTS** screw terminals. If the phone system provides ring signal for night ring, connect a pair of wires from the phone system night ring output to the **NIGHT RING** screw terminals.
Step 7.	Put DIP switch **4** to **OFF** to disable the ZPI-4's dial tone.

B. Amplifier Configuration

1. Four Amplifier Mode

In this mode, each paging zone has its own amplifier, and the function of the **ZPI-4** is to switch the unamplified paging or background music signal to the appropriate amplifier.

Advantages: There is no amplifier power limitation, zones can be set to different volumes, background music is selectable per zone and the non-paged zones will continue to get music during a page.

To set the **ZPI-4** up in the four amplifier mode:

Step 1.	Attach the ZONE 1 screw terminals to the input of the amplifier for Zone 1.
Step 2.	If background music is to be enabled on this zone, ensure that the ZONE 1 music shunts are in place, covering both pins. If not, remove the shunts.
Step 3.	Repeat steps 1 and 2 for each of the remaining three zones.
Step 4.	Install the included jumpers across the Optional Paging Amp screw terminals.
Step 5.	If a background music source is being used, install the Optional Background Music Amplifier jumpers as shown.
Step 6.	Set DIP switch 1 to OFF.
Step 7.	Connect Paging Amps between zone outputs and speakers.

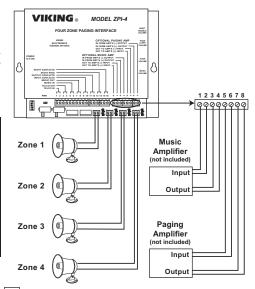### 2. Two Amplifier Mode (Paging and Music)

In the two amplifier mode, one amp serves as the paging amplifier and the other as the background music amplifier. The paging or music signal is sent to the external amplifier, returned and the amplified signal is switched by the **ZPI-4** to the correct zone or zones.

Advantages: Up to a 350 watt amplifier may be used when driving 70V speakers, only (2) amplifiers (or one stereo amp) are required for 4 zones, background music is selectable per zone, and the non-paged zones will continue to to get music during a page.

Limitations: The paging amp needs to be limited to 200 watts and the music amp needs to be limited to 70 watts when switching 8 ohm speaker loads, each speaker zone is limited to 8 ohms minimum impedance and the amp must have the ability to drive the speakers of all zones. (Example: 4 zones at 8 ohms per zone equals a 2 ohm load during an all call.)

To set up the **ZPI-4** in the two amplifier mode:

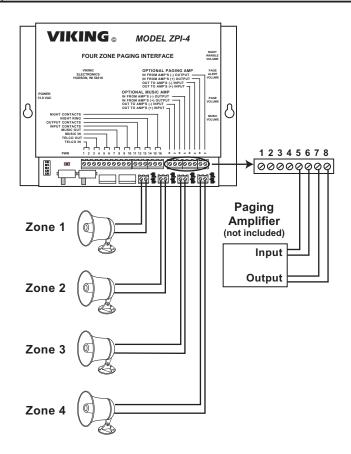|	
Step 1.	Attach the ZONE 1 screw terminals to the speaker(s) for Zone 1.
Step 2.	If background music is to be enabled on this zone, ensure that the ZONE 1 music shunts are in place, covering both pins. If background music is not desired, remove the shunts.
Step 3.	Repeat steps 1 and 2 for each of the remaining three zones.
Step 4.	Attach the paging amplifier and the music amplifier as shown in the diagram.
Step 5.	Set DIP switch 1 to OFF.

3. Single Amplifier Mode

In this mode, one external amplifier handles both paging and background music. An internal relay capable of switching between paging signal and music signal sends input to this amp, the amplified signal is returned and the **ZPI-4** sends it to the correct zone(s).

Advantages: Up to a 350 watt amplifier may be used when driving 70V speakers, only one amplifier is required.

Limitations: The amplifier needs to be limited to 200 watts, each speaker zone is limited to an 8 ohm minimum impedance, the amplifier must be able to drive the speakers of all zones (Example: 4 zones at 8 ohms per zone equals a 2 ohm load during an all call); if background music is used, all zones will receive background music and it will be muted in all zones during a page.
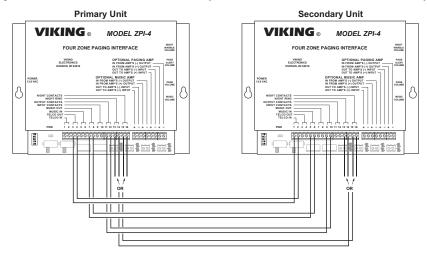
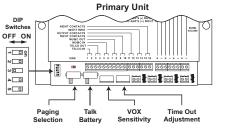To set up the **ZPI-4** in the single amplifier mode:

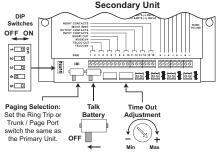|	
Step 1.	Attach ZONE 1 screw terminals to the speaker(s) for Zone 1.
Step 2.	Repeat step 2 for each of the remaining three zones.
Step 3.	Attach the paging amp as shown in the diagram.
Step 4.	Set DIP switch 1 to the ON position. This tells the **ZPI-4** that it is operating in the single amplifier mode.

C. Multiple Units

While the **ZPI-4** is a four zone paging unit, it may be cascaded with an additional **ZPI-4** for a total of up to eight paging zones. The first **ZPI-4** is considered the "Primary" unit, and the other unit is considered a "Secondary".

Primary Unit   **Secondary Unit**

On the Primary Unit: Set the Paging Selection switch, Talk Battery switch, VOX Sensitivity and Time Out Adjustment as shown in Installation section **A. System Interface** as needed for your application.

Step 1.	Install the Primary unit as explained in section **A. System Interface**.
Step 2.	Select an amplifier mode, shown in **Installation** section **B. Amplifier Configuration**, sections **1-3**.
Step 3.	Set DIP switch **2** to **ON** for both the Primary and Secondary. This sets both **ZPI-4**s for multiple units.
Step 4.	On the Secondary unit, set DIP switch **3** to **ON**. On the Primary unit, leave **OFF**.
Step 5.	If dial tone is desired, set DIP switch **4** on the Primary unit to **ON**. This will enable dial tone for both units. On the Secondary unit, DIP switch **4** should remain **OFF**.
Step 6.	To enable page alert tone, set DIP switch 5 on the primary unit to **ON**. To disable, set DIP switch 5 on the primary unit to **OFF**. On the secondary unit, DIP switch 5 should be set to **OFF**. *Note: The primary units page alert volume will control the secondary unit's zones.*
Step 7.	On the Secondary unit, set the **RING TRIP/TRUNK/PAGE PORT** switch to the same as the Primary.
Step 8.	On the Secondary unit, set the **TALK BATTERY** switch to **OFF**.
Step 9.	Connect a pair of wires from the **TELCO OUT** of the Primary to the **TELCO IN** of the Secondary.
Step 10.	Connect a pair of wires from the **MUSIC OUT** of the Primary to the **MUSIC IN** of the Secondary.
Step 11.	Connect a pair of wires from the **OUTPUT CONTACTS** of the Primary to the **INPUT CONTACTS** of the Secondary.
Step 12.	If night warble is desired through the Secondary unit's zones, connect a pair of wires from the **NIGHT RING** or **NIGHT CONTACTS** (depending on which application you are using) of the Primary to the **NIGHT RING** or **NIGHT CONTACTS** of the Secondary. *Note: In the Trunk/Page Port mode, the Secondary unit's night warble volume should be set to minimum (fully counterclockwise). The Primary units night warble volume will control the Secondary unit's zones. In Ring Trip mode, the Primary and Secondary unit's night warble volumes will work independently.*
Step 13.	Set the **TIME OUT ADJUSTMENT** on the Secondary to the maximum time (clockwise).
Step 14.	Plug the power supply adapter into the power jack of the Secondary, and the other end into a wall outlet.

D. Dip Switch Programming

Note: *DIP switches should be set prior to powering up the* ***ZPI-4****. If power has already been applied, momentarily power down the unit so the switches will take effect.*

DIP Switches

OFF ON

* Factory defaults

Switch	Position	Description
1	ON	Single amplifier
1	OFF	Two or more amplifiers *
2	ON	Two units
2	OFF	Single unit *
3	ON	Secondary unit
3	OFF	Primary unit *
4	ON	Dial tone enabled
4	OFF	Dial tone disabled *
5	ON	Page alert tone enabled *
5	OFF	Page alert tone disabled

Operation

A. Initiating a Page

1. Ring Trip Paging

To access the **ZPI-4** for ring trip paging, call the PABX/KSU station number the **ZPI-4** is connected to. The **ZPI-4** will answer on the first ring, produce dial tone (if enabled) and await Touch Tone entry for 10 seconds. If there is a Touch Tone entry, the **ZPI-4** activates the selected zone(s). If there is no Touch Tone entry in 10 seconds, the **ZPI-4** disconnects.

2. Paging from an Unused Phone System Trunk Input

To make a page with the **ZPI-4** installed on a spare trunk port, simply access the trunk connected to the **ZPI-4**. The **ZPI-4** will produce dial tone (if enabled), wait for Touch Tone entry, and activate the selected zone(s) when it sees a Touch Tone entry.

3. Paging from a Phone System's 600 Ohm Paging Port

To page in this situation, access the phone system's paging port. The **ZPI-4** will detect that a page is being initiated and wait for a Touch Tone entry. When it sees an entry, it activates the selected zone(s).

B. Selecting Zones

1. Selecting Zones with One ZPI-4

Enter a single Touch Tone to select the zone or zones to be paged. After this entry has been made, the **ZPI-4** activates the selected zone(s). See table to the right.

Touch Tone	Zone(s)
1	1
2	2
3	3
4	4
5	1+2
6	2+3
7	3+4
8	1+2+3
9	2+3+4
0	1+2+3+4 (ALL)

2. Selecting Zones with Multiple ZPI-4's

To page all zones, enter a Touch Tone "**0**". The **ZPI-4** will activate all zones to which it is connected. Otherwise, enter two Touch Tones, with the first selecting which **ZPI-4** is being addressed, and the second selecting which zones connected to that **ZPI-4** are to be paged. If a Touch Tone "**1**" is entered as the first digit, the Primary is selected. If a Touch Tone "**2**" is entered as the first digit, the Secondary is selected.

Touch Tone	Unit	Zone(s)
0	ALL	ALL

Touch Tone	Primary Unit	Zone(s)
11	1	1
12	1	2
13	1	3
14	1	4
15	1	1+2
16	1	2+3
17	1	3+4
18	1	1+2+3
19	1	2+3+4
10	1	1+2+3+4 (ALL)

Touch Tone	Secondary Unit	Zone(s)
21	2	1
22	2	2
23	2	3
24	2	4
25	2	1+2
26	2	2+3
27	2	3+4
28	2	1+2+3
29	2	2+3+4
20	2	1+2+3+4 (ALL)

C. Paging

After there has been a Touch Tone entry, the **ZPI-4** activates the selected zones and produces a paging alert tone (if enabled). At this point the page can be spoken into the handset of the phone. In a **RING TRIP** or **PAGING PORT WITHOUT CONTACT CLOSURE** application, it is necessary to keep in mind that there is a time limit on the page, set by the **TIME OUT ADJUSTMENT**. Also, in these two applications, the VOX voice detect circuit will disconnect the page if three seconds of silence elapse during the page. When finished paging, either dial a touch tone "#" or simply hang up.

D. Night / Loud Ringing

If a night ring contact closure is connected to **NIGHT CONTACTS**, or a night ring line is connected to the **NIGHT RING** terminals, the unit will produce a warble tone in all zones when a ring signal is detected. The priority of unit operation is as follows: 1) Loud Ring, 2) Voice Paging, 3) Background Music.

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.

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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.

Product Support: (715) 386-8666

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