Selectable Output Speaker Strobes – Wall and Ceiling Mount

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

For use with the following models:
Wall Speakers: SPSRL, SPSWL, SPSRL-P, SPSWL-P, SPSRL-SP, SPSWL-CLR-ALERT
Ceiling Speakers: SPSCRL, SPSCWL, SPSCWL-P, SPSCWL-SP, SPSCWL-CLR-ALERT

PRODUCT SPECIFICATIONS

Standard Operating Temperature:	32°F to 120°F (0°C to 49°C)
Humidity Range:	10 to 93% Non-condensing
Nominal Voltage (speakers):	25 Volts or 70.7 Volts
Maximum Supervisory Voltage:	50 VDC
Speaker Frequency Range:	400 – 4000 Hz
Power Settings:	¼, ½, 1, 2 Watts
Input terminal wire gauge:	12 to 18 AWG
Strobe Flash Rate:	1 flash per second
Nominal Voltage (strobes):	Regulated 12VDC, regulated 24VDC or 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)

DIMENSIONS FOR PRODUCTS AND ACCESSORIES			
WALL PRODUCTS	Length	Width	Depth
Wall Speaker Strobe	6.5" (165 mm)	5.00" (127 mm)	2.30" (58.4 mm)
CEILING PRODUCTS	Length	Width	Depth
Ceiling Speaker Strobe	6.8" (173 mm)	N/A	2.87" (73mm)
WALL SURFACE MOUNT BACK BOX	Length	Width	Depth
Speaker Strobe with SBBSPRL/WL Surface Mount Back Box	6.62" (168mm)	5.12" (130 mm)	2.30" (58.4 mm)
CEILING SURFACE MOUNT BACK BOX	Diameter		Depth
Speaker Strobe with SBBCRL/WL Surface Mount Back Box	6.92" (176 mm)		5.37" (116mm)

MOUNTING BOX OPTIONS
SPEAKER STROBES
4" x 4" x 2⅛" or deeper, SBBSPRL/WL (wall), SBBCRL/WL (ceiling)

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

BEFORE INSTALLING

Please read the System Sensor Voice Evacuation Application Guide, which provides detailed information on speaker notification devices, wiring and special applications. Copies of this manual are available from System Sensor. NFPA 72 and NEMA guidelines should be observed. System Sensor also recommends installing fire alarm speakers in compliance with NFPA 72, ANSI/UL 1480 and NEC 760

Important: The notification appliance used must be tested and maintained following NFPA 72 requirements.

GENERAL DESCRIPTION

System Sensor series of notification appliances offer a wide range of audible and visible devices for life safety notification. Our indoor speaker strobes come with 7 field selectable candela setting. The strobe portion is designed to be used in 12 VDC, 24VDC, or 24V FWR (full wave rectified) systems. The speaker is designed to be used at either 25 or 70.7 volts, and operate at any one of four input power levels. Our speaker strobes are suitable for dry and damp environments. These products are electrically backwards compatible with previous generation of System Sensor speaker strobes. With its low total harmonic distortion, the System Sensor SPL series offers high fidelity sound output.

Speakers Strobes are public mode notification appliances intended to alert occupants of a life safety event. The speaker is listed to ANSI/UL 1480 (public mode) and the strobe is listed to ANSI UL 1638 (public mode).

FIRE ALARM SYSTEM CONSIDERATIONS

System Sensor also recommends installing fire alarm speakers in compliance with NFPA 72, ANSI/UL 1480 and NEC 760.

SYSTEM DESIGN

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 for 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. Note that if Class A wiring is installed, the wire length may be up to twice as long as it would be circuits that are not fault tolerant. The total number of strobes on a single NAC must not exceed 69 for 24 volt applications.

AVAILABLE CANDELA SETTINGS

System Sensor offers a wide range of candela settings for your life safety needs. In order to select your candela output, adjust the slide switch on the rear of the product to the desired candela setting on the selector switch. (See Figure 1.)

The candela setting can also be verified by looking into the small window on the front of the unit. See Tables 1 and 2 for candela settings for wall and ceiling products. All products meet the light output profiles specified in the appropriate UL Standards. (See Figures 2–4.)

FIGURE 1. CANDELA SELECTOR



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CURRENT DRAW AND AUDIBILITY RATINGS

For the strobe, the current draw for each setting is listed in Tables 1 and 2.

TABLE 1. WALL-MOUNT STROBE CURRENT DRAW (mA)

Candela	8-17.5 Volts	16-33 Volts	
	DC	DC	FWR
15	88	43	60
30	143	63	83
75	-	107	136
95	-	121	155
110	-	148	179
135	-	172	209
185	-	222	257

NOTE: Products set at 15 and 30 candela automatically work on either 12V or 24V power supplies. The products are not listed for 12V DC operation when set to any other candela settings.

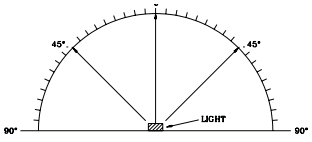
TABLE 2. CEILING-MOUNT STROBE CURRENT DRAW (mA)

Candela	8-17.5 Volts	16-33 Volts	
	DC	DC	FWR
15	87	41	60
30	153	63	86
75	-	111	142
95	-	134	164
115	-	158	191
150	-	189	228
177	-	226	264

NOTE: Products set at 15 and 30 candela automatically work on either 12V or 24V power supplies. The products are not listed for 12V DC operation when set to any other candela settings.

FIGURE 2. WALL LIGHT OUTPUT – HORIZONTAL DISPERSION

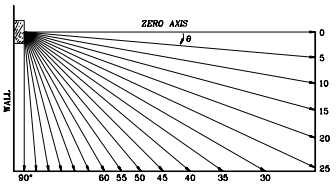
Degrees*	Percent of Rating
0	100
5-25	90
30-45	75
50	55
55	45
60	40
65	35
70	35
75	30
80	30
85	25
90	25
Compound 45 to the left	24
Compound 45 to the right	24



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FIGURE 3. VERTICAL DISPERSION, WALL TO FLOOR

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

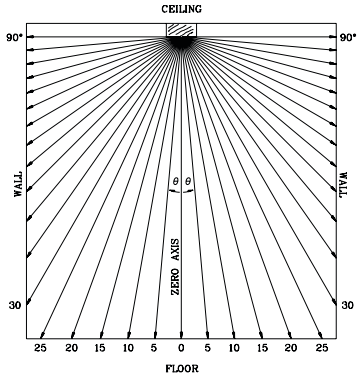


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*Tolerance of ± 1 degree is permitted.

FIGURE 4. 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



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WIRING AND MOUNTING

All wiring must be installed in compliance with the National Electric Code and the local codes as well as the authority having jurisdiction. Wiring must not be of such length or wire size which would cause the notification appliance to operate outside of its published specifications. Improper connections can prevent the system from alerting occupants in the event of an emergency.

Wire sizes up to 12 AWG (2.5 mm²) may be used with the mounting plate. The mounting plate ships with the terminals set for 12 AWG wiring.

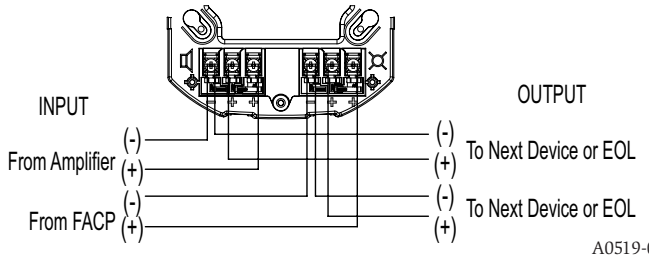
Make wire connections by stripping about 3/8" of insulation from the end of the wire. Then slide the bare end of the wire under the appropriate clamping plate and tighten the clamping plate screw.

See Figure 5 for wiring terminals and strip guide reference.

1. Connect the speaker as shown in Figure 5.

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 and the second switch is used to select the input power of ¼, ½, 1 or 2 watts. (See Figure 6.)

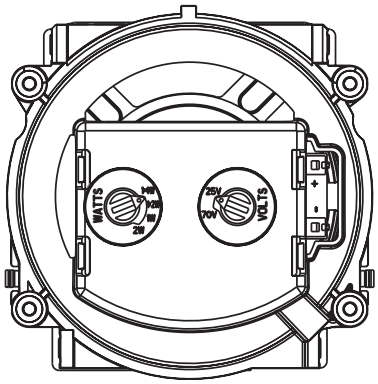
FIGURE 5. WIRING DIAGRAM AND WIRING TERMINALS



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Wiring Terminals	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.
1. Negative (-). Line in and out 2. Positive (+). Line in and out 3. Positive (+). Line in and out	

FIGURE 6. SPEAKER WATTAGE AND VOLTAGE SETTINGS

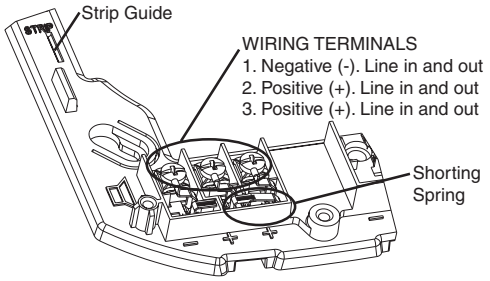


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SHORTING SPRING FEATURE

System Sensor notification appliances come with a shorting spring that is provided between terminals 2 and 3 of the mounting plate to enable system continuity checks after the system has been wired, but prior to installation of the final product. (See Figure 7.) This spring will automatically disengage when the product is installed, to enable supervision of the final system.

FIGURE 7. SHORTING SPRING



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AVAILABLE POWER SETTINGS

System Sensor offers a wide range of power settings for your life safety needs, including ¼, ½, 1, and 2W.

Sound levels data per UL 1480 can be found in Table 3.

TABLE 3. SOUND LEVELS FOR EACH TRANSFORMER POWER SETTING

Setting	UL Reverberant (dBA @10 ft)	UL Anechoic (dBA @10 ft)
¼ W	77	77
½ W	80	80
1 W	83	83
2 W	86	86

⚠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.

MOUNTING

1. Attach mounting plate to junction box. The mounting plate is compatible with 4" x 4" x 2⅛" or deeper junction boxes. (See Figures 8 and 9.)

2. Connect field wiring to terminals, as shown in Figure 5.

3. If the product is not to be installed at this point, use the protective dust cover to prevent contamination of the wiring terminals on the mounting plate.

4. To attach product to mounting plate, remove the protective dust cover, hook tabs on the top of the product housing into the grooves on mounting plate.

5. Then, hinge the 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.

⚠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.

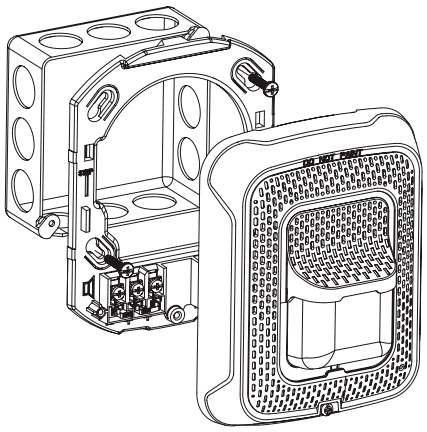
⚠CAUTION

Factory finish should not be altered: Do not paint!

⚠CAUTION

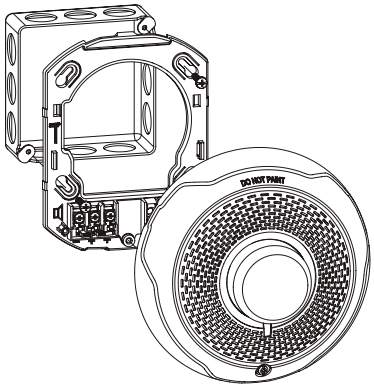
Do not over tighten mounting plate screws; this may cause mounting plate to flex.

FIGURE 8. WALL SPEAKER



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FIGURE 9. CEILING SPEAKER



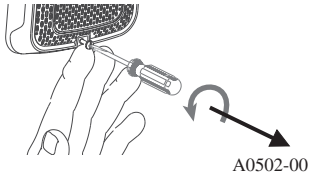
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TAMPER SCREW

For tamper resistance, the standard captive screw may be replaced with the enclosed Torx screw.

1. To remove the captive screw, back out the screw and apply pressure to the back of the screw until it disengages from the housing. Replace with the supplied Torx screw. (See Figure 10.)

FIGURE 10. TAMPER SCREW



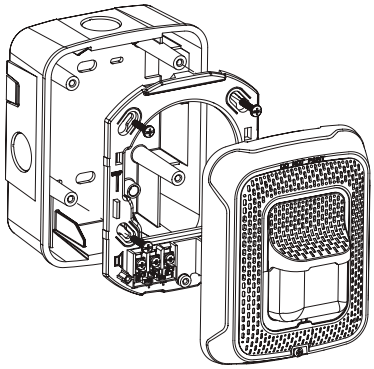
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NOTE: Wall speaker shown in this example.

SURFACE MOUNT BACK BOX MOUNTING

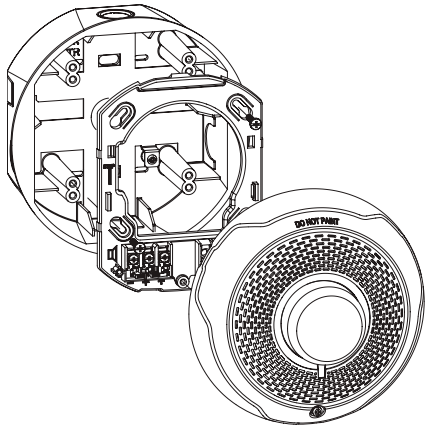
1. The surface mount back box may be secured directly to the wall or ceiling. A grounding bracket with ground screw capability is provided if needed. For wall see Figure 11, and for ceiling see Figure 12.

FIGURE 11. WALL SURFACE MOUNT BACK BOX



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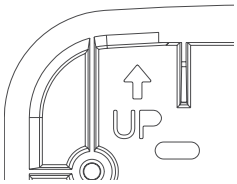
FIGURE 12. CEILING SURFACE MOUNT BACK BOX



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2. The wall mount box must be mounted with the up arrow pointing up. (See Figure 13.)

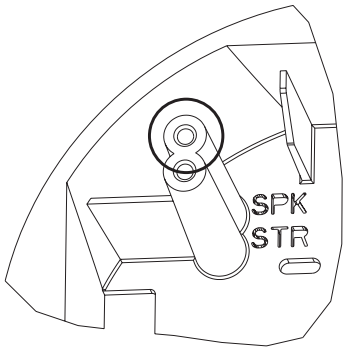
FIGURE 13. SMBB UP ARROW



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NOTE: Ceiling Surface Mount Back Box, SBBCR/CWL is a common back box for ceiling horn strobes, strobes and ceiling speakers and speaker strobes. Use the top mounting holes for ceiling speaker and speaker strobe products. (See Figure 14.)

FIGURE 14. CEILING SURFACE MOUNT BACK BOX MOUNTING KEY HOLE PATTERN



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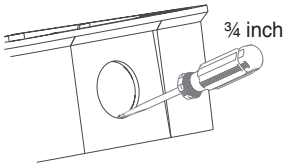
3. Threaded knockout holes are provided for the sides of the box for ¾ inch conduit adapter. Knockout holes in the back of the box can be used for ¾ inch rear entry.

4. To remove the ¾ 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 your way around as shown in Figure 15A. **NOTE: Use caution not to strike the knockout near the top edge of the surface mount back box.**

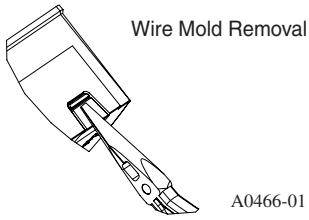
5. V500 and V700 raceway knockouts are also provided. Use V500 for low profile applications and V700 for high profile applications.

6. To remove the knockout turn pliers up, as shown in Figure 15B.

FIGURE 15A AND 15B . KNOCKOUT AND WIRE MOLD REMOVAL FOR SURFACE MOUNT BACK BOX



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NOTE: Use caution not to strike the knockout near the top edge of the wall version of the surface mount back box.

Please refer to insert for the Limitations of Fire Alarm Systems

⚠WARNING

THE LIMITATIONS OF SPEAKERS

Always make sure that the individual speakers are tested after installation per NFPA regulations. The speakers may not be heard. The loudness of the speaker meets (or exceeds) current Underwriters Laboratories' standards. However, the speaker may not alert 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 such as traffic, air conditioners, machinery or music appliances that may prevent alert persons from hearing the alarm. The speaker may not be heard by persons who are hearing impaired.

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: Honeywell, 12220 Rojas Drive, Suite 700, El Paso TX 79936, USA. 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

System Sensor speakers 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.

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