TECHNICAL
Practice
TELECOM SOLUTIONS FOR THE 21ST CENTURY

RAD-AMP
Amplified Remote Access Device
March 11, 2010

Extend Your Phone System's Features and Forward Calls to Telecommuters

The **RAD-AMP** extends the usefulness of your phone system to remote employees, as well as providing call forwarding to remote employees or locations.

As a line extender, the **RAD-AMP** provides authorized users remote access to PABX, Centrex or Electronic Key system features.

As a call diverter, the **RAD-AMP** provides call forwarding from one location to another. After detecting an inbound call, the **RAD-AMP** accesses a second phone line, dials a preprogrammed touch tone number, and then bridges the two lines.

As a Telecommuting extender, the **RAD-AMP** gives remote workers access to most PABX/KSU features from their home or cell phone. The home based employee hears a special tone when answering and has the option of taking the work related call. Remote call center personnel can "Log-In" and Log-Out" or change their forwarding number as their location changes. Using touch tones, remote workers can use phone system features to transfer the call to another extension or voice mail, start a conference call, generate a page or any other feature available to an analog PABX/KSU extension.

⚠ *This product does not eliminate the possibility of toll fraud! To further protect against fraudulent calls, use with a TR-1 Toll Restrictor (Fax Back Document 705).*

Features

Standard Features
• Improved audio amplifier
• Programmable 6 digit security code
• Programmable ring delay
• Remote night switch
• Disconnects on CPC, busy, return dial tone, maximum call time or by dialing #7
• Non-volatile memory (no batteries required)
• Auxiliary dry contacts
• Programmable 15 second to 49.5 minute call timer
• Compatible with analog stations on PABX and KSU systems
• Simple programmable toll restriction

Line Extender
• Access code(s)
• 500 ms hook switch flash command
• 2 second disconnect command

Call Diverter
• 32 digit phone number memory

Telecommuting Extender
• Log-In and Log-Out capability
• Special tone notifies of work related calls
• Supports PABX/KSU features (transfers, voicemail, paging, etc.) to remote employees

Applications

Line Extender
• Bridge calling zones
• Utilize inexpensive WATS, FX or TIE lines
• Remotely access paging amplifiers (**PA-2A**, **HF-3W**) or service observers (**SO-24A**)
• Remote audio monitoring of radio or church programs and security sites

Call Diverter
• Forward calls to voice mail or dictation equipment
• Eliminate C.O. "Call forwarding" charges
• Forward after hours calls to "on call" employees or answering services

Telecommuting Extender
• Home based call center personnel
• Outside sales staff
• Traveling executives and personnel

Phone…715.386.8861

http://www.vikingelectronics.com

Specifications

Power: 120VAC/13.8VAC 1.25A UL listed adapter provided
Dimensions: 133mm x 130mm x 38mm (5.25" x 5.1" x 1.5")
Weight: 1.0 Kg (2 lbs 3 oz.)
Environmental: 0°C to 32°C (32°F to 90°F) with 5% to 95% non-condensing humidity
Connections: (2) RJ11 modular jacks
Amplification: Factory set to 3dB of audio gain

Definitions

Line Extender: The mode of operation in which the **RAD-AMP** provides remote access to an analog station of a PABX, KSU or a second C.O. line. This is ideal for bridging long distance areas or allowing remote employees to use company lines for toll calls.

Call Diverter: The mode of operation in which the **RAD-AMP** forwards a call to a pre-programmed phone number.

Telecommuting Extender: The mode of operation in which the **RAD-AMP** forwards calls to one of nine pre-programmed numbers as well as providing remote access to an analog PABX/KSU station or C.O. line, including all features available to that station or C.O. line.

Security Code: The code programmed into the **RAD-AMP** that allows access to all programming features.

Priority 1 Access Code: The code programmed into the **RAD-AMP** that allows a remote user to have complete access to the PABX or KSU including outside toll calls.
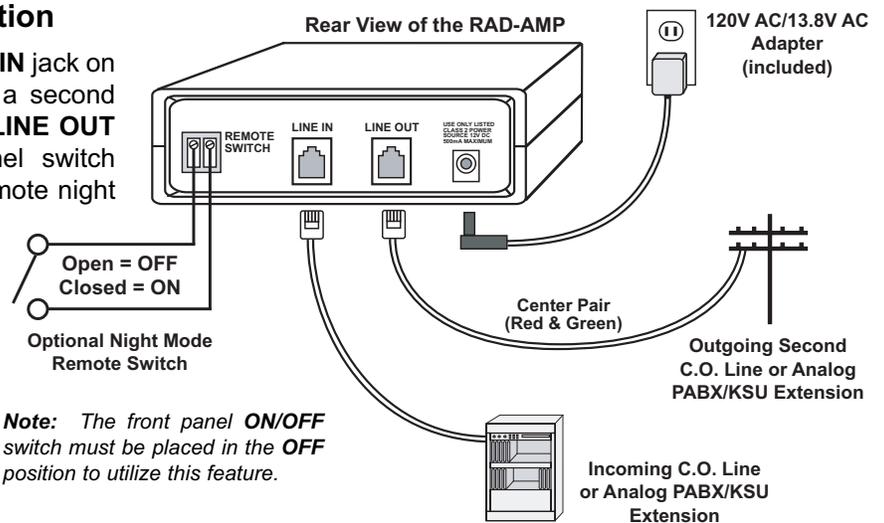
"Priority 2" Access Code: The code programmed into the **RAD-AMP** that allows a remote user to have limited access to the PABX or KSU, effectively blocking outside line access.

Installation

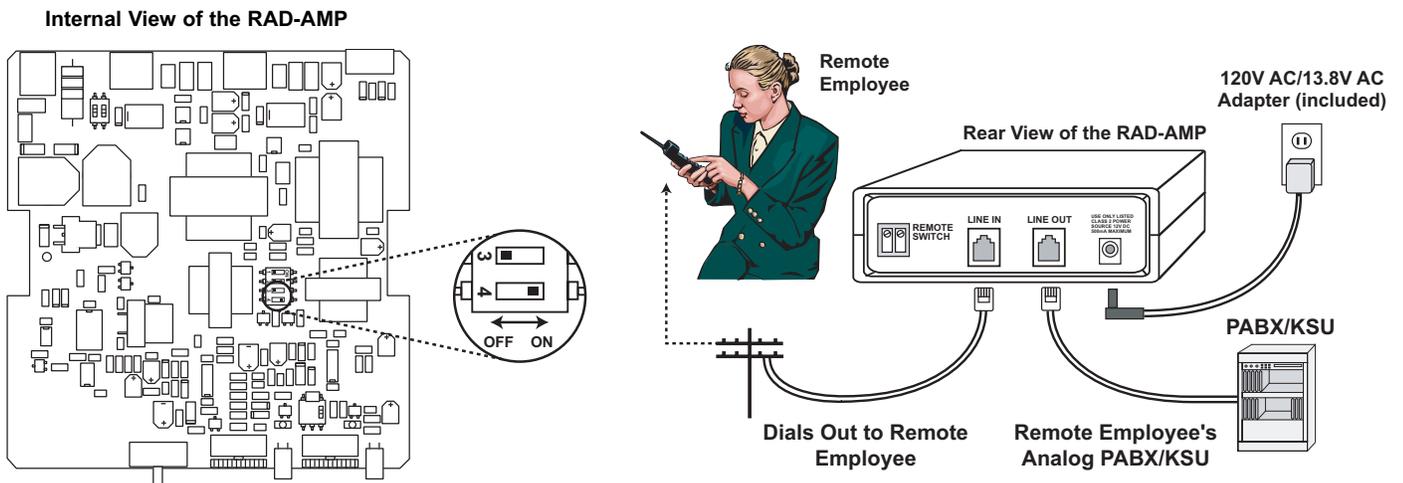## A. Line Extender/Call Diverter Installation

Connect the incoming phone line to the **LINE IN** jack on the back panel of the **RAD-AMP**. Connect a second phone line or 600 ohm audio device to the **LINE OUT** jack. For normal operation, the front panel switch should be set to the ON position and the remote night switch contacts must be open.

*Note: The **RAD-AMP** is factory configured as a "Line Extender" . To change the mode of operation or operating parameters, see the "Programming" section and follow the specific programming section for the desired mode (Line Extender, Call Diverter or Telecommuting Extender).*

Rear View of the RAD-AMP

120V AC/13.8V AC Adapter (included)

Open = OFF
Closed = ON

Optional Night Mode
Remote Switch

Center Pair
(Red & Green)

Outgoing Second
C.O. Line or Analog
PABX/KSU Extension

Incoming C.O. Line
or Analog PABX/KSU
Extension

*Note: The front panel **ON/OFF** switch must be placed in the **OFF** position to utilize this feature.*

B. Telecommuting Extender Installation
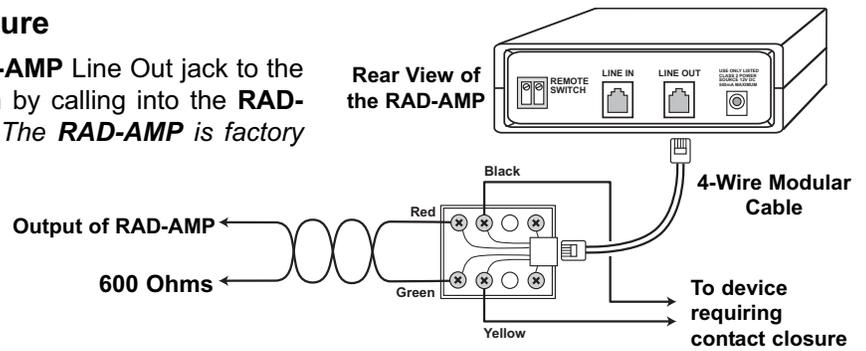
To utilize the Telecommuting extender mode for remote employees, the **RAD-AMP** must be installed as shown below and DIP switches 3 and 4 must be set as shown before programming the unit.

Internal View of the RAD-AMP

OFF   ON

Remote
Employee

120V AC/13.8V AC
Adapter (included)

Rear View of the RAD-AMP

PABX/KSU

Dials Out to Remote
Employee

Remote Employee's
Analog PABX/KSU

C. Installing the Auxiliary Contact Closure

Connect a 4-wire modular cord from the **RAD-AMP** Line Out jack to the 625A jack. Test the contact closure operation by calling into the **RAD-AMP** and verifying proper operation. *Note: The RAD-AMP is factory configured with this feature disabled. To activate this feature see section F in Programming. The Red-Green pair is the outgoing line of the RAD-AMP, while the Yellow-Black pair provides the auxiliary contact closure.*

Rear View of the RAD-AMP

Output of RAD-AMP
600 Ohms

Black
Red
Green
Yellow

4-Wire Modular Cable

To device requiring contact closure

Programming

A. Line Extender Mode

To access programming in the "Line Extender" mode, call into the **LINE IN** port. After the **RAD-AMP** answers, enter a ✳ followed by the security code, factory set to V-I-K-I-N-G (**845464**). The **RAD-AMP** will beep twice indicating that programming has been accessed. It is recommended that the factory security code be changed. While programming, if 20 seconds elapse between touch tones, the **RAD-AMP** will disconnect. All valid touch tone programming sequences are acknowledged with a double beep. A triple beep indicates that a mistake has been made. *Note: If a "Priority 2" access code is used, program the "PABX outside line number" with the touch tone required to access a C.O. line from a PABX extension.*

Line Extender Quick Programming Features	Enter Digits	- then -	Enter Memory Location
Set the **RAD-AMP** to Line Extender mode (factory set)	✳ 1		
Set the **RAD-AMP** to Call Diverter mode (see section **B**)	✳ 2		
Set the **RAD-AMP** to Telecommuting Extender mode (see section **C**)	✳ 3		
Security code (6 digits 0-9) (factory set to 845464)	6 digits	then	**# 47**
"Priority 1" access code (enter 6 digits, no digits disables) (factory disabled)	6 digits	then	**# 45**
"Priority 2" access code (enter 6 digits, no digits disables) (factory disabled)	6 digits	then	**# 46**
PABX outside line number (enter 1 digit, no digit disables) (factory set to 9)	1 digit	then	**# 44**
Silence timer (01-99 sec, 00 or no digits disables) (factory disabled)	2 digits	then	**# 43**
# commands (0 = # commands, 1 = ## commands)	1 digit	then	**# 42**
Busy detect (0 = enabled, 1 = disabled)	1 digit	then	**# 41**
SO-24A mode enabled (see **Operation** section **D**)	✳✳		
SO-24A mode disabled (factory setting, see **Operation** section **D**)	✳ #		
Maximum call timer (enter 2 digits*, no digits disables - factory disabled)	2 digits	then	**# 48**
Ring delay (1-9) (factory set to 1)	1 digit	then	**# 49**
Alert tones On (call progress beeps) (factory enabled)	✳ 9		
Alert tones Off	✳ 0		
Enable dial tone detection (for installations without CPC or busy signal)	✳ 5		
Disable dial tone detection (factory setting)	✳ 6		
Exit programming and disconnect	# 7		
Set all programming features to factory settings	###		

*** Note:** Call timer digits specified as follows: 00 = 15 seconds, 01-99 = .5 - 49.5 minutes in .5 minute increments.*

B. Call Diverter Mode

To access programming in the "Call Diverter" mode, call into the **LINE IN** port. After the called party answers, enter a ✳ followed by the security code, factory set to V-I-K-I-N-G (**845464**). The **RAD-AMP** will beep twice indicating that programming has been accessed. It is recommended that the factory security code be changed. While programming, if 20 seconds elapses between touch tones, the **RAD-AMP** will disconnect. All valid touch tone programming sequences are acknowledged with a double beep. A triple beep indicates that a mistake has been made.

Call Diverter Quick Programming Features	Enter Digits	- then -	Enter Memory Location
Set the **RAD-AMP** to Line Extender mode (see section **A**)	✳ 1		
Set the **RAD-AMP** to Call Diverter mode	✳ 2		
Set the **RAD-AMP** to Telecommuting Extender mode (see section **C**)	✳ 3		
Security code (6 digits 0-9) (factory set to 845464)	6 digits	then	**# 47**
Call Diverter number (1-32 digits)	1-32 digits	then	**# 00**
Silence timer (01-99 sec, 00 or no digits disables) (factory disabled)	2 digits	then	**# 43**
# commands (0 = # commands, 1 = ## commands)	1 digit	then	**# 42**
Busy detect (0 = enabled, 1 = disabled)	1 digit	then	**# 41**
To enter a "✳" in the Call Diverter number	✳ ✳		
To enter a "#" in the Call Diverter number	✳ #		
To enter a 1 second pause in the Call Diverter number	✳ 8		
Maximum call timer (enter 2 digits*, no digits disables - factory disabled)	2 digits	then	**# 48**
Ring delay (1-9) (factory set to 1)	1 digit	then	**# 49**
Enable dial tone detection (for installations without CPC or busy signal)	✳ 5		
Disable dial tone detection (factory setting)	✳ 6		
Exit programming and disconnect	# 7		
Set all programming features to factory settings	###		

*** Note:** Call timer digits specified as follows: 00 = 15 seconds, 01-99 = .5 - 49.5 minutes in .5 minute increments.*

C. Telecommuting Extender Mode (Remote Employee)

To access programming in the "Telecommuting Extender" mode, call into the **LINE IN** port. After the **RAD-AMP** answers, enter a ∗ followed by the security code, factory set to V-I-K-I-N-G (**845464**). The **RAD-AMP** will beep twice indicating that programming has been accessed. It is recommended that the factory security code be changed. While programming, if 20 seconds elapses between touch tones, the **RAD-AMP** will disconnect. All valid touch tone programming sequences are acknowledged with a double beep. A triple beep indicates that a mistake has been made. ***Note:*** *If a "Priority 2" access code is used, program the "PABX outside line number" with the touch tone required to access CO line from PABX extension.*

Telecommuting Extender Quick Programming Features	Enter Digits	- then -	Enter Memory Location
Set the **RAD-AMP** to Line Extender mode (see section **A**)	∗ 1		
Set the **RAD-AMP** to Call Diverter mode (see section **B**)	∗ 2		
Set the **RAD-AMP** to Telecommuting Extender mode	∗ 3		
Security code (6 digits 0-9) (factory set to 845464)	6 digits	then	**#47**
Priority 1 access code (enter 6 digits, no digits disables) (factory disabled)	6 digits	then	**#45**
"Priority 2" access code (enter 6 digits, no digits disables) (factory disabled)	6 digits	then	**#46**
PABX outside line number (enter 1 digit, no digit disables) (factory set to 9)	1 digit	then	**#44**
First remote phone number (1-32 digits each)	1-32 digits	then	**#01**
Second remote phone number (1-32 digits each)	1-32 digits	then	**#02**
Third remote phone number (1-32 digits each)	1-32 digits	then	**#03**
Fourth remote phone number (1-32 digits each)	1-32 digits	then	**#04**
Fifth remote phone number (1-32 digits each)	1-32 digits	then	**#05**
Sixth remote phone number (1-32 digits each)	1-32 digits	then	**#06**
Seventh remote phone number (1-32 digits each)	1-32 digits	then	**#07**
Eighth remote phone number (1-32 digits each)	1-32 digits	then	**#08**
Ninth remote phone number (1-32 digits each)	1-32 digits	then	**#09**
To enter a "∗" in the remote phone number	∗ ∗		
To enter a "#" in the remote phone number	∗ #		
Supervised call forwarding (factory enabled)	∗ 4		
Un-supervised call forwarding	∗ 7		
To enter a 1 second pause in the remote phone number	∗ 8		
Maximum call timer (enter 2 digits∗, no digits disables - factory disabled)	2 digits	then	**# 48**
Ring delay (1-9) (factory set to 1)	1 digit	then	**# 49**
Silence timer (01-99 sec, 00 or no digits disables) (factory disabled)	2 digits	then	**# 43**
# commands (0 = # commands, 1 = ## commands)	1 digit	then	**# 42**
Busy detect (0 = enabled, 1 = disabled)	1 digit	then	**# 41**
Alert tones On (call progress beeps) (factory enabled)	∗ 9		
Alert tones Off	∗ 0		
Enable dial tone detection (for installations without CPC or busy signal)	∗ 5		
Disable dial tone detection (factory setting)	∗ 6		
Exit programming and disconnect	# 7		
Set all programming features to factory settings	###		

** **Note:** Call timer digits specified as follows: 00 = 15 seconds, 01-99 = .5 - 49.5 minutes in .5 minute increments.*

D. Programming Examples

1. Line Extender Mode

Programming the RAD-AMP to...	Enter Digits
1. ...be in the Line Extender mode	∗ 1
2. ...set the PABX outside line number to 9	9 #44
3. ...set "Priority 2" access code to 345678	345678 #46
4. ...disable "Priority 1" access code	#45
5. ...set the call timer to 20 minutes	40 #48

2. Call Diverter Mode

Programming the RAD-AMP to...	Enter Digits
1. ...be in the Call Diverter mode	∗2
2. ...set the call diverter number to 1-715-386-8861 (up to 32 digits)	17153868861 #00
3. ...dial 9 (for outside line), pause 1 second, then dial 386-8861	9 ∗8 3868861 #00

3. Telecommuting Extender Mode

Programming the RAD-AMP to...	Enter Digits
1. ...be in the Telecommuting Extender mode	∗ 3
2. ...set the first remote number to 1-715-386-8861	17153868861 #01
3. ...set the PABX outside line number to 9	9 #44
4. ...set "Priority 1" access code to 123456	123456 #45
5. ...clear the "Priority 2" access code	#46

E. Security Bypass Mode

This mode is useful if you have forgotten your security code and need to enter programming, but requires you to be at the physical location of the **RAD-AMP**.

Step 1.	To enter this mode, call into the **RAD-AMP**.
Step 2.	When it answers, slide the front panel switch to "**OFF**."
Step 3.	Then dial ✱. Two beeps will be heard.
Step 4.	Enter you new security code (**6 digits + #47**).
Step 5.	Enter any other programming desired.
Step 6.	When finished, hang-up.
Step 7.	Slide the front panel switch to "**ON**."

F. Auxiliary Dry Contact Closure

The **RAD-AMP** can provide an auxiliary dry contact closure for systems that require it. To utilize this feature, an internal shunt must be set to the correct position. *Important: Electronic components are sensitive to static electricity. Personnel and the work area should be grounded before handling.*

Step 1.	Disconnect the power and telco cables.
Step 2.	Remove the two screws on the bottom of the chassis and take off the cover.
Step 3.	Locate and configure DIP switch 1 and 2 as shown in the chart below.
Step 4.	Follow the instructions as shown in **Installation** section **C**.

Auxiliary Dry Contact DIP Switches

DIP Switch 1	DIP Switch 2	Description
OFF	OFF	Disabled (factory default)
ON	OFF	Normally Closed
OFF	ON	Normally Open
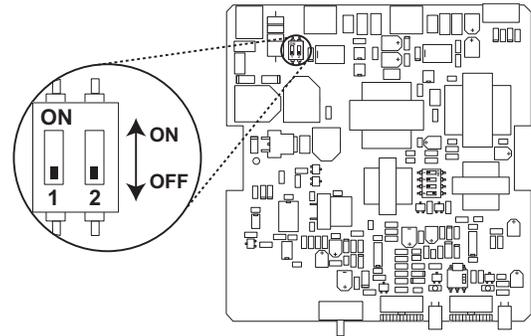
Operation

When configured as a Line Extender, the **RAD-AMP** allows remote access to a loop start C.O. line, an analog PABX station or any other 600 ohm audio device. This is useful for many applications including access to inexpensive WATS lines (line extending), remote access to PABX/KSU features (DISA), or remote service observing using **Viking**'s **SO-24A**.

When configured as a Call Diverter, the **RAD-AMP** forwards all incoming calls to a pre-programmed number on a second line.

When configured as a Telecommuting Extender, the **RAD-AMP** allows an employee to work from a remote location by providing most PABX features to be utilized from their home or cell phone.

All programming features, including mode of operation, access codes, security codes, call timers, alert tones and phone numbers are programmable from a standard touch tone phone (see **Programming**). The **RAD-AMP** provides a remote night mode contact input, which can be connected to a remote switch or a dry contact closure provided by your phone system. This allows remote operation to enable or disable the **RAD-AMP** (see **Installation**). *Note: The front panel On/Off switch must be placed in the Off position to utilize this feature.* The **RAD-AMP** also provides an auxiliary dry contact closure for user specified applications.

*Important: It is crucial that the installer and system owner understands the functions and capabilities of both the **RAD-AMP** and the lines and/or PABX stations connected to the **RAD-AMP**, so that any and all toll fraud and other system abuse possibilities are understood. This enables the installer and owner to make risk managing decisions about the system in which the **RAD-AMP** is put into. Viking Electronics Inc. is not able to assume responsibility since it is a function of the entire system assembled by the installer/owner. A Viking **TR-1** Toll Restrictor may be added to help prevent toll abuse if the PABX toll restriction is not adequate.*

A. Line Extender

When the **RAD-AMP** is configured as a Line Extender, it will always answer an incoming call after the programmed ring delay. In the "Line Extender" mode, the **RAD-AMP** offers either unsecured access, or two levels of secured access, designated "Priority 1" and "Priority 2." "Priority 1" access may be used in applications where the **RAD-AMP**'s outbound line is either a CO line or a PABX extension, whereas the "Priority 2" access mode is specific to applications where the **RAD-AMP**'s outbound line is a PABX extension.

1. Unsecured Access

If neither the "Priority 1", nor the "Priority 2" access codes have been programmed, the unit is "Unsecured." In this mode, the **RAD-AMP** answers the inbound call, double beeps, bridges the lines together, and the caller is given full and immediate access to the outbound line. The caller may then dial without restriction. Anybody that calls into the **RAD-AMP** is given an extended line.

2. Priority 1 (unlimited) Access

When a "Priority 1" access code has been programmed, the **RAD-AMP** answers the inbound call and prompts the caller with a single beep. The caller is then required to enter a 6 digit access code. If an access code is not entered within 20 seconds, the **RAD-AMP** will triple beep and hang up. When a valid access code has been entered, the **RAD-AMP** will double beep and bridge the lines together providing access to the opposite line port. Anybody that calls into the **RAD-AMP** and successfully dials the "Priority 1" access code has unlimited access to the extended line.

3. Priority 2 (limited) Access

This mode is specific to PABX applications. When a "Priority 2" access code has been programmed, the **RAD-AMP** answers the inbound call and prompts the caller with a single beep. The caller is then required to enter a 6 digit access code. If an access code is not entered within 20 seconds, the **RAD-AMP** will triple beep and hang up. When a valid "Priority 2" access code has been entered, the **RAD-AMP** will double beep and bridge the lines together providing access to the opposite line port. The caller is then given limited access, and may only dial extensions and features within the PABX. If the caller attempts to dial the PABX outside line number (programmable, but typically a 9) to place a call outside of the PABX, the caller will hear a triple beep and be immediately disconnected. This effectively prevents toll fraud and system abuse. **_Important_**: _If the PABX utilizes any special direct trunk access codes in addition to the outside line number, the_ **RAD-AMP** _can not prevent toll fraud and system abuse on a "Priority 2" access call._

4. Disconnect

For disconnect, the **RAD-AMP** senses busy signals (if enabled), return dial tone (if enabled), maximum call time (if enabled), silence time out (if enabled) the touch tone command **#7** or a CPC break on either port. In addition, the **RAD-AMP** will flash the **LINE OUT** port for 500ms when the touch tone command **#1** is entered and disconnect the **LINE OUT** port for 2 seconds, when the touch tone command **#2** is entered. (Substitute **##1**, **##2**, **##7** if programmed.)

**Note:** The "Priority 1" and "Priority 2" access codes can work well together. As an example, one group of users can be given the "Priority 2" access code, and hence only have the ability to dial within the PABX system. Another group of trusted users (supervisors, for example) could be given the "Priority 1" access code, and thus have unrestricted remote access to the PABX system, including outbound dialing.

B. Call Diverter

When the **RAD-AMP** is configured as a Call Diverter and inbound ringing is detected on the **LINE IN** port, the **RAD-AMP** will dial the user programmed phone number (see **Programming**) on the **LINE OUT** port, answer the **LINE IN** port, and bridge the two ports together for a nearly transparent transfer. For disconnect, the **RAD-AMP** senses busy signals (if enabled), return dial tone (if enabled), maximum call time (if enabled), silence time out (if enabled), the touch tone command **#7** or a CPC break on either port. (Substitute **##7** if programmed.)

C. Telecommuting Extender

When the **RAD-AMP** is configured as a Telecommuting Extender, it can be programmed to provide either supervised or un-supervised call forwarding from a PABX station to a remote employee's home or cell phone. This allows the remote employee to take business calls as if they are actually "in the office". Calls can be forwarded to one of nine different phone numbers so that calls may follow them wherever they may go. The Telecommuting Extender mode also provides the remote employee access to the PABX/KSU system, similar to the line extender mode.

1. **Log In and Log Out**

   a. **Log In**

   The remote employee calls into the **LINE IN** port of the **RAD-AMP**, hears a single beep tone, and dials ✳✳**1**, ✳✳**2**, ✳✳**3**, ✳✳**4**, ✳✳**5**, ✳✳**6**, ✳✳**7**, ✳✳**8**, or ✳✳**9** to tell the **RAD-AMP** which one of the nine pre-programmed phone numbers to forward calls to. This way the remote employee can program the **RAD-AMP** to follow them as they change locations, or change over from one remote employee to another.

   b. **Log Out**

   The remote employee calls into the **LINE IN** port of the **RAD-AMP**, hears a single beep tone, and dials ✳✳**0**. A logged out employee will appear as a busy PABX/KSU station.

2. **Supervised and Unsupervised Forwarding**

   a. **Supervised Forwarding**

   Supervised forwarding is ideal for PABX/KSU systems with voicemail, ACD/UCD or other applications where manual call acceptance is preferred. When PABX/KSU station ringing is detected on the **RAD-AMP**'s **LINE OUT** port, the **RAD-AMP** goes off hook on the **LINE IN** port, and speed dials the remote employee's phone number. When the remote employee answers the call, a series of short beeps will be heard signifying that this is a call from the **RAD-AMP**. If the remote employee is available to take the call, they may release the call by pressing a touch tone **5** on their phone. The call will then be immediately bridged for a completely transparent transfer. If a touch tone **5** is not pressed, the call appears as a "ring-no-answer" to the PABX/KSU, so that it may roll into a voice mail box, back to the operator, to another agent or as the PABX/KSU is programmed for ring-no answer situations.

   b. **Unsupervised Forwarding**

   Unsupervised forwarding is ideal for applications where the remote user has central office provided voicemail or an answering machine. When inbound ringing is detected on the **LINE OUT** port, the **RAD-AMP** will access the **LINE IN** port, dial the user programmed phone number, answer the **LINE OUT** port, and bridge the two ports together for a nearly transparent transfer.

3. **Remote PABX/KSU Feature Use**

   After a call has been forwarded and established, the remote employee may perform nearly any function on the PABX/KSU that could be done locally through an analog station port. Dialing a **#1** will hookswitch flash the PABX/KSU. This enables the remote employee to complete hookswitch flash type features, such as transfers, conferencing, paging, etc. Dialing a **#2** will disconnect the PABX/KSU station for two seconds returning fresh PABX/KSU dial tone to the remote employee for placing an outbound or intercom call through the system. Realize that a toll call placed this way will appear on the PABX's business line, not the remote employee's line. A manual disconnect may be performed by dialing a **#7**. (Substitute **##1**, **##2**, **##7** if programmed.)

   The remote employee can also make themselves unavailable by "Punching out" (see section **1**). This will make their PABX station appear to be busy. The remote employee can "Log-In" by programming one of the nine pre-programmed phone numbers as the forwarding number (see section **1**).

4. **Calling the PABX/KSU Remotely**

   In the "Telecommuting Extender" mode, the **RAD-AMP** allows telecommuters to access the PABX/KSU remotely in order to check phone system voice mail, make long distance calls, make pages, or talk to on-site personnel. When a remote user dials into the **LINE IN** port of the **RAD-AMP**, the **RAD-AMP** answers the inbound call and prompts the caller with a single beep. The caller is then required to enter an access code within 20 seconds. If an access code is not entered within 20 seconds, the **RAD-AMP** will triple beep and hang up. The **RAD-AMP** offers two levels of secured access, designated "Priority 1" and "Priority 2."

   a. **Priority 1 (unlimited) Access**

   Upon entering the correct "Priority 1" access code, a double beep will be heard and the caller is provided unrestricted access to dial on the analog station port. ***Important:*** *Anybody that knows both the inbound phone number and the "Priority 1" access code may place a toll call through the PABX/KSU's business lines.*

   b. **Priority 2 (limited) Access**

   Upon entering the correct "Priority 2" access code, a double beep will be heard and the caller is provided limited access to dial extensions and features within the PABX/KSU. If the caller attempts to dial the PABX/KSU outside line number (programmable, typically a 9) to place a call outside of the PABX/KSU, the caller is immediately disconnected, providing basic toll fraud and system abuse. ***Important:*** *If the PABX/KSU utilizes any special direct trunk access codes in addition to the outside line number, the **RAD-AMP** can not prevent toll fraud and system abuse on a "Priority 2" access call.*

5. **Disconnect**

   For disconnect, the **RAD-AMP** senses busy signals (if enabled), return dial tone (if enabled), maximum call time (if enabled), silence time out (if enabled), the touch tone command **#7** or a CPC break on either port. In addition, the **RAD-AMP** will flash the **LINE OUT** port for 500ms when the touch tone command **#1** is entered and disconnect the **LINE OUT** port for 2 seconds to return fresh dialtone, when the touch tone command **#2** is entered. (Substitute **##1**, **##2**, **##7** if programmed.)

D. SO-24A Mode

This mode is necessary when using the **RAD-AMP** to access Viking's model **SO-24A** Service Observing Module remotely. While in this mode the **RAD-AMP** omits conflicting commands by ignoring #1, #2 and "Priority 2" restrictions.

> ❓ ***Need More Information on the SO-24A?***
> **Call (715) 386-4345 and select 690.**

Warranty

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, which 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. Located on the equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN). If requested, this information must be provided to the telephone company.

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive REN's on the 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 the line, as determined by the total REN's, contact the telephone company to determine the maximum REN for the calling area.

This equipment cannot be used on the telephone company-provided coin service. Connection to Party Line Service is subject to State Tariffs.

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. 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 in order to maintain uninterrupted service.

If trouble is experienced with this equipment, please contact: ***Viking Electronics, Inc., 1531 Industrial Street, Hudson, WI 54016 (715) 386-8666***

If the trouble is causing harm to the telephone network, the telephone company may request you to remove the equipment from the network until the problem is resolved.

The RAD-AMP uses the USOC jack RJ11C.

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.

This equipment is Hearing-Aid Compatible (HAC).

The telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.)

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 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.

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