



# TECHNICAL Practice

**TELECOM SOLUTIONS FOR THE 21ST CENTURY**

**SO-24A**  
Service  
Observation Unit

JANUARY 17, 2012

## Add Silent Observation to Most Phone Systems





The **SO-24A** allows supervisors to silently monitor employee phones without disrupting the activity at their workstation. The information gathered may be used for quality purposes, to train, motivate even **assist** customer service and telemarketing representatives.

A supervisor may enter the conversation by dialing a “\*.” A cassette recorder output permits automatic or manual recording of conversations (see page 6, **Operation** sections **D** and **E**).

The **SO-24A** features improved audio and can now be easily expanded to 240 stations by installing additional 24 line units. The **SO-24A** can be programmed with a 2, 3 or 4 digit dial up code to match station extension numbers (see page 6, **Operation** section **B**).

### Features

- **24 station capacity can be expanded to 240 stations at any time**
- Compatible with analog PABX/KSU stations
- Configurable for digital phones (requires the **SO-24 AK** and a dedicated pair of wires between the handset and the **SO-24A**)  
 *Need More Information on the SO-24 AK?*  
Call (715) 386-4345 and select 819.
- Monitor stations from an unused phone system line input or to a dedicated single line phone
- Add remote observing with a **RAD-AMP** Remote Access Device  
 *Need More Information on the RAD-AMP?*  
Call (715) 386-4345 and select 415.
- Built-in talk assist (dial \*)
- **Dial up code can be programmed to match the phone system's station or extension numbers**
- Cassette recorder output with automatic or Touch Tone control (see page 6, **Operation** sections **D** & **E**)
- Automatic gain control equalizes in and outbound conversation levels
- **Call progress tones for observing supervisor**

### Applications

- Telemarketing Centers
- Direct Sales Outlets
- Travel Agencies
- Customer Service Departments
- Airline Employment Services
- Collection Agencies
- Credit Bureaus
- Insurance Companies

**Phone... 715.386.8861**

**info@vikingelectronics.com**

**http://www.vikingelectronics.com**

### Specifications

**Power:** 120V AC/13.8V AC 1.25A, UL listed adapter provided  
**Dimensions:** 210mm x 159mm x 45mm (8.25" x 6.25" x 1.75")  
**Shipping Weight:** 1.36 kg (3 lbs)  
**Environmental:** 0° C to 32° C (32° F to 90° F) with 5% to 95% non-condensing humidity  
**Talk Battery:** 40V DC  
**Connections:** (1) RJ21X, (1) 3.5mm (1/8") audio jack and cable, (1) 2.5mm (3/32") control jack and cable, (2) RJ-14 type multi-module interconnect and interconnect cord

# Wiring

## A. Single Module Wiring

24 Analog PABX/KSU Stations

C.O. Lines



Bridge Clip the First 24 Pairs

Punch down the SO-24A in parallel with up to 24 analog lines or stations.

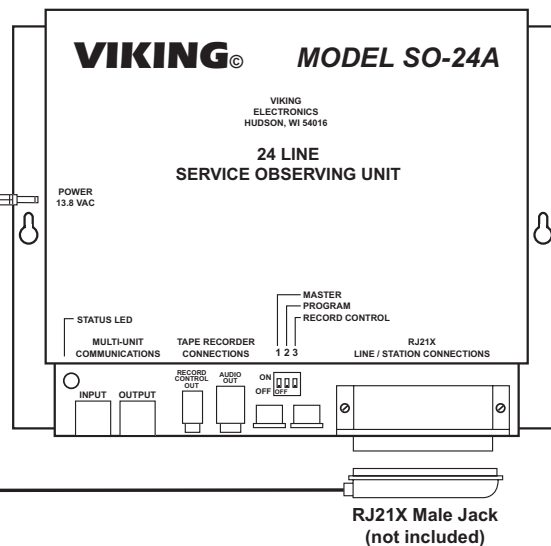
13.8V AC Adapter (included)



Punch Down Terminal Block with Split Center (not included)

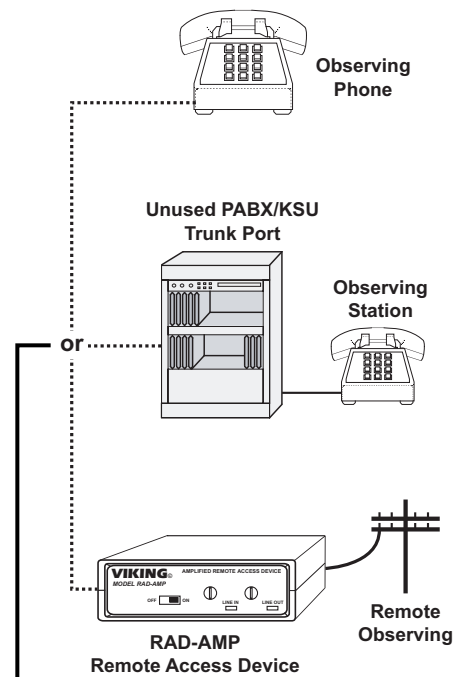
Emerson # 66M1-50  
Siemon # 66M150  
Suttle # SE-66M1-50-C5

To 24 Monitored Stations or Phones



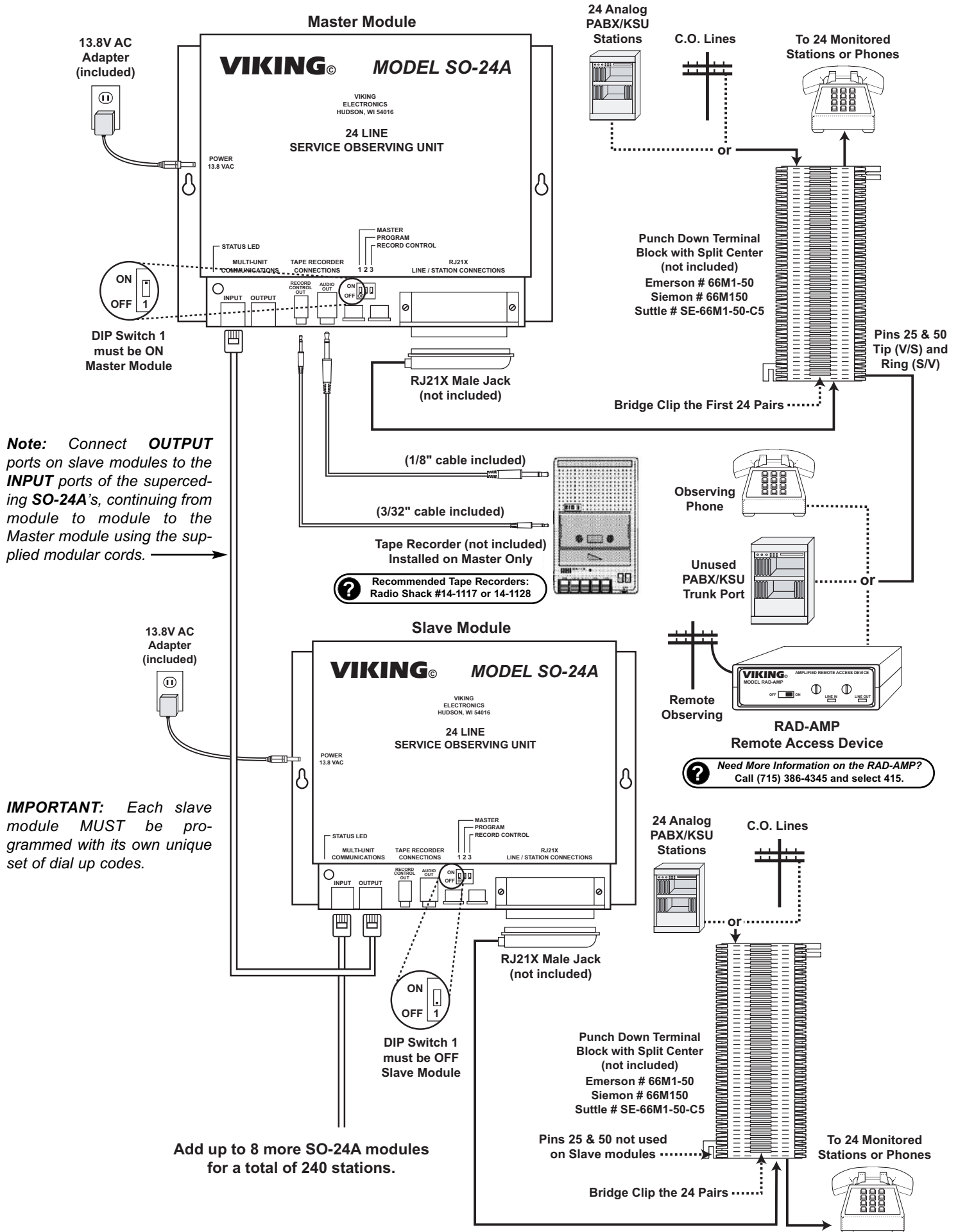
Row 1 Lines In	Row 2 Unused	Row 3 SO-24A	Row 4 To Phones	Factory Default 2-Digit Dial Up Code	User Program- mable 2, 3 or 4 Digit Dial Up Code	Memory Location:
1T		W/BL	1T	01		#01
1R		BL/W	1R			
2T		W/O	2T	02		#02
2R		O/W	2R			
3T		W/G	3T	03		#03
3R		G/W	3R			
4T		W/BN	4T	04		#04
4R		BN/W	4R			
5T		W/S	5T	05		#05
5R		S/W	5R			
6T		R/BL	6T	06		#06
6R		BL/R	6R			
7T		R/O	7T	07		#07
7R		O/R	7R			
8T		R/G	8T	08		#08
8R		G/R	8R			
9T		R/BN	9T	09		#09
9R		BN/R	9R			
10T		R/S	10T	10		#10
10R		S/R	10R			
11T		BK/BL	11T	11		#11
11R		BL/BK	11R			
12T		BK/O	12T	12		#12
12R		O/BK	12R			
13T		BK/GN	13T	13		#13
13R		GN/BK	13R			
14T		BK/BN	14T	14		#14
14R		BN/BK	14R			
15T		BK/S	15T	15		#15
15R		S/BK	15R			
16T		Y/BL	16T	16		#16
16R		BL/Y	16R			
17T		Y/O	17T	17		#17
17R		O/Y	17R			
18T		Y/G	18T	18		#18
18R		G/Y	18R			
19T		Y/BN	19T	19		#19
19R		BN/Y	19R			
20T		Y/S	20T	20		#20
20R		S/Y	20R			
21T		V/BL	21T	21		#21
21R		BL/V	21R			
22T		V/O	22T	22		#22
22R		O/V	22R			
23T		V/G	23T	23		#23
23R		G/V	23R			
24T		V/BN	24T	24		#24
24R		BN/V	24R			
		V/S	25T			
		S/V	25R			

**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.

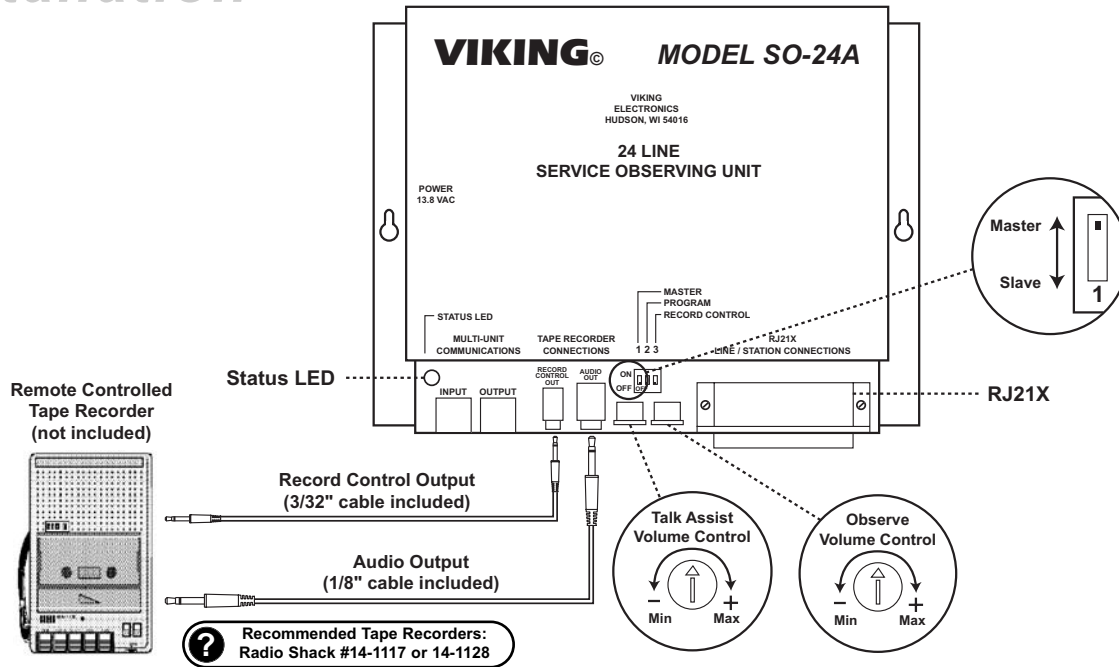


Need More Information on the RAD-AMP? Call (715) 386-4345 and select 415.

## B. Multi-Module Wiring



# Installation



## A. Definitions

**“66” Punchdown Terminal Block:** A connection peripheral used to interface telephone lines easily.

**Analog Communication:** The type of communication in which a standard residential type phone may be used. The **SO-24A** can monitor any analog communication path that is compatible with standard analog telecom equipment.

**Dial Up Code:** The 2, 3 or 4 digit Touch Tone code dialed from the observing phone to listen to a specific analog station or line.

**Digital Communication:** The type of communication used on digital phone systems in which proprietary phones must be used. The **SO-24A** can monitor certain digital systems. This requires the **SO-24 AK** and a dedicated pair of wires between each phone and the **SO-24A**. The audio must be taken from the digital phone’s receiver (earpiece) for each of the stations to be observed, following the wiring table shown in **Wiring section A**. **Note:** When using the “Talk Assist” feature with the **SO-24 AK**, the outside party will not hear the supervisor, ONLY the inside agent will hear the supervisor.

**Need More Information on Digital System Interfaces?**  
Call (715) 386-4345 and select 819.

**Master Module:** The primary **SO-24A** module in a multi-unit configuration (DIP switch 1 ON) or the only module in a single-module system.

**Slave Module(s):** Any module(s) in addition to the Master module, used to increase capacity (DIP switch 1 OFF).

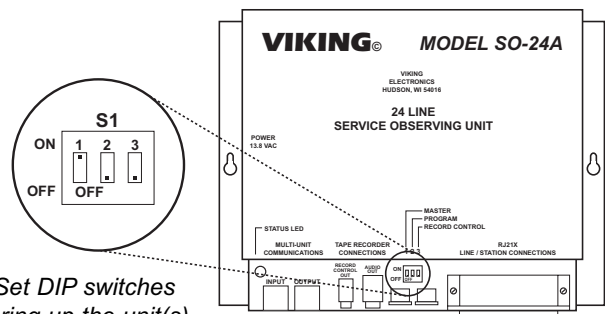
## B. Assigning Modules

A **SO-24A** system consists of at least one Master **SO-24A** module, and as many as nine (9) Slave modules. Multiple **SO-24A** modules are interconnected from module to module, using the supplied modular cords, daisy-chaining the modules from **INPUT** to **OUTPUT**. If more than one **SO-24** module is being installed, it will be necessary to set DIP switch 1 to OFF on each slave module. The observing phone and optional tape recorder must be connected to the Master module.

# Programming

## A. DIP Switch Settings

Switch	ON/OFF	Description
1	ON	Master
1	OFF	Slave
2	ON	Program Mode
2	OFF	Normal Operation
3	ON	Record control automatic
3	OFF	Dial “9” to record



**Important:** Set DIP switches before powering up the unit(s).

## B. Accessing the Programming Mode

<b>Step 1.</b>	Set DIP switch 2 to <b>ON</b> for the module being programmed.
<b>Step 2.</b>	Come off-hook on the observing phone and dial a *.
<b>Step 3.</b>	Two beeps will be heard. (Modules not being programmed - status LED's will turn off)
<b>Step 4.</b>	When finished programming, hang-up and set DIP switch 2 to <b>OFF</b> .

**Note:** For multi-module systems, program each module separately. The status LED for the module being programmed will remain lit, while all other module's LEDs will turn off.

## C. Setting the Number of Digits (for Dial Up Codes)

The dial up codes are factory set to two digits (01-24). Each **SO-24A** in a multi-module configuration needs to be programmed with the same number of digits for all dial up codes. To program the number of digits, use the chart below:

To Program...	Step 1:	Step 2:
... two digit dial up codes	Access <b>Programming</b> as shown in section <b>B</b>	Enter digits: <b>2 # 00</b>
... three digit dial up codes	Access <b>Programming</b> as shown in section <b>B</b>	Enter digits: <b>3 # 00</b>
... four digit dial up codes	Access <b>Programming</b> as shown in section <b>B</b>	Enter digits: <b>4 # 00</b>

**Important:** All **SO-24A**'s in a system **MUST** be programmed with the same number of dial up code digits.

## D. Dial Up Codes

The **SO-24A** is factory set with the dial up codes for locations 1-24 factory set to 01-24. The dial up codes may be programmed to match the extension number of the line/station being observed or any other numbering scheme as long as all access codes are the same length (see section **C**). **Important:** Each module must to be programmed with its own unique set of dial up codes.

To Program...	Step 2:	Step 3:	Step 4:
...dial up code 231 for location 03	Access <b>Programming</b> as shown in section <b>B</b>	Select 3-digit dial up codes as shown in <b>Programming</b> section <b>C</b>	Enter: <b>231 #03</b>
...dial up code 15 for location 15	Access <b>Programming</b> as shown in section <b>B</b>	Select 2-digit dial up codes as shown in <b>Programming</b> section <b>C</b>	Enter: <b>15 #15</b>
...dial up code 2714 for location 14	Access <b>Programming</b> as shown in section <b>B</b>	Select 4-digit dial up codes as shown in <b>Programming</b> section <b>C</b>	Enter: <b>2714 #14</b>

## E. Talk Assist

The talk assist feature can be activated any time a location is being observed and a "\*" is dialed at the observing phone. To prevent accidental talk assist, the feature may be disabled by entering \*0 while in the programming mode (see section **B**). Enter \*1 to enable talk assist.

## F. Quick Programming Guide

	Enter Digits	- then -	Enter Memory Location
To set dial up codes to two digits (factory setting) .....	<b>2</b>	then	<b>#00</b>
To set dial up codes to three digits .....	<b>3</b>	then	<b>#00</b>
To set dial up codes to four digits .....	<b>4</b>	then	<b>#00</b>
To program dial up codes .....	<b>2-4 digits</b>	then	<b>#01 - #24</b>
To enable talk assist option (factory setting) .....	<b>*1</b>		
To disable talk assist .....	<b>*0</b>		
To set all programming features and dial up codes to factory settings .....	<b>###</b>		
To activate the tape recorder automatically when a station is being observed .....			set DIP switch 3 to <b>ON</b>

**Note:** Recommended Tape Recorders: Radio Shack # 14-1117 or 14-1128.

# Operation

From the observing port, any of the stations can be accessed by dialing a programmable 2, 3 or 4 digit Touch Tone dial up code. Stations being observed are unaware that they are being monitored. Automatic gain control equalizes in and out-bound conversation levels. If assistance is required, the observer can quickly enter the conversation by dialing a Touch Tone "\*." An audio out jack provides a microphone level signal for a tape recorder while the record control jack provides remote operation of the tape recorder on command. Additional **SO-24A**'s may be used to add 24 additional stations or lines at a time. A multi-module configuration of **SO-24A**'s is capable of supporting 240 lines or stations.



## A. Accessing the SO-24A

The **SO-24A** provides balanced 40V talk battery with dial tone on the observing wire pair. A manager or training supervisor may access the **SO-24A** observing port dial tone from an unused trunk input on any PABX/KSU or via a dedicated Touch Tone phone. The **SO-24A** may also be remotely accessed through the **RAD-AMP** Remote Access Devices.

**?** Need More Information on the RAD-AMP?  
Call (715) 386-4345 and select 415.

## B. Selecting a Line or Station

Once the observing port is accessed, dial any of the twenty-four to two hundred forty lines or stations by dialing the two, three or four digit dial up code programmed to that station (see Installation chart). Nothing can be heard by the station being observed. Another station may be selected by dialing a **#** followed by another two, three or four digit dial up code. You may also hang up and then re-access the observing port to dial another dial up code.

## C. Talk Assist

Though the **SO-24A** monitors silently, a manager may enter the conversation to provide assistance at any time by dialing a **\***. To prevent accidental interruptions, this feature may be disabled (see **Programming** section **E**).

## D. Manually Controlled Tape Recording

A remotely controllable tape recorder may be started and stopped when interfaced with the **SO-24A** using the provided cables (see **Installation**). To start the recorder, dial a Touch Tone **9**. To stop the recorder, dial a Touch Tone **#** or hang up.

**?** Recommended Tape Recorders:  
Radio Shack #14-1117 or 14-1128

## E. Automatic Tape Recording

Set DIP switch **3** to **ON** (see **Programming** section **A**) and all monitored conversations will be recorded. If a multi-module system (Master and Slaves) is installed, set DIP switch **3** on all modules to **ON**.

## F. Status LED

The status LED will turn off when a Touch Tone is present from the observing phone, and will wink once per second while observing a station.

## G. Quick Operation Guide

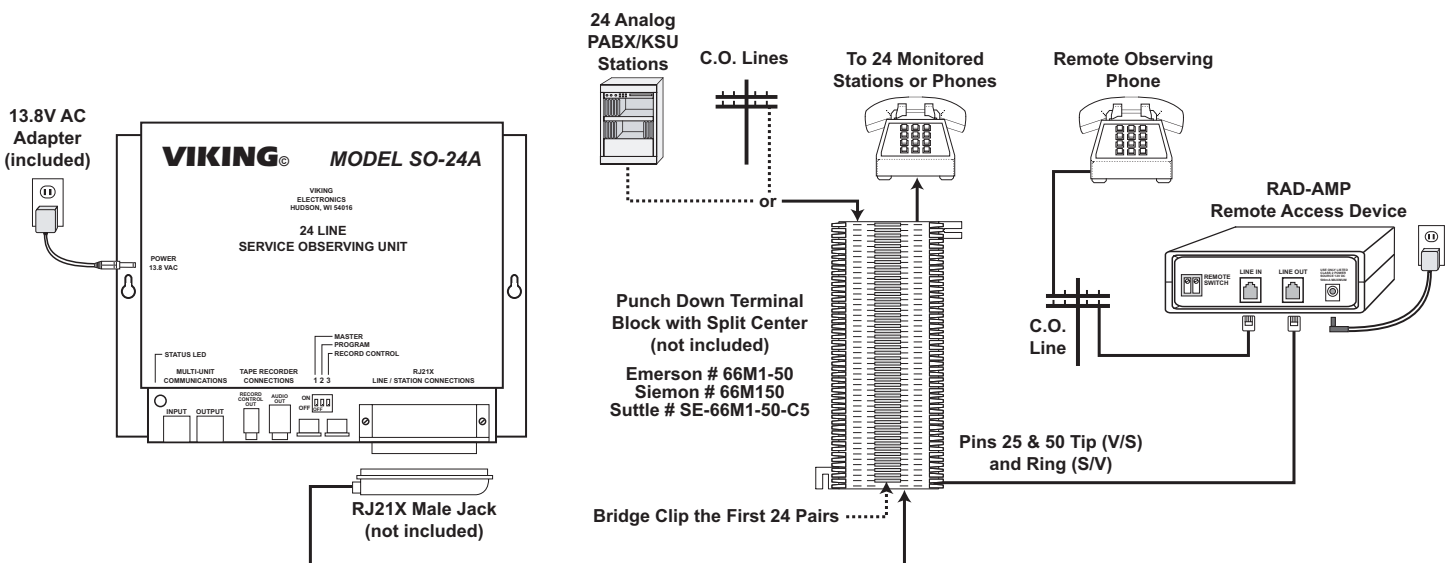
	Enter Digits
To select another line or station .....	# + new dial up code
To join conversation using talk assist feature .....	*
To manually start recorder .....	9
To stop recorder .....	# or hang up
To discontinue observing .....	Hang up

# Applications

## A. Remote Observing

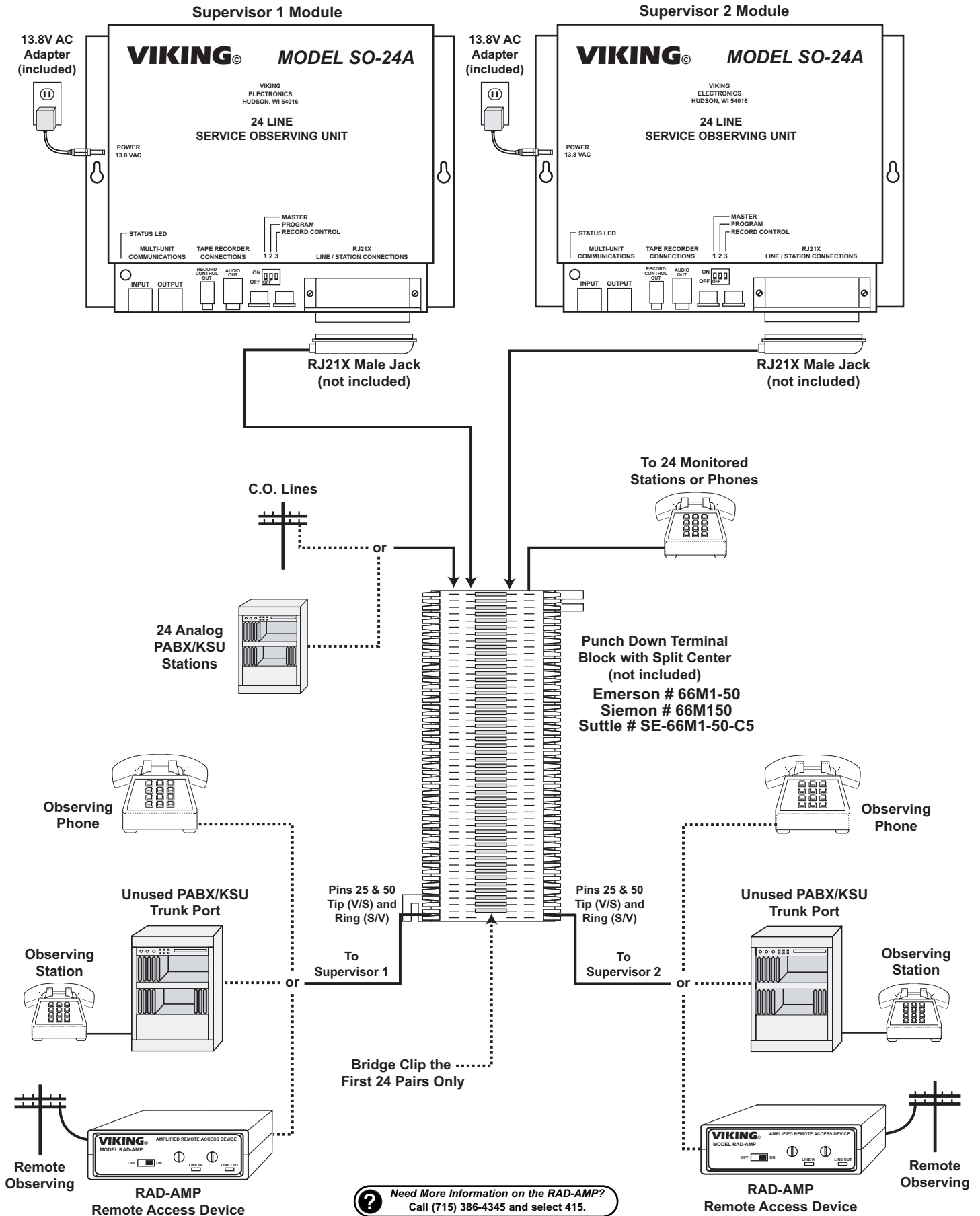
The **SO-24A** may be used remotely by adding the **RAD-AMP** to the monitoring output. **Important:** When using this combination, the **SO-24A** dial up codes can **NOT** begin with the number 7. This is because **#7** is the hang-up command for the **RAD-AMP**.

**?** Need More Information on the RAD-AMP?  
Call (715) 386-4345 and select 415.



## B. Multiple Supervisors

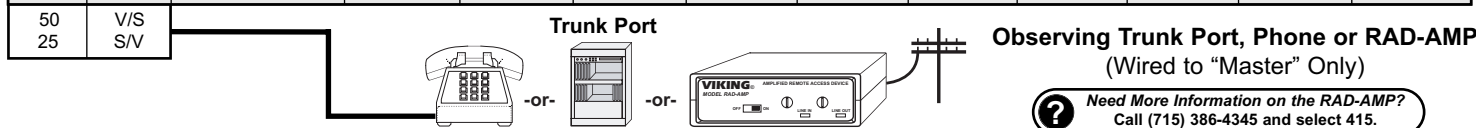
If multiple simultaneous supervisors are required, parallel **SO-24A**'s must be installed for each additional supervisor.



# Programming Guide

The **SO-24A** comes factory programmed with two digit dial up codes for the 24 lines or station set to **01-24** to exactly match the 24 locations 01-24. For convenience, the dial up codes may be programmed to match the extension numbers of the lines or stations being observed. For example, to observe extension 231, simply come off hook on the observing phone and dial **231**. Each module needs to be programmed with its own unique set of dial up codes. The chart below has been provided to help manage assigning dial up codes, especially when multiple units are used in a system. **Note:** *The number of digits (2, 3 or 4) must be the same on ALL modules within the system.*

Pins	Color	Programming Memory Location	Module 1 "Master"	Module 2 "Slave"	Module 3 "Slave"	Module 4 "Slave"	Module 5 "Slave"	Module 6 "Slave"	Module 7 "Slave"	Module 8 "Slave"	Module 9 "Slave"	Module 10 "Slave"
26 1	W/BL BL/W	#01										
27 2	W/O O/W	#02										
28 3	W/G G/W	#03										
29 4	W/BN BN/W	#04										
30 5	W/S S/W	#05										
31 6	R/BL BL/R	#06										
32 7	R/O O/R	#07										
33 8	R/G G/R	#08										
34 9	R/BN BN/R	#09										
35 10	R/S S/R	#10										
36 11	BK/BL BL/BK	#11										
37 12	BK/O O/BK	#12										
38 13	BK/GN GN/BK	#13										
39 14	BK/BN BN/BK	#14										
40 15	BK/S S/BK	#15										
41 16	Y/BL BL/Y	#16										
42 17	Y/O O/Y	#17										
43 18	Y/G G/Y	#18										
44 19	Y/BN BN/Y	#19										
45 20	Y/S S/Y	#20										
46 21	V/BL BL/V	#21										
47 22	V/O O/V	#22										
48 23	V/G G/V	#23										
49 24	V/BN BN/V	#24										



Product Support Line...715.386.8666

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