

**INSTALLATION AND MAINTENANCE INSTRUCTIONS**

**SpectrAlert Advance SPS and SPV Series  
Wall and Ceiling Speaker/Strobes for  
Fire Protective Signaling Systems**



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1-800-SENSOR2, FAX: 630-377-6495  
www.systemsensor.com

156-3109-011R

For use with models:

SPSR, SPSRH, SPSW, SPSWH, SPSRV, SPSWV, SPSRK, SPSWK, SPSCR, SPSCRH, SPSCW, SPSCWH, SPSRHK, SPSCRV, SPSCRVH, SPSCWV, SPSCWVH, SPSCWK, SPSCWHK, SPSR-P, SPSRH-P, SPSW-P, SPSWH-P, SPSRV-P, SPSWV-P, SPSCW-P, SPSCWH-P, SPSCWVH-P, SPSCHWV-P, SPSRK-P, SPSWK-P, SPSCW-CLR-ALERT, SPSW-CLR-ALERT, SPRK-R, SPWK-R, SPSWK-R, SPSRK-R, SPSCWHK-P, SPSWK-CLR-ALERT, SPSCWK-CLR-ALERT



**NOTE:** All -R models are specifically designed for use with the WTP Series of Weatherproof plates

**NOTE:** When replacing outdoor units; device and back box must be replaced

**PRODUCT SPECIFICATIONS**

Operating Temperature	Standard	32°F to 120°F (0°C to 49°C)	K Series	-40°F to 151°F (-40°C to 66°C)
Humidity Range	Standard	10% to 93% Non-condensing	K Series	Meets NEMA 4X, IP56 rating requirements
Nominal Voltage (speakers)	25 Volts or 70.7 Volts (nominal)			
Max. Supervisory Voltage (speakers and strobes)	50 VDC			
Strobe Flash Rate	1 flash per second			
Nominal Voltage (strobes)	Regulated 12VDC or FWR or regulated 24DC or FWR			
Speaker Frequency Range	400 to 4000 Hz			
Power Settings (Speakers)	1/4, 1/2, 1, 2 watts			
Operating Voltage Range (includes fire alarm panels with built in sync)	8 to 17.5V (12V nominal) or 16 to 33V (24V nominal)			
Operating Voltage with MDL3 Sync Module	8.5 to 17.5V (12V nominal) or 16.5 to 33V (24V nominal)			
Input Terminal Wire Guage	12-18 AWG			

**Dimensions for Speaker/Strobes and Accessories**

NOTE: V suffix denotes high volume device, C suffix denotes ceiling device.

Wall Product	Length	Width	Depth	Ceiling Product	Diameter	Depth
SPS Speaker/Strobe	6.0"	5.0"	4.7" (including lens and speaker)	SPSC Speaker/Strobe	6.8"	4.7" (including lens and speaker)
SPSV Speaker/Strobe	6.0"	5.0"	4.8" (including lens and speaker)	SPSCV Speaker/Strobe	6.8"	4.8" (including lens and speaker)
Weatherproof back box **	6.5"	5.5"	2.9"	Weatherproof back box **	7.2"	2.9"
Surface Mount Skirt	6.5"	5.0"	2.7"	Surface Mount Skirt	7.2"	2.7"

\*Depth above finished surface of wall or ceiling. \*\*Weatherproof back box dimensions do not include the two mounting tabs.

**Mounting Box Options**

2-Wire Indoor Products	K Series Products
4 × 4 × 2 <sup>1</sup> / <sub>8</sub> or deeper	MWBB - red wall metal weatherproof back box MWBBW - white wall metal weatherproof back box MWBBCW - white ceiling metal weatherproof back box

The indoor SP and SPV Series are suitable for dry and damp environments. The "K" Series models are suitable for use in both indoor and outdoor applications.

NOTICE: This manual shall be left with the owner/user of this equipment. The "K" models are suitable for outdoor use in wet environments with outdoor back box supplied with the product.

**GENERAL DESCRIPTION**

The SpectrAlert Advance series of notification appliances offers a wide range of speaker/strobe products for wall and ceiling applications, indoors and outdoors. The strobe portion is designed to be used in 12 or 24 volt, DC or FWR (full wave rectified) systems. The speaker portion can be operated with distribution amplifiers having an output voltage of either 25 or 70.7 volts.

With its low total harmonic distortion, the SpectrAlert Advance SP series offers high fidelity sound output. The SpectrAlert Advance SPV series offers greater sound output at every tap setting for applications with high ambient noise levels. The speakers operate at any one of four input power levels. These products are electrically backward compatible with the previous generation of SpectrAlert notification appliances. All SpectrAlert Advance products are suitable for use in synchronized systems. The System Sensor MDL3 module may be used to provide synchronization for the strobes. Wall and ceiling products may be used interchangeably (wall products may be used on the ceiling and ceiling products may be used on the wall.) K Series products are designed to be used over a wider range of temperatures and are suitable for use in wet

locations.

**FIRE ALARM SYSTEM CONSIDERATIONS**

All wiring must be installed in compliance with the National Electrical Code (NEC) and applicable local codes. System Sensor recommends installing fire alarm speakers in compliance with NFPA 72, ANSI/UL1480 and NEC 760.

**LOOP DESIGN AND WIRING**

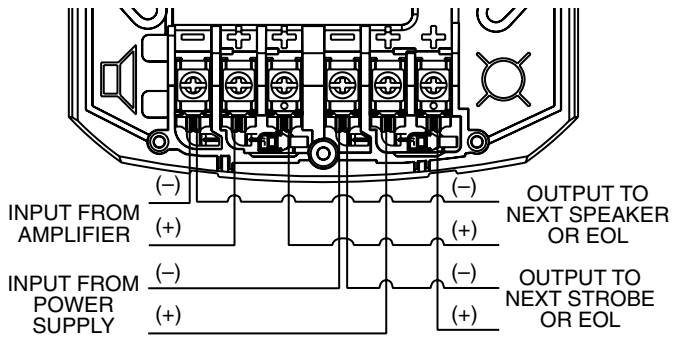
The system designer must make sure that the total current drawn by the devices on the loop does not exceed the current capability of the panel supply, and that the last device on the circuit is operated within its rated voltage. The current draw information for making these calculations can be found in the tables within this manual. For convenience and accuracy, use the voltage drop calculator on the System Sensor website (www.systemsensor.com) or CD-ROM.

When calculating the voltage available to the last device, it is necessary to consider the voltage drop due to the resistance of the wire. The thicker the wire, the smaller the voltage drop. Wire resistance tables can be obtained from electrical handbooks. Note that if Class A wiring is installed, the wire length may be up to twice as long as it would be for circuits that are not fault tolerant.

NOTE: For 24 volt applications, the total number of strobes on a single NAC must not exceed 40, with a maximum loop resistance of 120 ohms. For 12 volt applications, the total number of strobes must not exceed 12, with a maximum loop resistance of 30 ohms.

NOTE: Supply power for strobe must be continuous for proper operation.

**FIGURE 1. WIRING DIAGRAM:**



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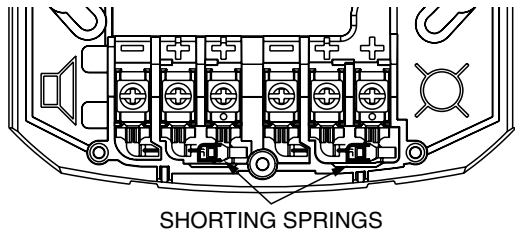
**ELECTRICAL WIRING**

1. Connect the speaker as shown in Figure 1.  
NOTE: Do not loop electrical wiring under terminal screws. Wires connecting the device to the control panel must be broken at the device terminal connection in order to maintain electrical supervision.
2. There are two rotary switches on the back of the product. The first switch is used to select either 25 or 70.7 volts input for the speaker portion. The second switch is used to select the input power of 1/4, 1/2, 1 or 2 watts. See diagram.

**SHORTING SPRING**

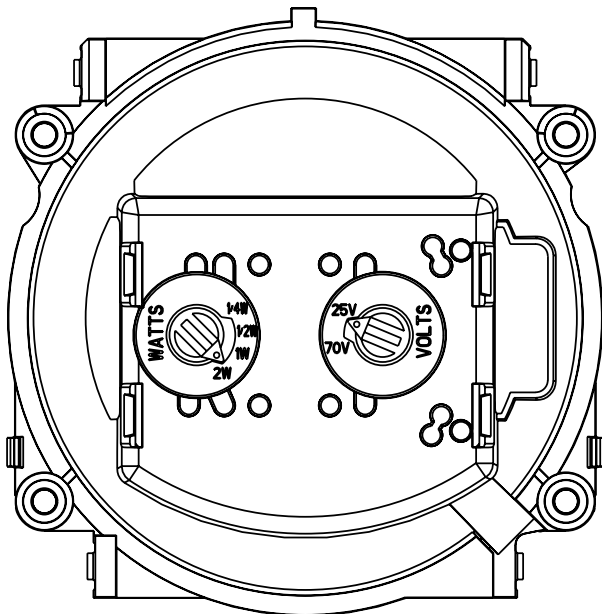
NOTE: Shorting springs are provided between terminals 2 and 3 and between terminals 5 and 6 of the mounting plate to enable wiring checks after the system has been wired, but prior to installation of the final product. These springs will automatically disengage when the product is installed, to enable supervision of the final system.

**FIGURE 2. SHORTING SPRING**



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**FIGURE 3. SPEAKER WATTAGE AND VOLTAGE SETTINGS:**



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**TABLE 1. SOUND LEVELS FOR EACH TRANSFORMER POWER TAP:**

UL Reverberant (dBA @ 10 ft.)	SPS, SPSC	SPSV, SPSCV
2W	85	89
1W	82	86
1/2W	79	83
1/4W	76	80

UL Anechoic (dBA @ 10 ft.)	SPS, SPSC	SPSV, SPSCV
2W	88	93
1W	86	90
1/2W	83	87
1/4W	80	84

**CAUTION**

Signal levels exceeding 130% rated signal voltage can damage the speaker. Consequently, an incorrect tap connection may cause speaker damage. This means that if a 25V tap is selected when a 70.7V amplifier is being used, speaker damage may result. Therefore, be sure to select the proper taps for the amplifier voltage/input power level combination being used.

**TABLE 2. STROBE CURRENT DRAW MEASUREMENTS:**

Strobe Current Draw(mA)					
	Candela	8-17.5 Volts		16-33 Volts	
		DC	FWR	DC	FWR
Standard Candela Range	15	123	128	66	71
	15/75	142	148	77	81
	30	NA	NA	94	96
	75	NA	NA	158	153
	95	NA	NA	181	176
	110	NA	NA	202	195
High Candela Range	115	NA	NA	210	205
	135	NA	NA	228	207
	150	NA	NA	246	220
	177	NA	NA	281	251
	185	NA	NA	286	258

**CANDELA SELECTION**

Adjust the slide switch on the rear of the product to position the desired candela setting in the small window on the front of the unit. All products meet the light output profiles specified in the appropriate UL Standards. Use Table 2 to determine the current draw for each candela setting. For K series products used outdoors at low temperatures, listed candela ratings must be reduced in accordance with Table 3.

NOTE: SpectraAlert products set at 15 and 15/75 candela automatically work on either 12V or 24V power supplies. The products are not listed for 12V operating voltages when set to any other candela settings.

**TABLE 3. CANDELA DERATING:**

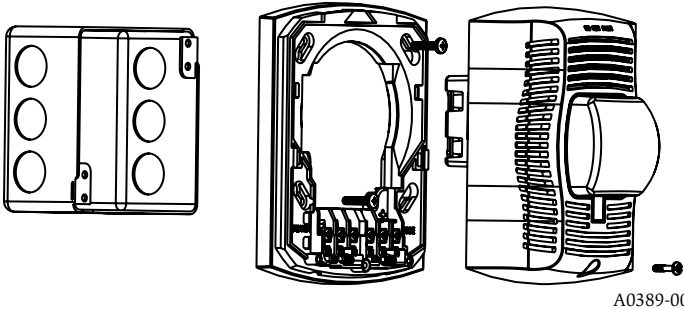
Listed Candela Rating	
Candela rating at -40°F (K Series Outdoor Applications Only)	
15	Do not use below 32°F
15/75	
30	
75	44
95	70
110	110
115	115
135	135
150	150
177	177
185	185

## MOUNTING

### Mounting Indoor Wall or Ceiling Products

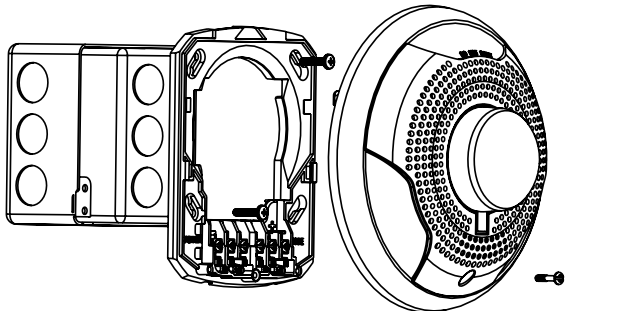
1. Attach mounting plate to junction box as shown in Figures 4 and 5. The mounting plate is compatible 4" x 4" x 2<sup>1</sup>/<sub>8</sub>" junction boxes. If using a back box skirt or trim ring, attach the mounting plate to the skirt or trim ring and then attach the entire assembly to the junction box (see Figures 4, 6 and 8).
2. Connect field wiring to terminals, as shown in Figure 1.
3. If the product is not to be installed at this point, use the paint cover to prevent contamination of the mounting plate.
4. To attach product to mounting plate, remove the paint cover, then hook tabs on the product housing into the grooves on mounting plate.
5. Then, swing product into position to engage the pins on the product with the terminals on the mounting plate. Make sure that the tabs on the back of the product housing fully engage with the mounting plate.

**FIGURE 4: WALL MOUNT PRODUCT WITH TRIM RING:**



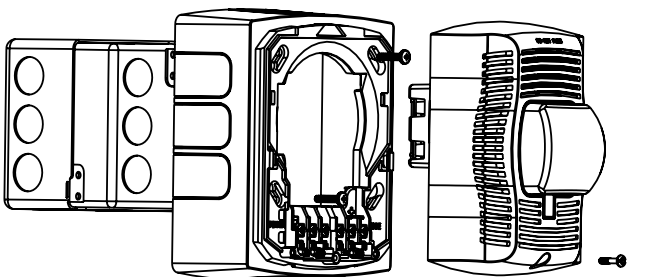
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**FIGURE 5: CEILING MOUNT PRODUCT:**



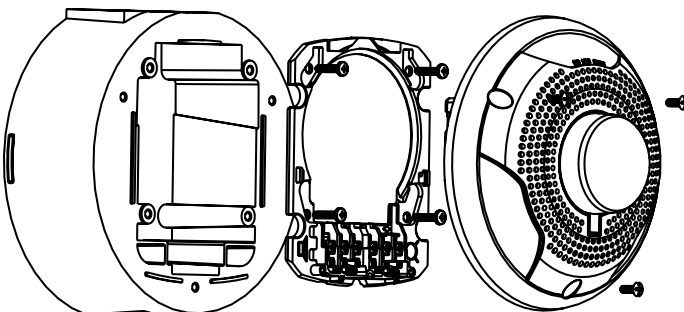
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**FIGURE 6: WALL MOUNT PRODUCT WITH BACK BOX SKIRT:**



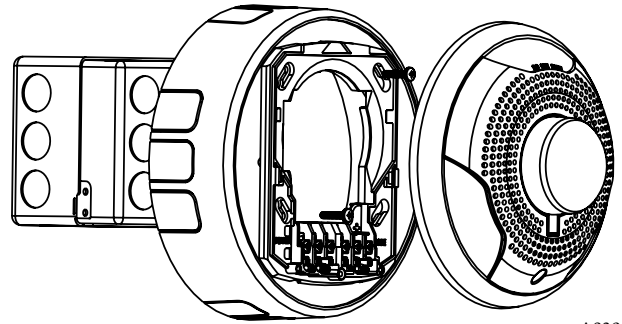
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**FIGURE 7. OUTDOOR CEILING MOUNT PRODUCT WITH PLASTIC WEATHERPROOF BACK BOX:**



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**FIGURE 8: CEILING MOUNT PRODUCT WITH BACK BOX SKIRT:**



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6. **Secure product by tightening the single mounting screw in the front of the product housing.** For tamper resistance, the standard captivated mounting screw may be replaced with the enclosed Torx screw.

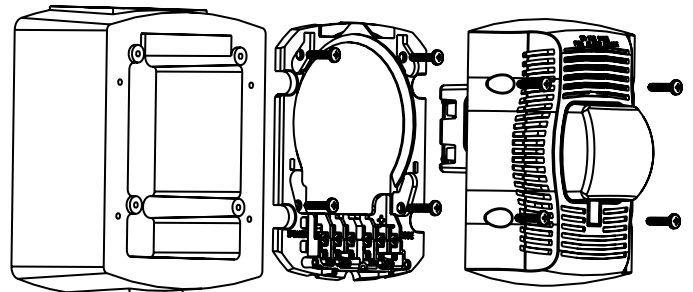
### K Series Mounting

1. K Series products may be used indoors or outdoors. They must be installed using the proper SpectrAlert Advance weatherproof back box. Do not attempt to use boxes other than those specified for use with the product.
2. The plastic weatherproof back box is equipped with removable side flanges for mounting. The back box may be secured directly to the wall or ceiling using the flanges (plastic and metal back boxes) or by using the knockout plugs (plastic back boxes). Knockout plugs are provided to mount directly to the wall or ceiling or to a 1900 weatherproof electrical box, see Figure 12.
3. Threaded holes are provided in the sides of the box for 3/4 inch conduit adapters. Knockout plugs in the back of the box can be used for 1/2 or 3/4 inch rear entry. Unused holes must be sealed. Plugs and O-Rings are provided with the box for this purpose.
4. It is the responsibility of the installer to make sure that all openings and connections are sealed properly. Outdoor installations that are protected from direct exposure to rain are still subject to condensation or leakage through hidden areas, such as a soffit.
5. Water may pool on the back box due to condensation or direct exposure to rain or snow. Use watertight fittings for all wiring connections, including the knockout plugs on the back of the box. When using the plastic plugs to fill unused threaded holes, make sure the O-rings supplied are properly positioned on the plug. The plugs must be sealed with PTFE thread seal tape.
6. Attach the mounting plate to the weatherproof back box using the four non-painted screws.
7. Follow steps 2-5 of the indoor mounting instructions to wire and attach the product. The product must be mounted to the weather proof back box using the painted screws (wall product has 4 screws, ceiling product has 3 screws)

### CAUTION

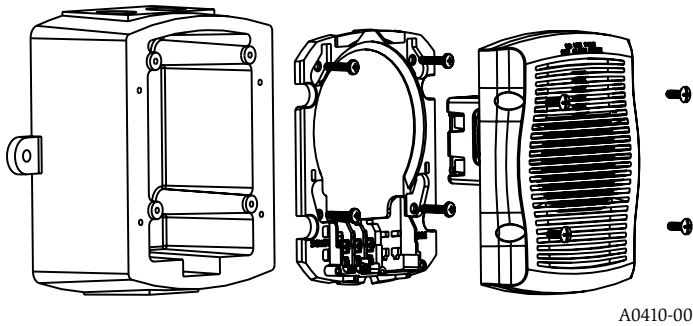
The 'hold-in-place' snaps are not intended to secure the product to the back box. The product must be secured to the back box using the screws provided

**FIGURE 9. WALL MOUNT WEATHERPROOF PRODUCT WITH PLASTIC BACK BOX:**



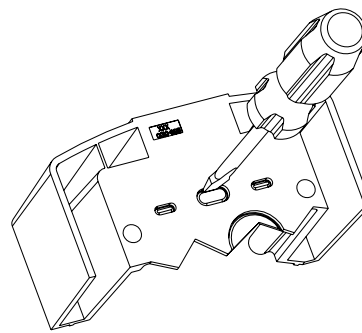
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**FIGURE 10. OUTDOOR WALL MOUNT PRODUCT WITH METAL WEATHERPROOF BACK BOX:**



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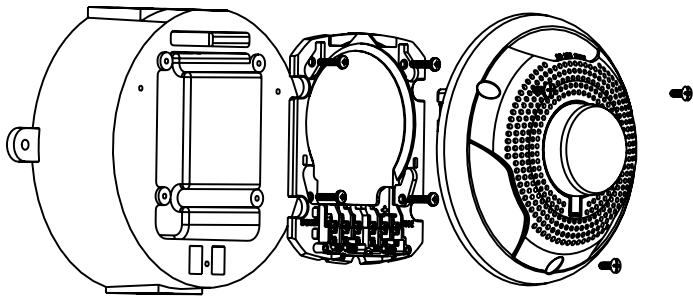
**FIGURE 12. FOR KNOCKOUTS USE A FLAT BLADE SCREWDRIVER.**



NOTE: Place the blade along the edge of the slot and slowly work your way around the slot as you strike the screwdriver.

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**FIGURE 11. OUTDOOR CEILING MOUNT PRODUCT WITH METAL WEATHERPROOF BACK BOX:**



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## Please refer to insert for the Limitations of Fire Alarm Systems

### ⚠ WARNING

#### THE LIMITATIONS OF SPEAKER/STROBES

Always make sure that the individual speakers are tested after installation per NFPA regulations.

The speaker may not be heard. The loudness of the speaker meets (or exceeds) the current Underwriters Laboratories' standards. However, the speaker may not attract the attention of a sound sleeper or one who has recently used drugs or has been drinking alcoholic beverages. The speaker may not be heard if it is placed on a different floor from the person in hazard or if placed too far away to be heard over the ambient noise. Traffic, air conditioners, machinery, or music appliances may prevent even alert persons from hearing the alarm. The speaker may not be heard by persons who are hearing impaired. The signal strobe may not be seen. The electronic visual warning signal uses an extremely reliable xenon flash tube. It flashes at least once every second. The strobe must

not be installed in direct sunlight or areas of high light intensity (over 60 foot candles) where the visual flash might be disregarded or not seen. The strobe may not be seen by the visually impaired.

The signal strobe may cause seizures. Individuals who have positive photoic response to visual stimuli with seizures, such as persons with epilepsy, should avoid prolonged exposure to environments in which strobe signals, including this strobe, are activated.

The signal strobe cannot operate from coded power supplies. Coded power supplies produce interrupted power. The strobe must have an uninterrupted source of power in order to operate correctly. System Sensor recommends that the speaker and signal strobe always be used in combination so that the risks from any of the above limitations are minimized.

#### THREE-YEAR LIMITED WARRANTY

System Sensor warrants its enclosed product to be free from defects in materials and workmanship under normal use and service for a period of three years from date of manufacture. System Sensor makes no other express warranty for this product. No agent, representative, dealer, or employee of the Company has the authority to increase or alter the obligations or limitations of this Warranty. The Company's obligation of this Warranty shall be limited to the replacement of any part of the product which is found to be defective in materials or workmanship under normal use and service during the three year period commencing with the date of manufacture. After phoning System Sensor's toll free number 800-SENSOR2 (736-7672) for a Return Authorization number, send defective units postage prepaid to: System Sensor, Returns Department, RA # \_\_\_\_\_, 3825

Ohio Avenue, St. Charles, IL 60174. Please include a note describing the malfunction and suspected cause of failure. The Company shall not be obligated to replace units which are found to be defective because of damage, unreasonable use, modifications, or alterations occurring after the date of manufacture. In no case shall the Company be liable for any consequential or incidental damages for breach of this or any other Warranty, expressed or implied whatsoever, even if the loss or damage is caused by the Company's negligence or fault. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

#### FCC STATEMENT

SpectrAlert Speaker/Strobes have been tested and found to comply with the limits for a Class B 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.