

SCA and DCA Single Channel and Dual Channel Amplifier Manual



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1. Installation Wiring Documents

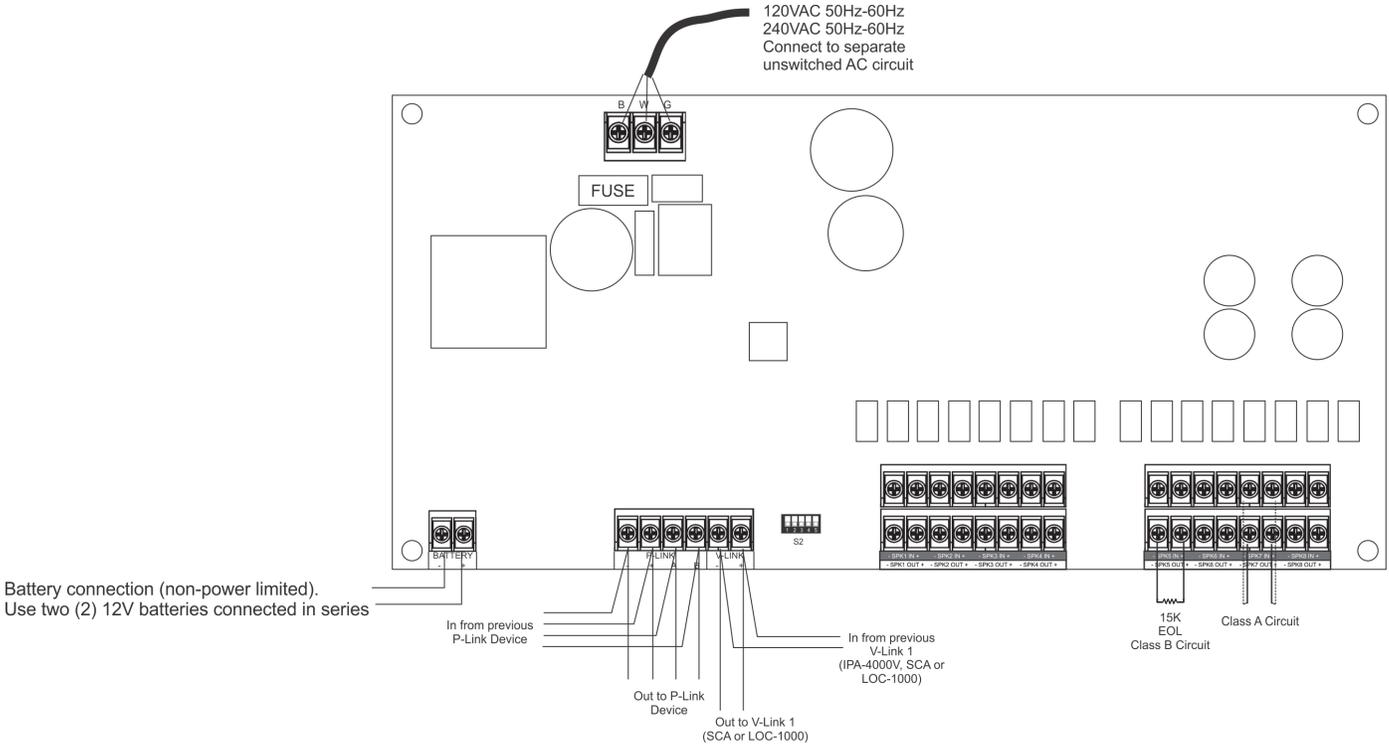


Figure 1. SCA-2525, SCA-2570, SCA-5025 and SCA-5070 Wiring Diagram

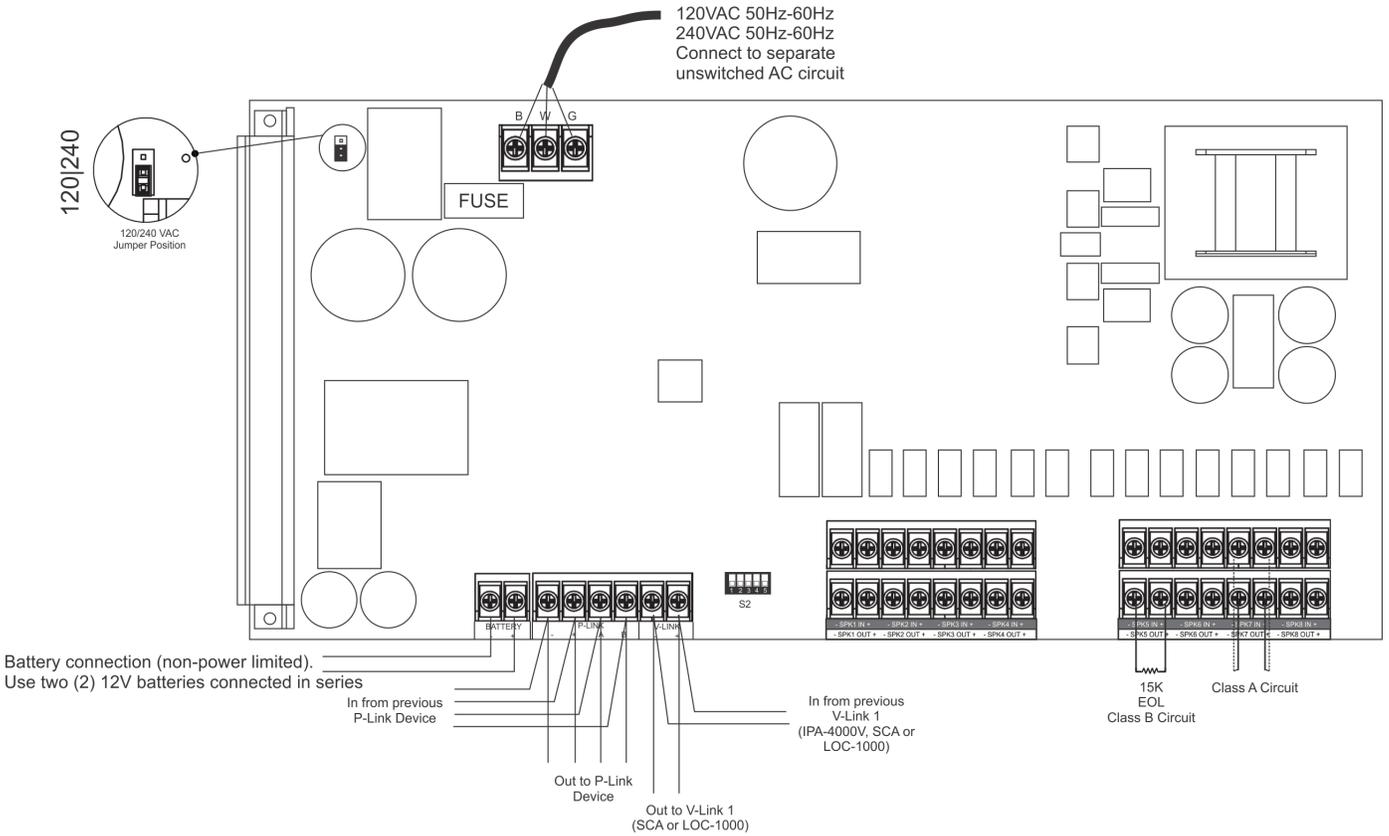


Figure 2. SCA-10070 Wiring Diagram

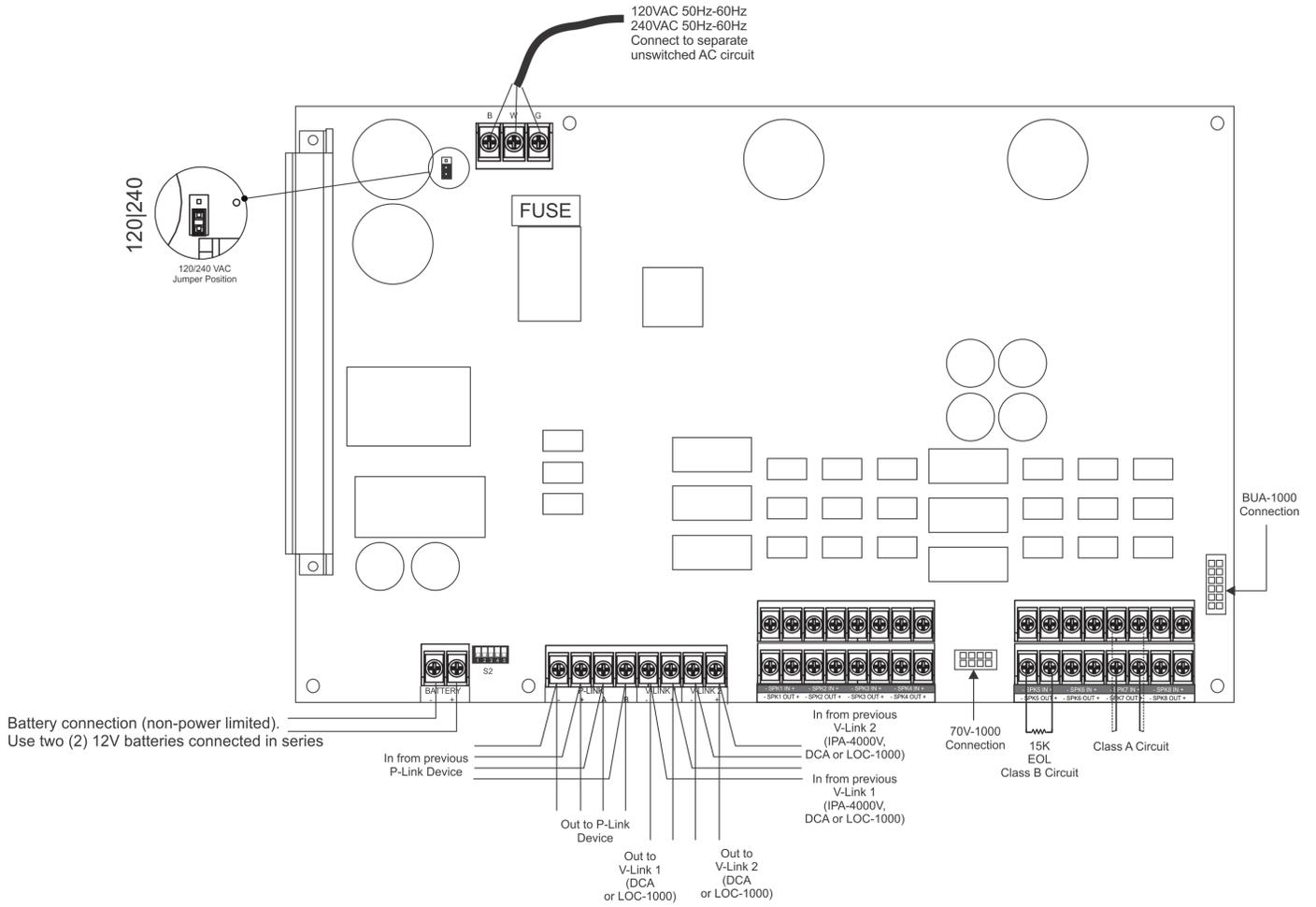


Figure 3. DCA-5025 and DCA-10025

Type of Circuit	Voltage Type	Power Type
AC Connection	High Voltage	Non-Power Limited
Battery Connection	Low Voltage	Non-Power Limited
P-Link	Low Voltage	Power Limited
V-Link	Low Voltage	Power Limited
Speaker Circuits	Low Voltage	Power Limited

Main Supply Circuit

The AC terminal is located in the upper left hand portion of the main board. The main board supervises the main AC power and provides indication that the AC power is absent.

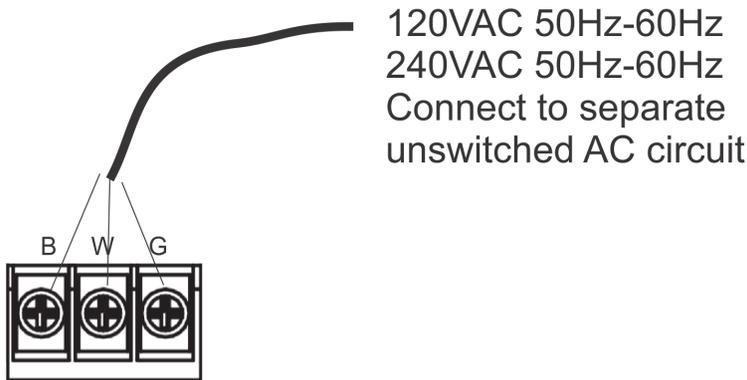


Figure 4. Main Supply Circuit

The terminals are rated at 120 VAC/240 VAC 50/60 Hertz and are marked so accordingly on the board. The earth ground connection is marked as “G” and is the furthest connection from the line voltage connection.

The AC input power ratings:

SCA-2525, SCA-2570, SCA-5025 and SCA-5070 Amplifiers:

Maximum of 242mA at the nominal 120 VAC rating

Maximum of 137mA at the nominal 240 VAC rating

SCA-10070 Amplifiers

Maximum of 443mA at the nominal 120 VAC rating

Maximum of 246mA at the nominal 240 VAC rating

DCA-5025 and DCA-10025 Amplifiers

Maximum of 532mA at the nominal 120 VAC rating

Maximum of 300mA at the nominal 240 VAC rating

Rechargeable Battery Circuit

The battery charging circuit is provided in the bottom portion of the board. Terminal connections are provided to connect wire leads for battery connection. The battery must be a recognized or listed sealed lead acid battery or equivalent.

The battery charging voltage is approximately 27.3 VDC and the circuit is supervised. The battery circuit is protected with a non-replaceable 7 amp poly switch located on the main circuit board. The maximum battery charging circuit is 1.0 amp DC.

The battery circuit is rated for 8 to 55 AH batteries and the cabinet will house up to two 18 AH batteries. The batteries will operate the panel for at least 24 hours and 15 minutes of alarm. To determine the minimum size batteries for standby and alarm times desired, the installer must complete a battery calculation work sheet to determine the minimum battery size for a particular application. For reference, the battery calculation work sheet is attached as Appendix A. Complete standby battery calculations must be completed to ensure adequate battery sizes are provided.

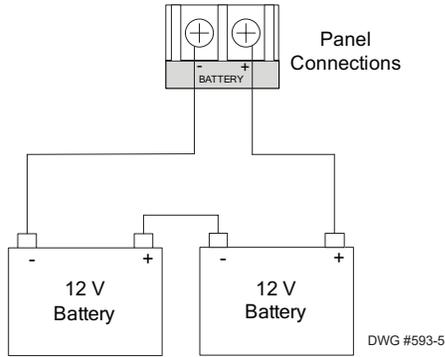


Figure 5. Battery Circuit Connections

Separation of Circuits - Power Limited, Non-Power Limited, High Voltage Wiring

The main AC power connection is considered high-voltage and non-power limited. The Battery conductors, and the low AC and trouble relays are nonpower limited. All remaining circuits are low-voltage, power limited connections.

Proper separation must be maintained between the circuits listed above. All separations in the different wiring must be maintained by at least 0.25 inches and the wire insulation must be for the higher voltage.

In the panel there are sufficient knock outs located around the periphery of the cabinet to allow the installer to maintain power limited and non-power limited connections.

P-Link

The SCA and DCA amplifiers operate in conjunction as an expansion device with the IPA-4000V via P-Link.

All expansion devices are supervised via the RS-485 connection. Wiring is fully supervised, and power limited. Any connection to ground of 0 ohms will be annunciated as a ground fault.

P-Link Voltage = 24 VDC

Maximum wire length = 6,500 feet.

Maximum wire resistance = Maximum wiring resistance is based on load.

Calculate using the following equation

$$(Total\ P-Link\ Alarm\ Current) \times (Wire\ Resistance) < 6\ volts.$$

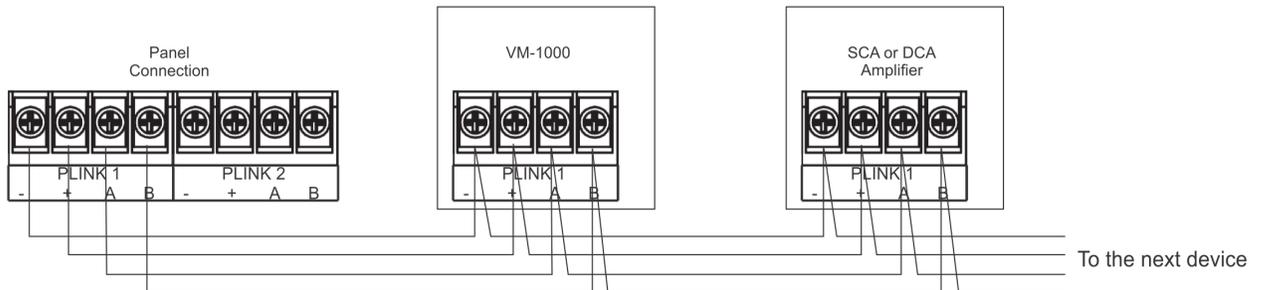


Figure 6. P-Link Class B Wiring Example

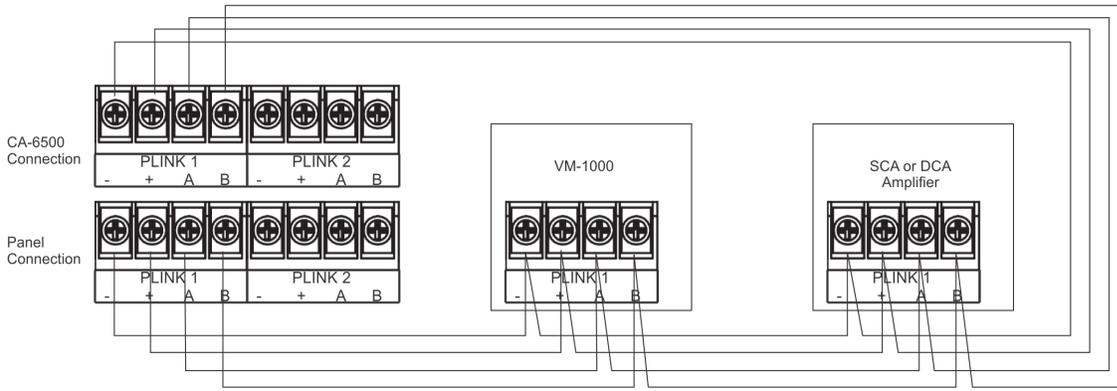


Figure 7. P-Link Class A Wiring Example

V-Link

The V-Link is a supervised proprietary bus that transmits audio to designated channels on SCA and DCA amplifiers. Wiring is fully supervised, and power limited. Any connection to ground of 0 ohms will be annunciated as a ground fault.

Maximum wire length = 6500 feet

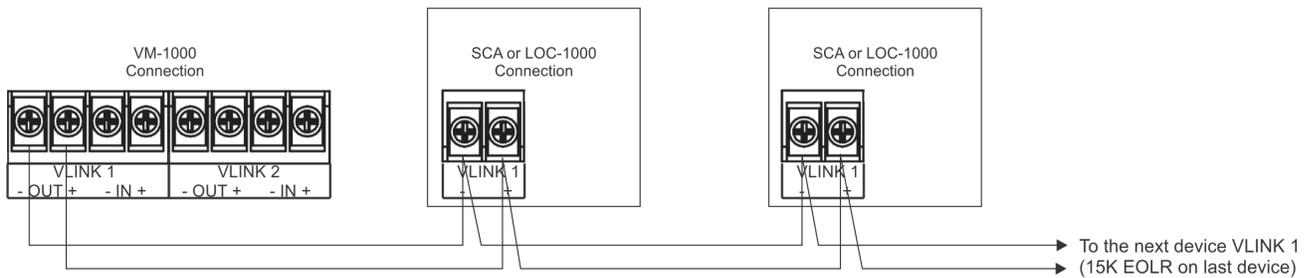


Figure 8. VM-1000 VLINK1 Class B

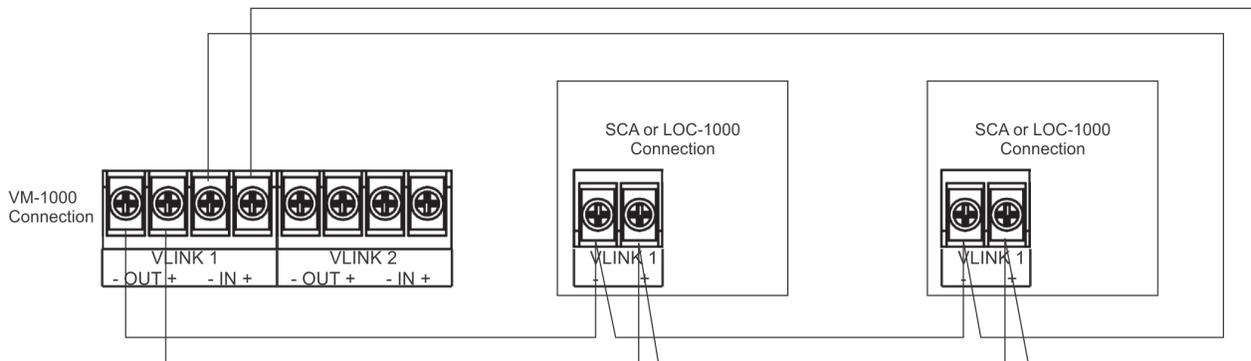


Figure 9. VM-1000 VLINK1 Class A

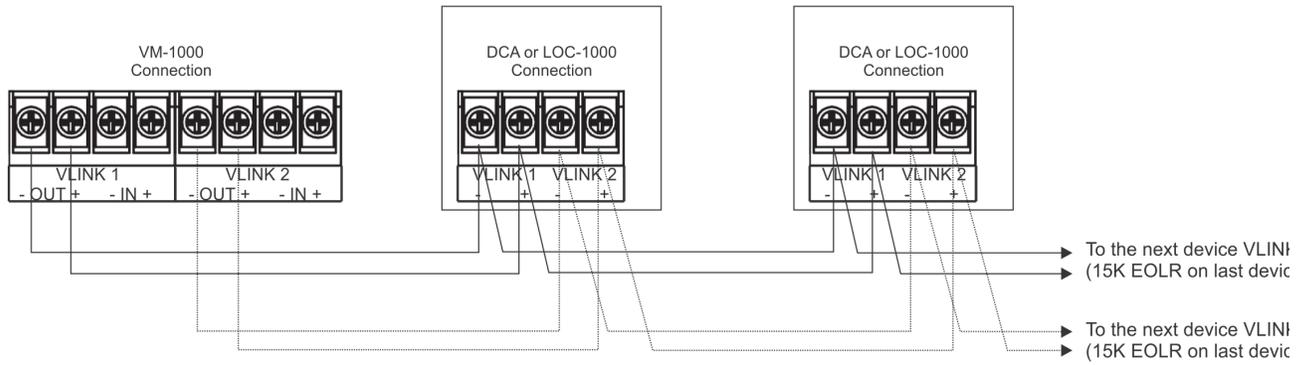


Figure 10. VM-1000 VLINK1 and 2 Class B

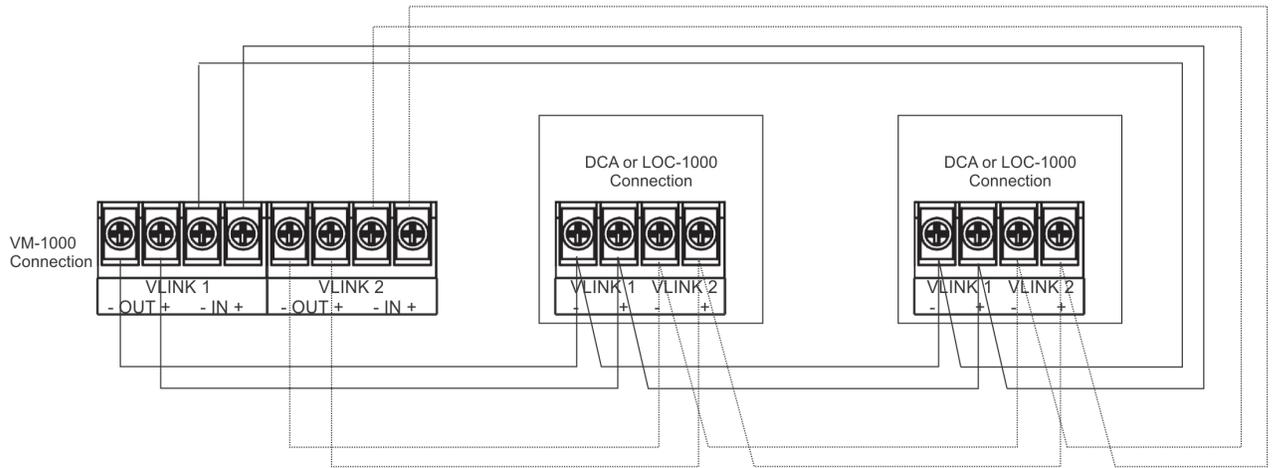


Figure 11. VM-1000 VLINK1 and 2 Class A

Technical Specifications

SCA-2525, SCA-2570, SCA-5025 and SCA-5070

Standby Current	58 mA
Alarm Current	608 mA
Maximum number of amplifiers	31
SCA Cabinet Dimensions	16" x 17" x 3 7/8"
Operating Temperature Range	32° to 120° F (0° to 49°C)
Operating Humidity Range	10% to 93% (non-condensing)

SCA-10070

Standby Current	60 mA
Alarm Current	766 mA
Maximum number of amplifiers	31
SCA Cabinet Dimensions	16" x 17" x 3 7/8"
Operating Temperature Range	32° to 120° F (0° to 49°C)
Operating Humidity Range	10% to 93% (non-condensing)

DCA-5025 and DCA-10025

Standby Current	48 mA
Alarm Current	520 mA
Maximum number of amplifiers	31
SCA Cabinet Dimensions	19" x 27 3/8" x 4 5/8"
Operating Temperature Range	32° to 120° F (0° to 49°C)
Operating Humidity Range	10% to 93% (non-condensing)

General Wiring Information

The cabinet has various conduit knockouts located around the cabinet for ease of wire installation. In addition, this method provides a means to separate different types of circuit to reduce electrical interference, transient voltage, or voltage ratings.

The enclosure requires the use of power limited and non-power limited wiring on the main board as well as within the enclosure. Power limited wiring is to remain separated from non-power limited by a minimum of 0.25 inches and all cablings should be insulated to the higher voltage.

When the panel is installed, the National Electrical Code (NEC, NFPA 70) should be followed for the proper installation and separation of power limited and non-power limited circuits. The mixing of power limited, and non-power limited should be avoided. Refer to the following figure for suggested wiring routing.

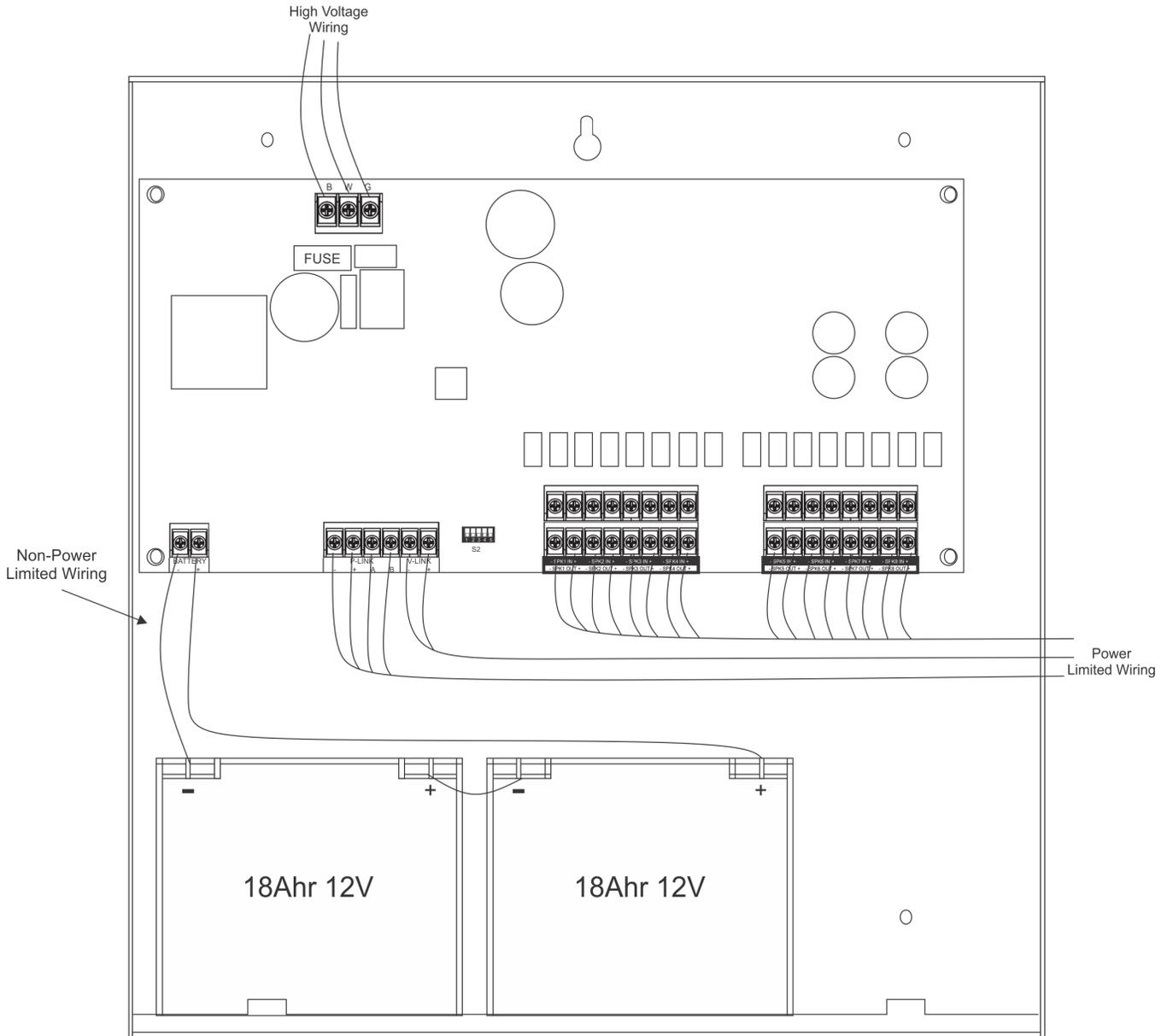


Figure 12. SCA and DCA Wire Routing

2. Functionality

The system is completely supervised and is designed to comply with UL 864 and UL 2572.

Models:

Model	Description	Accessories
SCA-2525	SINGLE CHANNEL 25W, 25V AMPLIFIER	None
SCA-2570	SINGLE CHANNEL 25W, 25V OR 70V SELECTABLE AMPLIFIER	None
SCA-5025	SINGLE CHANNEL 50W, 25V AMPLIFIER	None
SCA-5070	SINGLE CHANNEL 50W, 25V OR 70V SELECTABLE AMPLIFIER	None
SCA-10070	SINGLE CHANNEL 100W, 25V OR 70V SELECTABLE AMPLIFIER	None
DCA-5025	DUAL CHANNEL 50W, 25V AMPLIFIER	70V-1000 BUA-1000
DCA-10025	DUAL CHANNEL 100W, 25V AMPLIFIER	70V-1000 BUA-1000

The SCA-2525, SCA-2570, SCA-5025, SCA-5070 and SCA-10070 models are addressable single channel amplifiers that distribute live voice and ECS to 8 Class A or 8 Class B speaker outputs.

The DCA-5025 and DCA-10025 models are addressable dual channel amplifiers that distribute live voice and ECS to 8 Class A or 8 Class B speaker outputs.

Class B Speaker Circuit

Class A Speaker Circuit

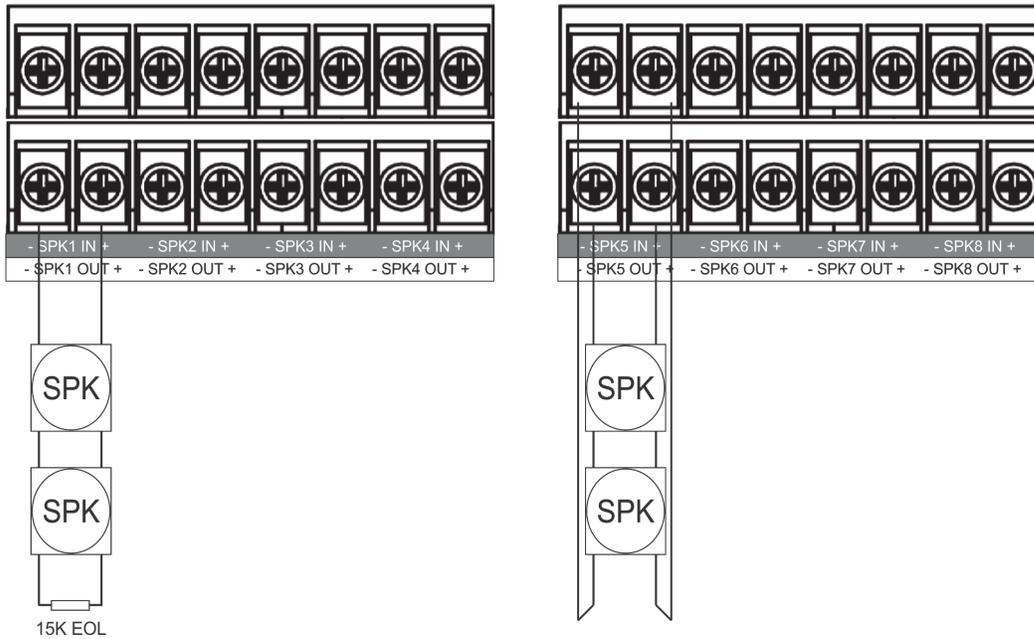


Figure 13. SCA and DCA Class A and Class B Speaker Wiring

A maximum of thirty-one (31) SCA or DCA amplifiers can be utilized with an IPA-4000V which offers a total of 248 Class B or Class A speaker circuits. All speaker circuits are fully supervised and programmable through Potter software. Reference the IPA-4000V manual for programming instructions.

Figure 14. Dip Switch Settings

Amplifier Address	Dip Switch Settings				
	SW-1	SW-2	SW-3	SW-4	SW-5
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF
13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON

Amplifier Address	Dip Switch Settings				
	SW-1	SW-2	SW-3	SW-4	SW-5
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON
23	ON	ON	ON	OFF	ON
24	OFF	OFF	OFF	ON	ON
25	ON	OFF	OFF	ON	ON
26	OFF	ON	OFF	ON	ON
27	ON	ON	OFF	ON	ON
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON

The SCA and DCA amplifiers are equipped with a proprietary P-Link communication bus to operate in conjunction with an IPA-4000V. The amplifiers are also equipped with a proprietary V-Link bus to receive audio from the VM-1000 contained in the IPA-4000V.

The 70V-1000 may be installed on the DCA-5025 and DCA-10025 to extend the voltage output to 70.7V. Refer to the 70V-1000 installation sheet (#5409211) for additional information including mounting.

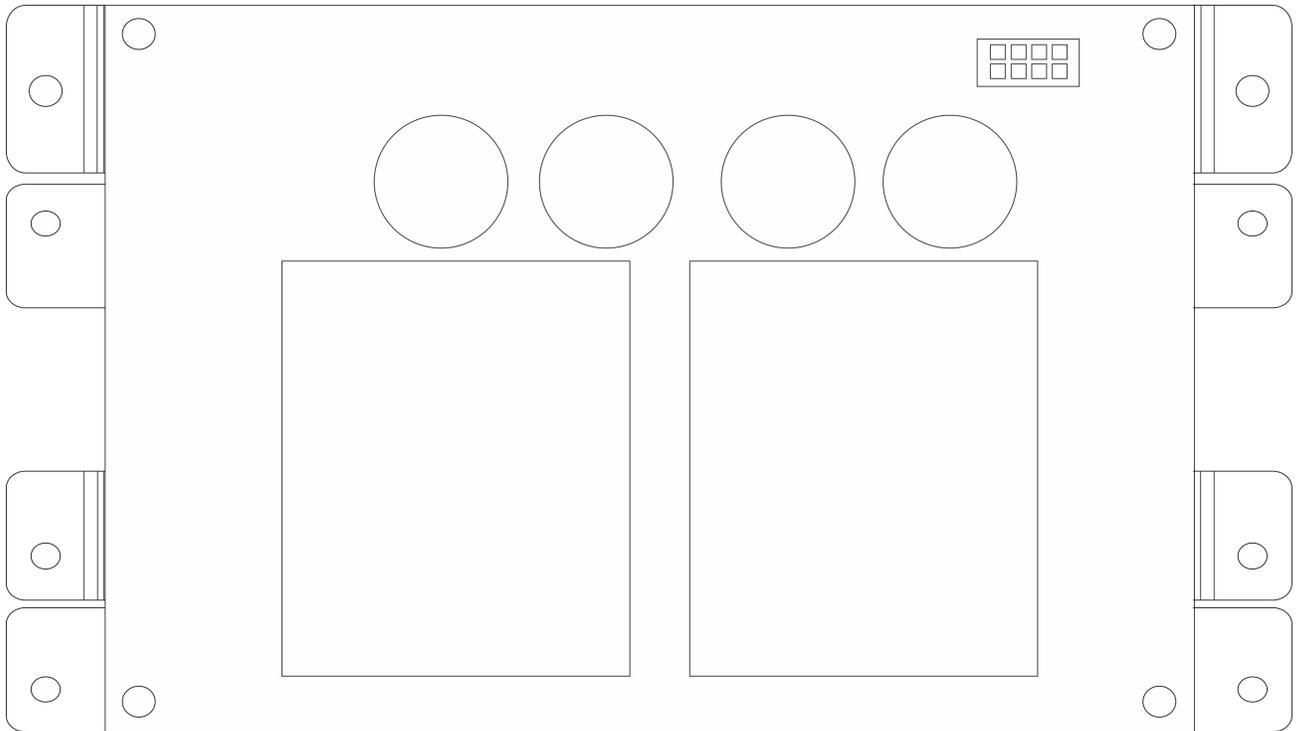


Figure 15. 70V-1000

The BUA-1000 may be installed on the DCA-5025 and DCA-10025 to provide backup amplification during internal amplifier failure. Refer to the BUA-1000 installation sheet (#5409212) for additional information including mounting.

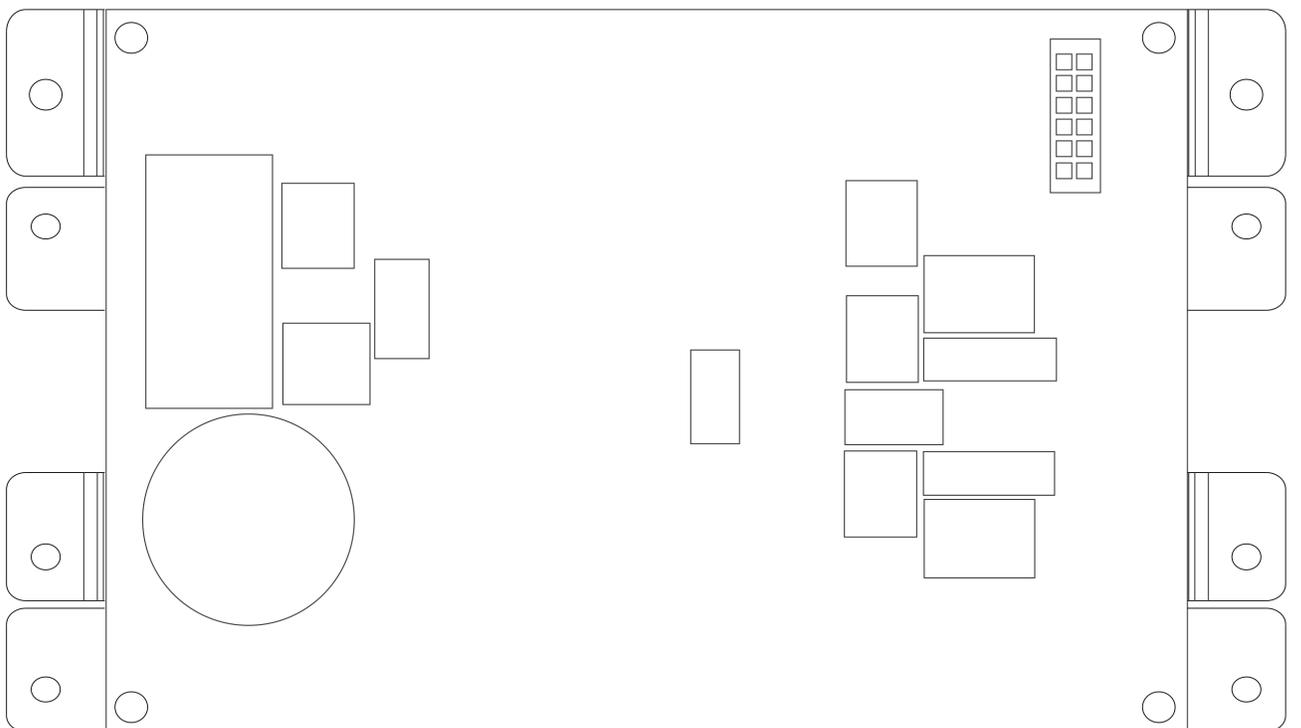


Figure 16. BUA-1000

The SCA-2525, SCA-2570, SCA-5025 and SCA-5070 is equipped with a universal power supply to support 120VAC and 240VAC 50Hz/60Hz.

The SCA-10070, DCA-5025 and DCA-10025 require a shunt on J1 to select 120VAC or 240VAC, 50Hz/60Hz.

SCA-2525, SCA-2570, SCA-5025, SCA-5070 and DCA-5025: A maximum of 50W per circuit at 25V and 70V.

SCA-10070: A maximum of 100W on circuit 1 at 25V and 70V, and 50W maximum on circuits 2-8 at 25V and 70V

DCA-10025: A maximum of 100W on circuits 1 and 5 at 25V and 70V, and maximum of 50W on circuits 2, 3, 4, 6, 7 and 8 at 25V and 70V.

3. Compatibility

The SCA and DCA amplifiers are compliant with UL 464 520 Hz signaling with the following speakers:

Potter Signal Series: FASPKR, SPKSTR-24CLP and SPKSTR-24WLP

Gentex Series: SSPKCLP, SSPK24WLP and SSPK24CLP

System Sensor Series: SPCRL and SPRL

Wheelock Series: E50 and E60

Appendix A: Battery Calculation Worksheets

Description	Quantity	Standby (mA)	Total Standby (mA)	Alarm (mA)	Total Alarm (mA)
SCA-2525	1	58	58	608	608
		Total (mA)		Total (ma)	
Convert to Amps			x 0.001	Convert to Amps	x 0.001
(*Refer to maximum allowable standby current) Total A:				Total A:	
Multiply by standby hours			x ____	<u>60 minutes per hour</u> Alarm time (minutes) <i>Example:</i> 5 minute alarm: enter 12 10 minute alarm: enter 6	÷ ____
Total Standby AH				Total Alarm AH	
				+Total Standby AH	
				Total AH	
				Efficiency Factor	÷ 0.80
				Required AH	

SCA-2570	1	58	58	608	608
		Total (mA)		Total (ma)	
Convert to Amps			x 0.001	Convert to Amps	x 0.001
(*Refer to maximum allowable standby current) Total A:				Total A:	
Multiply by standby hours			x ____	<u>60 minutes per hour</u> Alarm time (minutes) <i>Example:</i> 5 minute alarm: enter 12 10 minute alarm: enter 6	÷ ____
Total Standby AH				Total Alarm AH	
				+Total Standby AH	
				Total AH	
				Efficiency Factor	÷ 0.80
				Required AH	

SCA-5025	1	58	58	608	608
		Total (mA)		Total (ma)	
Convert to Amps			x 0.001	Convert to Amps	x 0.001
(*Refer to maximum allowable standby current) Total A:				Total A:	
Multiply by standby hours			x ____	<u>60 minutes per hour</u> Alarm time (minutes) <i>Example:</i> 5 minute alarm: enter 12 10 minute alarm: enter 6	÷ ____
Total Standby AH				Total Alarm AH	
				+Total Standby AH	
				Total AH	
				Efficiency Factor	÷ 0.80
				Required AH	

SCA-5070	1	58	58	608	608
		Total (mA)		Total (ma)	
Convert to Amps			x 0.001	Convert to Amps	x 0.001
(*Refer to maximum allowable standby current) Total A:				Total A:	
Multiply by standby hours			x ____	<u>60 minutes per hour</u> Alarm time (minutes) <i>Example:</i> 5 minute alarm: enter 12 10 minute alarm: enter 6	÷ ____
Total Standby AH				Total Alarm AH	
				+Total Standby AH	
				Total AH	
				Efficiency Factor	÷ 0.80
				Required AH	

SCA-10070	1	60	60	766	766
		Total (mA)		Total (ma)	
Convert to Amps			x 0.001	Convert to Amps	x 0.001
(*Refer to maximum allowable standby current) Total A:				Total A:	
Multiply by standby hours			x ____	<u>60 minutes per hour</u> Alarm time (minutes) <i>Example:</i> 5 minute alarm: enter 12 10 minute alarm: enter 6	÷ ____
Total Standby AH				Total Alarm AH	
				+Total Standby AH	
				Total AH	
				Efficiency Factor	÷ 0.80
				Required AH	

DCA-5025	1	48	48	520	520
BUA-1000		48		52	
70V-1000		2		562	
		Total (mA)		Total (ma)	
Convert to Amps			x 0.001	Convert to Amps	x 0.001
(*Refer to maximum allowable standby current) Total A:				Total A:	
Multiply by standby hours			x ____	<u>60 minutes per hour</u> Alarm time (minutes) <i>Example:</i> 5 minute alarm: enter 12 10 minute alarm: enter 6	÷ ____
Total Standby AH				Total Alarm AH	
				+Total Standby AH	
				Total AH	
				Efficiency Factor	÷ 0.80
				Required AH	

DCA-10025	1	48	48	520	520
BUA-1000		48		52	
70V-1000		2		562	
		Total (mA)		Total (ma)	
Convert to Amps			x 0.001	Convert to Amps	x 0.001
(*Refer to maximum allowable standby current) Total A:				Total A:	
Multiply by standby hours			x _____	<u>60 minutes per hour</u> Alarm time (minutes) <i>Example:</i> 5 minute alarm: enter 12 10 minute alarm: enter 6	÷ _____
Total Standby AH				Total Alarm AH	
				+Total Standby AH	
				Total AH	
				Efficiency Factor	÷ 0.80
				Required AH	