

# VIKING PRODUCT MANUAL

COMMUNICATION &amp; SECURITY SOLUTIONS

## *Expand Existing Paging Systems and Add Remote Control to the New Speakers*

The Viking **SA-X12** expander / adapter is an economical way to expand an existing paging system, while adding remote control to the new speakers. The **SA-X12** can be connected to any existing paging audio source including 600 ohm line level, 4, 8, or 16 ohm speaker level, or even 25 volt and 70 volt paging systems. It can also be connected directly to the 2-wire protocol (40VDC + Audio) of another **SA-X12** or the Viking **SA-25** paging controller to add even more self amplified speakers.

The **SA-X12** takes audio from any paging or background music source, and combines it with 40 volts DC to run Viking self amplified speakers. The added Viking **SA Series** speakers will have the features of the existing paging system, plus have the added feature of being remote controllable.

The **SA-X12** can directly drive up to 12 Viking self amplified speakers which include the model **SA-1S** self amplifier ceiling speaker, and the **SA-1H** self amplified paging horn. Viking self amplified speakers have these advantages: 1) Audio and power are on the same pair (less copper). 2)



Power is 40VDC for lower current and smaller gauge wire (less copper than older 4-wire 24 volt systems). 3) Non-Polarity sensitive for easier wiring. 4) Each speaker is infrared remote controllable so there is no need to install volume controls on the walls, or climb up ladders to adjust the volume.

The **SA-IR** Infrared Remote and **SA Series** speakers are available separately.

### Features

- Powers up to 12 Viking self amplified speakers
- Viking **SA Series** speakers are remote controllable
- Expand existing paging systems
- Adapts to any paging system

### Applications

- 600 ohm line level paging systems
- 4, 8, or 16 ohm paging systems
- 25 volt and 70 volt paging systems
- Expand a Viking **SA-25** paging system

### Specifications

**Power:** 120V AC/13.8V AC 1.25A, UL listed adapter provided

**Dimensions:** 135mm x 90mm x 45mm (5.25" x 3.5" x 1.73")

**Shipping Weight:** 0.9kg (2 lbs)

**Environmental:** 0°C to 32°C (32°F to 90°F) with 5% to 95% noncondensing humidity

**Paging Output:** Viking 2-wire protocols (40VDC + Audio)

**Speakers:** Up to 12 Viking self amplified speakers

**Maximum Wire Run Length:** See chart on page 3

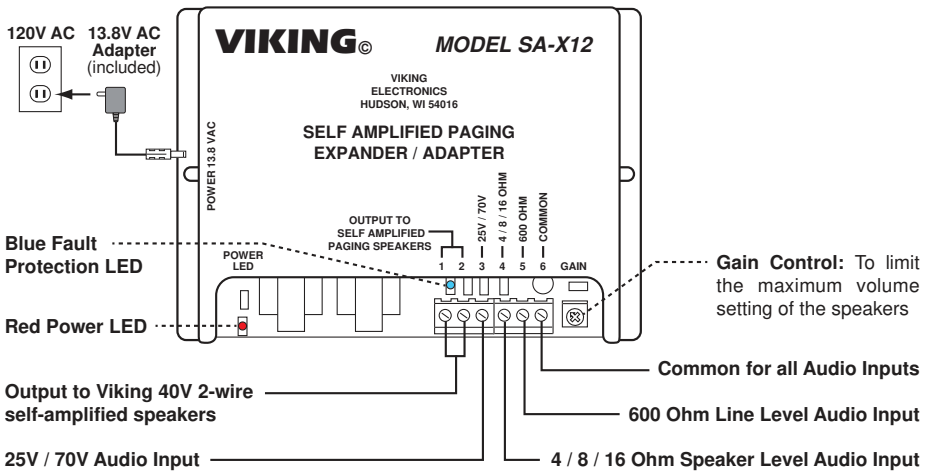
**Connections:** (1) 2.1mm barrel jack, (6) cage clamp screw terminals

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

## Features Overview



**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.



## Wire Gauge Chart

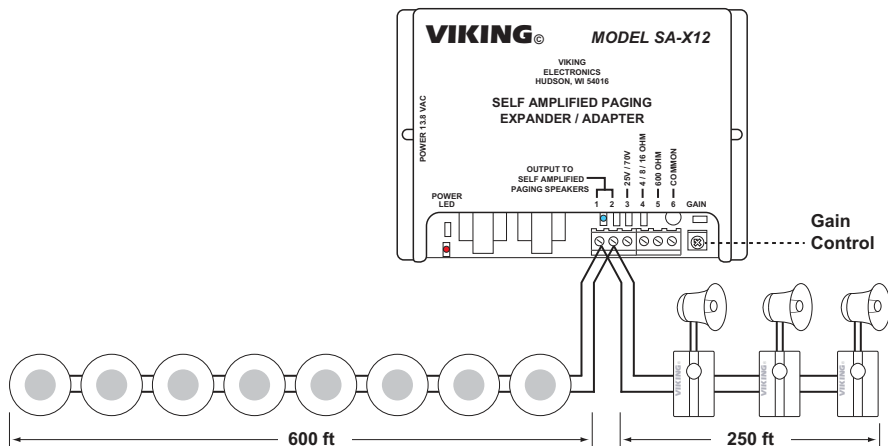
**Recommended Minimum AWG (American Wire Gauge) Size  
for Viking SA Series Self-Amplified Speakers on a Two-Wire Run**

Number of Speakers on the Two-Wire Run	12	#24	#24	#24	#22	#18	#18	#16						
	10	#24	#24	#24	#24	#20	#18	#18	#16					
	8	#24	#24	#24	#24	#22	#20	#18	#16	#16				
	6	#24	#24	#24	#24	#24	#24	#22	#20	#18	#16			
	5	#24	#24	#24	#24	#24	#24	#24	#20	#20	#18	#16		
	4	#24	#24	#24	#24	#24	#24	#24	#22	#20	#18	#16	#16	
	3	#24	#24	#24	#24	#24	#24	#24	#24	#24	#22	#20	#18	#16
	2	#24	#24	#24	#24	#24	#24	#24	#24	#24	#24	#22	#20	#18
	1	#24	#24	#24	#24	#24	#24	#24	#24	#24	#24	#24	#24	#24
		100	200	250	300	400	500	600	800	1000	1200	1600	2000	2500

# Installation

## A. Wiring Viking SA Series Two-Wire Self-Amplified Speakers

<b>Step 1</b>	Determine the wire run length and number of self-amplified speakers for each run
<b>Step 2</b>	Use the <b>Wire Gauge Chart</b> on page 2 to determine the minimum recommended wire gauge to use.
<b>Step 3</b>	Wire each run to pins 1 and 2.
<b>Step 4</b>	Adjust the volume of each speaker with the Viking <b>SA-IR</b> Infrared remote Control.
<b>Step 5</b>	Use the gain control to limit the maximum speaker volume when the infrared remote has them turned up all the way.



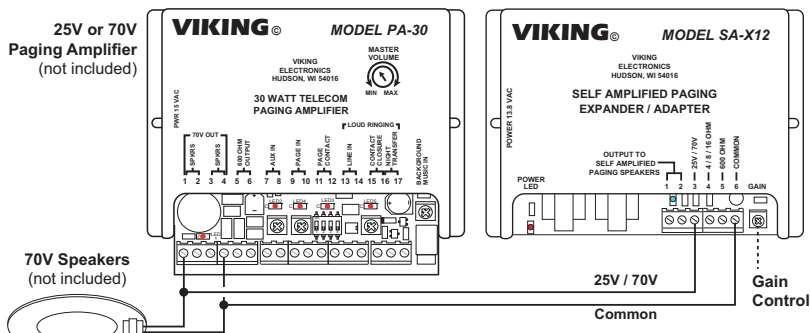
**Example:** Eight (8) **SA-1S** speakers on a 600 ft long wire run. Use at minimum #18 AWG copper wire pair as recommended in the Wire Gauge Chart on page 2.

**Example:** Three (3) **SA-1H** horns on a 250 ft long wire run. Use at minimum #24 AWG copper wire pair as recommended in the Wire Gauge Chart on page 2.

## B. Wiring Input Audio

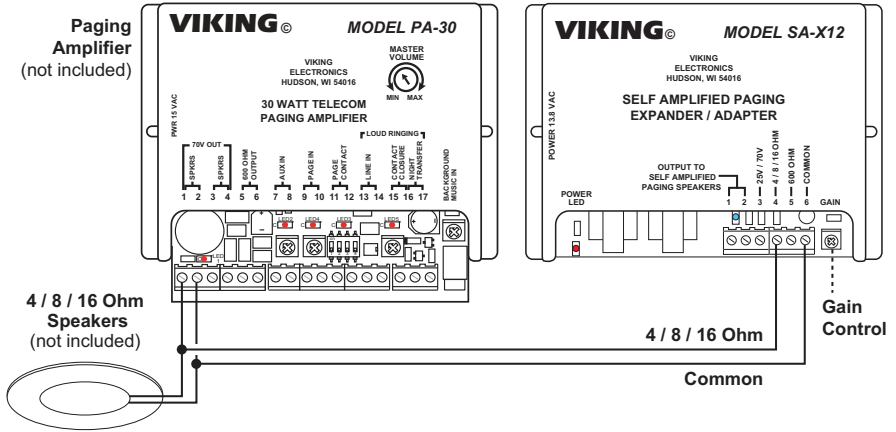
The **SA-X12** can be connected to any existing paging audio source including 600 ohm line level, 4, 8, or 16 ohm speaker level, or even 25V and 70V paging systems. It can also be connected directly to the 2-wire protocol (40VDC + audio) of another **SA-X12** or the Viking **SA-25** paging controller. The added Viking **SA Series** speakers will have the features of the existing paging system, plus have the added feature of being remote controllable.

### 1. 25V / 70V [Paging System]



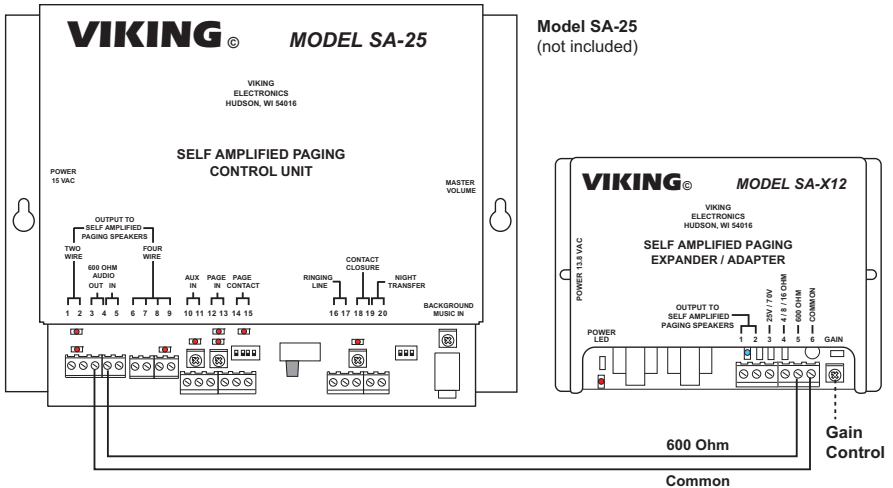
<b>Step 1</b>	Connect the output of any 25V or 70V paging amplifier to screw terminals 3 & 6 of the <b>SA-X12</b> .
<b>Step 2</b>	Add up to 12 Viking 2-wire self amplified remote controllable speakers as shown above.
<b>Step 3</b>	Use the <b>GAIN CONTROL</b> to limit the maximum speaker volume when the infrared remote has them turned up.

## 2. 4 / 8 / 16 ohm Speaker Volume



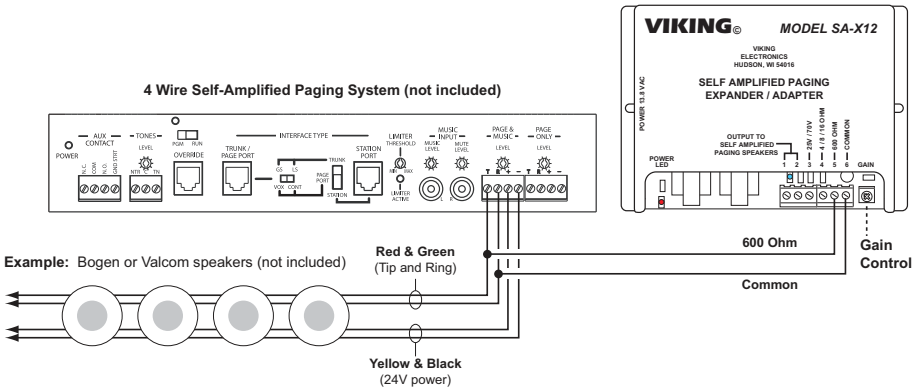
<b>Step 1</b>	Connect the output of any amplifier directly driving 4, 8 or 16 Ohm speakers to screw terminals 4 & 6 of the SA-X12.
<b>Step 2</b>	Add up to 12 Viking 2-wire self amplified remote controllable speakers as shown on page 3.
<b>Step 3</b>	Use the <b>GAIN CONTROL</b> to limit the maximum speaker volume when the infrared remote has them turned on.

## 3. 600 ohm Line Level Audio



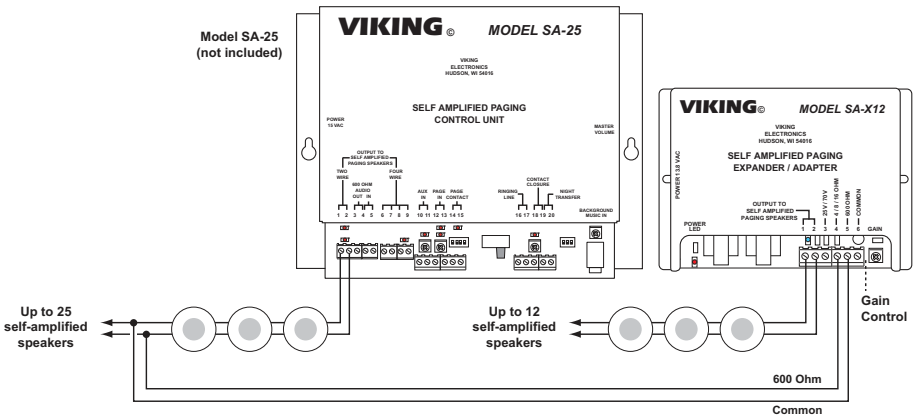
<b>Step 1</b>	Connect the 600 Ohm line level of any pre-amplifier or paging system to screw terminals 5 & 6 of the SAX-12.
<b>Step 2</b>	Add up to 12 Viking 2-wire self amplified remote controllable speakers as shown on page 3.
<b>Step 3</b>	Use the <b>GAIN CONTROL</b> to limit the maximum speaker volume when the infrared remote has them turned on.

#### 4. Valcom or Bogen 4-Wire Speakers



<b>Step 1</b>	Connect the audio output pair anywhere along a 4 wire self-amplified paging system speaker run to screw terminals 5 & 6 of the <b>SAX-12</b> .
<b>Step 2</b>	Add up to 12 Viking 2-wire self amplified remote controllable speakers as shown on page 3.
<b>Step 3</b>	Use the <b>GAIN CONTROL</b> to limit the maximum speaker volume when the infrared remote has them turned on.

#### 5. Expand a Viking 2-Wire Speaker Run



<b>Step 1</b>	Connect anywhere along a Viking 2 wire self-amplified paging system speaker run to screw terminals 5 & 6 of the <b>SAX-12</b> .
<b>Step 2</b>	Add up to 12 Viking 2-wire self amplified remote controllable speakers as shown on page 3.
<b>Step 3</b>	Use the <b>GAIN CONTROL</b> to limit the maximum speaker volume when the infrared remote has them turned on.

## Operation

The **SA-X12** takes audio from any paging or background music source, and combines it with 40VDC to run Viking self amplified speakers. The added Viking **SA Series** speakers will have the features of the existing paging system, plus have the added feature of being remote controllable.

The **SA-IR** remote control functions essentially like a TV remote control. Point the remote at the Viking **SA Series** speaker you wish to control and push the buttons. The speaker volume can be stepped up or down, or the speaker can be totally muted. When the speaker is muted, pressing the mute button again, or the volume up or down buttons, will release the mute. A short "beep" will be heard through the speaker when the mute is activated. A long "beep" will be heard through the speaker when the "MUTE" button is pressed again releasing the mute.

If the **SA-X12** is used to expand more speakers to a Viking **SA-25** paging control unit, the added speakers will be compatible with the **SA-25's** "Smart Mode" feature. In this special "Smart Mode" the **SA-IR** Remote Control "MUTE" button functions as a "mute background music button". All paging and loud ringing sound will be amplified through the speaker, but the speaker then mutes the background music. This feature is useful for speakers which are mounted in a meeting room in which pages need to be heard, but background music would be obstructive. This feature enables an office with background music to become a quiet meeting room with the push of a button.

### Self Amplified Paging Control Unit with IR Remote

The **SA-25** can directly drive up to 25 self amplified speakers. Speakers can be Viking's 2 wire self amplified ceiling speaker model **SA-1S**, the **SA-1H** self amplified paging horn, the older 4 wire legacy Valcom and Bogen self amplified speakers, or any combination of the above. Viking self amplified speakers have these advantages: 1) Audio and power are on the same pair (less copper). 2) Power is 40VDC for lower current and smaller gauge wire (less copper). 3) Non-Polarity sensitive for easier wiring. 4) Each speaker is infrared remote controllable so there is no need to manage and wire "background music zones", install volume controls on the walls, or climb up ladders to adjust the volume. The provided **SA-IR** Infrared Remote controls volume, mute, and enable/disable background music at each speaker as required.



For more information, see DOD 520

The **SA-25** provides paging, loud ringing, and background music when connected to electronic or 1A2 Key systems, PABX's, No-KSU phones, multi-line phones, as well as IP phone systems (that have an analog FXS or FXO port). The **SA-25** paging control unit can interface with a paging port or a ringing analog FXS, CO/Centrex line, PABX/KSU station port or an FXO, unused telephone line input (trunk port).

The **SA-25** will generate loud ringing from a ringing analog line or from a dry contact closure. Either a loud electronic warble sound or one of three other soft chime sounds may be selected. An external "night transfer" switch (such as Viking model **NS-1**) can be added to turn loud ringing on or off in night bell applications. If a music source is connected to the **SA-25**, background music can be enabled or disabled at any Viking self amplified speaker using the provided **SA-IR** infrared remote control. Background music is inhibited during paging. The **SA-25** is easy to install and comes complete with a power supply.

### Infrared Remote Controllable Ceiling Speaker for the SA-Series

The Viking model **SA-1H** is a 5 inch paging horn that includes a 1.5 watt power amplifier, an infrared remote control detector, and an integrated digital volume control. The **SA-1H** self amplified paging horn uses a proprietary two wire protocol in which both 40 volts DC power and audio are combined on the same pair of wires. It is designed for direct connection to the Viking model **SA-25** Self Amplified Paging Control unit, or use the Viking model **SA-X12** expander/adaptor to connect it to virtually any existing paging system.

The **SA-1H** includes an infrared receiver to accept volume control signals from a Viking Model **SA-IR** remote control. Aim the infrared transmitter at the receiver and press the buttons. The up/down buttons allow users to set the appropriate volume level for each speaker. The speaker provides an audible "beep" feedback tone to let the user gauge the volume level even when there's no background music (or page) playing at the time.



For more information,  
see DOD 526

### Infrared Remote Controllable Paging Horn for the SA-Series

The Viking model **SA-1S** is an 8 inch paging speaker that has a built in 1.5 watt power amplifier, an infrared remote control detector, and an integrated digital volume control, all built into an attractive off-white grill for flush mounting in office ceilings. The **SA-1S** self amplified paging speaker uses a proprietary two wire protocol in which both 40 volts DC power and audio are combined on the same pair of wires. It is designed for direct connection to the Viking model **SA-25** Self Amplified Paging Control unit, or use the Viking model **SA-X12** expander/adaptor to connect it to virtually any existing paging system.

The **SA-1S** speaker includes an infrared receiver to accept volume control signals from a Viking model **SA-IR** remote control. Aim the infrared transmitter at the speaker and press the buttons. The up/down buttons allow users to set the appropriate volume level for each speaker. The speaker provides an audible "beep" feedback tone to let the user gauge the volume level even when there's no background music (or page) playing at the time.



For more information,  
see DOD 525

## 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 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 Viking product 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.

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