**INSTALLATION AND MAINTENANCE INSTRUCTIONS**

SPECTRAlert ADVANCE from System Sensor

SYSTEM SENSOR®

3825 Ohio Avenue, St. Charles, Illinois 60174
800/736-7672, FAX: 630/377-6495
www.systemsensor.com

# Selectable Output Strobes, Horns, and Horn/Strobes

For use with the following : P2R, P2RH, P2RK, P2RHK, P2W, P2WK, P2WH, P2WHK, P4R, P4RH, P4RK, P4W, ; SR, SRH, SRK, SRHK, SW, SWK, SWH, SWHK, SW-CLR-PC2R, PC2RH,PC2RK, PC2RHK, PC2W, PC2WK, PC2WH, PC2WHK, PC4R, PC4RH, PC4W, PC4WK, PC4WHK, SCR, SCRH, SCRK, SCRHK, SCW, SCWK, SCWH, SCWHK, SCW-CLR-ALERT, HR, HRK, HW, SR-P, SW-P, SRH-P, SWH-P,P2R-P, P2W-P, P2WH-P, P4R-P, P4W-P, SCW-P, PC2R-P, PC2W-P, PC2WH-P, SRK-P, SRHK-P, P2RK-P, P2RHK-P, SWK-P, SWHK-P, P2WK-P, P2WHK-P, SR-SP, P2R-SP, PC2W-SP, SRK-R, SWK-R, SRHK-R, SWHK-R, P2RK-R, P2WK-R, P2RHK-R, P2WHK-R, SBHK, SBK-R

SIGNALING UL LISTED UL LISTED

**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
**NOTE:** Models SBHK, SBK-R are UL listed for General Signaling

## PRODUCT SPECIFICATIONS

| | | |
|---|---|---|
| Operating Temperature: | Standard Products | 32°F to 120°F (0°C to 49°C) |
| | K Series | –40°F to 151°F |
| Humidity Range: | Standard Products | 10 to 93% Non-condensing |
| | K Series | Meets NEMA 4X requirements |
| Strobe Flash Rate: | | 1 flash per second |
| Nominal Voltage: | | Regulated 12VDC/FWR or regulated 24DC/FWR |
| 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 gauge: | | 12 to 18 AWG |

**NOTE** : Strobes will operate at 12 V nominal for 15 & 15/75 candela settings only. Switching between ranges is automatic.

## DIMENSIONS FOR PRODUCTS AND ACCESSORIES

| WALL PRODUCTS | Length | Width | Depth | CEILING PRODUCTS | DIAMETER | DEPTH |
|---|---|---|---|---|---|---|
| Strobe and Horn/Strobes (including lens) | 5.6" | 4.7" | 2.5" | Strobes and Horn/Strobes (including lens) | 6.8" | 2.5" |
| | 142 mm | 119 mm | 64 mm | | 173 mm | 64 mm |
| Horns | 5.6" | 4.7" | 1.3" | SA-WBBC Red Weatherproof Back Box | 7.1" | 2.2" |
| | 142 mm | 119 mm | 33 mm | SA-WBBCW White Weatherproof Back Box | 180 mm | 51 mm |
| SA-WBB Red Weatherproof Back Box | 5.7" | 5.1" | 2.0" | SBBCR Red Surface Mount Box | 6.9" | 5.3" |
| SA-WBBW White Weatherproof Back Box | 145 mm | 130 mm | 51 mm | SBBCW White Surface Mount Box | 175 mm | 135 mm |
| SBBR Red Surface Mount Box | 5.6" | 4.7" | 4.3" | NOTE: SA-WBB, SA-WBBW, SA-WBBC and SA-WBBCW dimensions do not include the two mounting tabs | | |
| SBBW White Surface Mount Box | 142 mm | 119 mm | 109 mm | | | |

## MOUNTING BOX OPTIONS

| 2-Wire Indoor Products | 4-Wire Indoor Products | K Series Products |
|---|---|---|
| 4 × 4 × 1½, Single Gang, Double Gang, 4˝ Octagon SBBR/W (wall), SBBCR/W (ceiling) | 4 × 4 × 1½, Double Gang, 4˝ Octagon | SA-WBB/W (wall), SA-WBBC/CW (ceiling) |

NOTICE: This manual shall be left with the owner/user of this equipment.

## GENERAL DESCRIPTION

The SpectrAlert Advance series of notification appliances offers a wide range of horns, strobes, and horn/strobes, for wall and ceiling applications, indoors and outdoors. They are designed to be used on 12 or 24 volt, DC or FWR (full wave rectified) systems. These products are electrically backward compatible with the previous generation of SpectrAlert notification appliances. Horn/strobe products are available in two versions. The 2-wire products fit systems where a single NAC controls both horn and strobe. The 4-wire products are intended for systems which have separate wiring circuits for the horn and strobe. All SpectrAlert Advance products are suitable for use in synchronized systems. The System Sensor MDL3 module may be used to provide synchronization.

K Series products are designed to be used over a wider range of temperatures and are suitable for use in wet environments with outdoor backbox supplied with product.

**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.)**

## FIRE ALARM SYSTEM CONSIDERATIONS

The National Fire Alarm Code, NFPA 72, requires that all horns, used for building evacuation produce temporal coded signals. Signals other than those used for evacuation purposes do not have to produce the temporal coded signal. System Sensor recommends spacing notification appliances in compliance with NFPA 72.

## 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).

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:** The total number of strobes on a single NAC must not exceed 40 for 24 volt applications or 12 for 12 volt applications. Loop resistance on a single NAC should not exceed 120 ohms for 24 volt and 30 ohms for 12 volt systems.

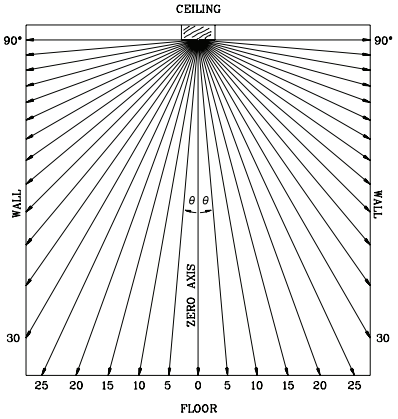
## CANDELA SELECTION

Adjust the slide switch on the rear of the product to 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. **See Figures 1-3**. Use **Table 1** 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 2**.

**NOTE:** SpectrAlert 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. For 4-Wire products, total current draw may be determined by adding current draw for the specific candela selection and the current draw for the specific horn selection use **Table 1 and Table 3**.

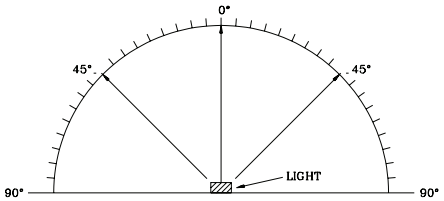
### FIGURE 1. LIGHT OUTPUT - VERTICAL DISPERSION, CEILING TO WALLS TO FLOOR

| Degrees* | Percent of Rating |
|---|---|
| 0 | 100 |
| 5-25 | 90 |
| 30-45 | 75 |
| 50 | 55 |
| 60 | 45 |
| 65 | 35 |
| 70 | 35 |
| 75 | 30 |
| 80 | 30 |
| 85 | 25 |
| 90 | 25 |



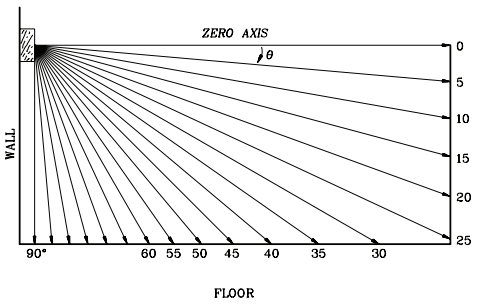

Figures 1-3 list the minimum light output requirements per UL1971.

### FIGURE 2. LIGHT OUTPUT - HORIZONTAL DISPERSION




| Degrees* | Percent of Rating |
|---|---|
| 0 | 100 |
| 5-25 | 90 |
| 30-45 | 75 |
| 50 | 55 |
| 55 | 45 |
| 60 | 40 |
| 65 | 35 |
| 70 | 35 |
| 75 | 30 |
| 80 | 30 |
| 85 | 25 |
| 90 | 25 |
| Compound 45 to the right | 24 |
| Compound 45 to the right | 24 |

### FIGURE 3. LIGHT OUTPUT - VERTICAL DISPERSION, WALL TO FLOOR




*Tolerance of ± 1 degree is permitted.

| Degrees* | Percent of Rating |
|---|---|
| 0 | 100 |
| 5-30 | 90 |
| 35 | 65 |
| 40 | 46 |
| 45 | 34 |
| 50 | 27 |
| 55 | 22 |
| 60 | 18 |
| 65 | 16 |
| 70 | 15 |
| 75 | 13 |
| 80 | 12 |
| 85 | 12 |
| 90 | 12 |

### TABLE 1. STROBE CURRENT DRAW (mA) FOR S, SC, P4 & PC4 SERIES:

| | 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 |
| | 115 | NA | NA | 210 | 205 |
| High Candela Range | 135 | NA | NA | 228 | 207 |
| | 150 | NA | NA | 246 | 220 |
| | 177 | NA | NA | 281 | 251 |
| | 185 | NA | NA | 286 | 258 |

### TABLE 2. CANDELA DERATING:

| Listed Candela | 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 |

## HORN SELECTION

Turn the rotary switch on the back of the product to the desired setting. For horn and 4-wire horn/strobe products, the current draw for each setting is listed in **Table 3**. For 2-wire horn/strobe products (P2 series), current draws are listed in **Tables 4** and **5**. The sound output measurement for each horn setting is shown in **Table 6**.

### TABLE 3. HORN CURRENT DRAW (mA) FOR H, P4 & PC4 SERIES:

| Pos | Sound Pattern | dA Out | 8–17.5 Volts | | 16–33 Volts | |
|---|---|---|---|---|---|---|
| | | | DC | FWR | DC | FWR |
| 1 | Temporal | High | 57 | 55 | 69 | 75 |
| 2 | Temporal | Medium | 44 | 49 | 58 | 69 |
| 3 | Temporal | Low | 38 | 44 | 44 | 48 |
| 4 | Non-temporal | High | 57 | 56 | 69 | 75 |
| 5 | Non-temporal | Medium | 42 | 50 | 60 | 69 |
| 6 | Non-temporal | Low | 41 | 44 | 50 | 50 |
| 7 | Coded | High | 57 | 55 | 69 | 75 |
| 8 | Coded | Medium | 44 | 51 | 56 | 69 |
| 9 | Coded | Low | 40 | 46 | 52 | 50 |

**NOTE:** In positions 7, 8, and 9, temporal coding must be provided by the NAC. If the NAC voltage is held constant, the horn output will remain constantly on. Positions 7, 8, and 9 are not available on 2-wire horn/strobe products.

**TABLE 4. 2-WIRE HORN/STROBE CURRENT DRAW (mA) FOR P2 AND PC2 STANDARD CANDELA SERIES:**

| DC Input | 8–17.5 Volts | | 16–33 Volts | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 15 cd | 15/75 cd | 15 cd | 15/75 cd | 30 cd | 75 cd | 95 cd | 110 cd | 115 cd |
| Temporal High | 137 | 147 | 79 | 90 | 107 | 176 | 194 | 212 | 218 |
| Temporal Medium | 132 | 144 | 69 | 80 | 97 | 157 | 182 | 201 | 210 |
| Temporal Low | 132 | 143 | 66 | 77 | 93 | 154 | 179 | 198 | 207 |
| Non-temporal High | 141 | 152 | 91 | 100 | 116 | 176 | 201 | 221 | 229 |
| Non-temporal Medium | 133 | 145 | 75 | 85 | 102 | 163 | 187 | 207 | 216 |
| Non-temporal Low | 131 | 144 | 68 | 79 | 96 | 156 | 182 | 201 | 210 |
| FWR Input | | | | | | | | | |
| Temporal High | 136 | 155 | 88 | 97 | 112 | 168 | 190 | 210 | 218 |
| Temporal Medium | 129 | 152 | 78 | 88 | 103 | 160 | 184 | 202 | 206 |
| Temporal Low | 129 | 151 | 76 | 86 | 101 | 160 | 184 | 194 | 201 |
| Non-temporal High | 142 | 161 | 103 | 112 | 126 | 181 | 203 | 221 | 229 |
| Non-temporal Medium | 134 | 155 | 85 | 95 | 110 | 166 | 189 | 208 | 216 |
| Non-temporal Low | 132 | 154 | 80 | 90 | 105 | 161 | 184 | 202 | 211 |

**TABLE 5. 2-WIRE HORN/STROBE CURRENT DRAW (mA) FOR P2 AND PC2 HIGH CANDELA RANGE SERIES:**

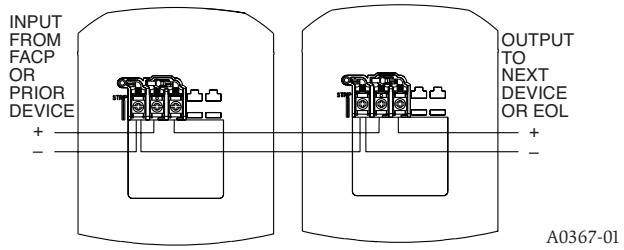
| Sound Pattern | 16–33 Volts Volts DC | | | | 16–33 Volts Volts FWR | | | |
|---|---|---|---|---|---|---|---|---|
| | 135 cd | 150 cd | 177 cd | 185 cd | 135 cd | 150 cd | 177 cd | 185 cd |
| Temporal High | 245 | 259 | 290 | 297 | 215 | 231 | 258 | 265 |
| Temporal Medium | 235 | 253 | 288 | 297 | 209 | 224 | 250 | 258 |
| Temporal Low | 232 | 251 | 282 | 292 | 207 | 221 | 248 | 256 |
| Non-temporal High | 255 | 270 | 303 | 309 | 233 | 248 | 275 | 281 |
| Non-temporal Medium | 242 | 259 | 293 | 299 | 219 | 232 | 262 | 267 |
| Non-temporal Low | 238 | 254 | 291 | 295 | 214 | 229 | 256 | 262 |

**TABLE 6. HORN OUTPUT (dBA) IN UL REVERBERANT ROOM:**

| Switch Position | Sound Pattern | dA | 8–17.5 Volts** | | 16–33 Volts** | | 24 V Nominal Measurements | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Reverberant | | Anechoic | |
| | | | DC | FWR | DC | FWR | DC | FWR | DC | FWR |
| 1 | Temporal | High | 78 | 78 | 84 | 84 | 88 | 88 | 99 | 98 |
| 2 | Temporal | Medium | 75 | 75 | 80 | 80 | 86 | 85 | 96 | 96 |
| 3 | Temporal | Low | 71 | 71 | 76 | 76 | 81 | 79 | 94 | 89 |
| 4 | Non-temporal | High | 82 | 82 | 88 | 88 | 93 | 92 | 100 | 100 |
| 5 | Non-temporal | Medium | 78 | 78 | 85 | 85 | 90 | 89 | 98 | 98 |
| 6 | Non-temporal | Low | 73 | 74 | 81 | 81 | 86 | 84 | 96 | 92 |
| 7* | Coded | High | 82 | 82 | 88 | 88 | 93 | 92 | 101 | 101 |
| 8* | Coded | Medium | 78 | 78 | 85 | 85 | 90 | 89 | 97 | 98 |
| 9* | Coded | Low | 74 | 75 | 81 | 81 | 85 | 83 | 96 | 92 |

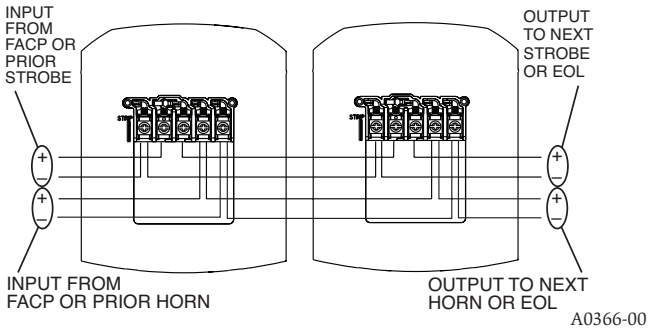
*Horn & 4-wire Horn/Strobe only. ** Minimum dB rating for Operational Voltage Range as per UL 464.

**FIGURE 4. WIRING 2-WIRE PRODUCTS:**



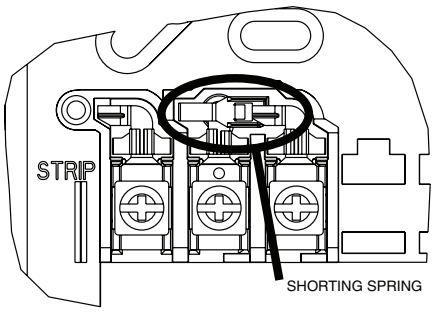

A0367-01

**FIGURE 5. WIRING 4-WIRE PRODUCTS:**




A0366-00

**FIGURE 6. SHORTING SPRING:**




A0368-00

For 4-Wire installations, terminals 1, 2, and 3 connect to the strobe; terminals 4 and 5 connect to the horn. The horn and strobe circuits must be wired independently, and each circuit must be terminated with the appropriate EOL device. Removal of a notification device will result in an open circuit indication on the strobe loop.

**NOTE:** A shorting spring is provided between terminals 2 and 3 of the mounting plate to enable wiring checks after the system has been wired, but prior to installation of the final product. This spring will automatically disengage when the product is installed, to enable supervision of the final system. Only available on indoor products(non K-series).

### MOUNTING INDOOR WALL OR CEILING PRODUCTS

1. Attach mounting plate to junction box as shown in Figure 7. The mounting plate is compatible with 4-inch square, double gang, and 4-inch octagon junction boxes (2-wire products may be used with a single gang box).
2. Connect field wiring to terminals, as shown in Figures 4 or 5.
3. If the product is not to be installed at this point, use the paint cover to prevent contamination of the mounting plate. (For indoor models only)
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. 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.
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.

### SURFACE MOUNT BACK BOX MOUNTING

1. The surface mount back box may be secured directly to the wall or ceiling. Grounding bracket provided if needed.
2. The wall mount box must be mounted with the up arrow pointing up.
3. Threaded knockout holes are provided for the sides of the box for ¾ inch and ½ inch conduit adapter. Knockout holes in the back of the box can be used for ¾ inch and ½ inch rear entry.
4. To remove the ½ inch knockout, we recommend you use a flat head screwdriver ,place the blade of the flat head screwdriver in the inner edge of the knockout. Strike the screwdriver as you work you way around as shown in Figure 9.

   To remove the ¾ inch knockout place the blade of the screwdriver along the outer edge and work your way around the knockout as you strike the screwdriver, as shown in Figure 9.

   NOTE: For both ½ in. and ¾ in. installation, use caution not to strike the knockout near the top edge of the wall version of the surface mount back box.
5. V500 and V700 raceway knockouts are also provided. Use V500 for low profile applications and V700 for high profile applications.
6. To remove the knockout turn pliers up, as shown in Figure 9.
7. Attach the mounting plate to the surface mount back box using the four unpainted screws, as shown in Figure 8.
8. Follow steps 2-6 of the mounting indoor wall or ceiling products to wire and attach the product.

   NOTE: For Outdoor Mounting Installation see included Outdoor Mounting Installation Document(I56-3222).

**FIGURE 7. MOUNTING:**

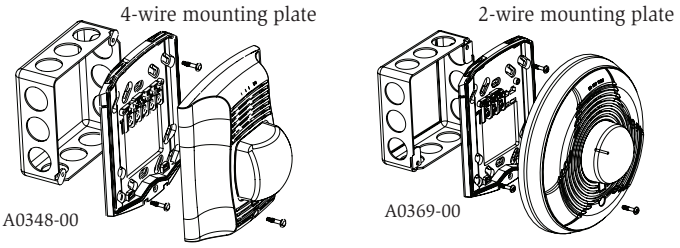



**FIGURE 8. SURFACE MOUNT BACK BOX MOUNTING:**

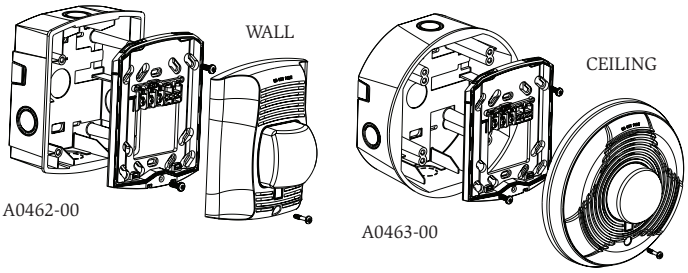
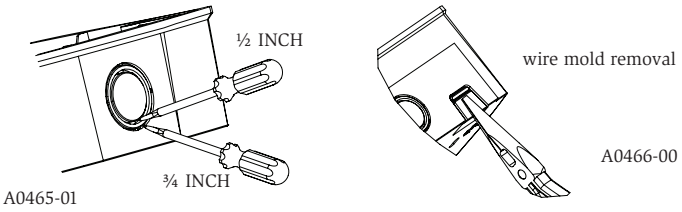



**FIGURE 9. KNOCKOUT REMOVAL FOR SURFACE MOUNT BACK BOX:**




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

**⚠WARNING**

### THE LIMITATIONS OF HORN/STROBES

**The horn and/or strobe will not work without power.** The horn/strobe gets its power from the fire/security panel monitoring the alarm system. If power is cut off for any reason, the horn/strobe will not provide the desired audio or visual warning.

**The horn may not be heard.** The loudness of the horn meets (or exceeds) current Underwriters Laboratories' standards. However, the horn may not alert a sound sleeper or one who has recently used drugs or has been drinking alcoholic beverages. The horn 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 such as traffic, air conditioners, machinery or music appliances that may prevent alert persons from hearing the alarm. The horn may not be heard by persons who are hearing impaired.

**NOTE:** Strobes must be powered continuously for horn operation.

**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 horn 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 Strobes and Horn/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.


©2014 System Sensor