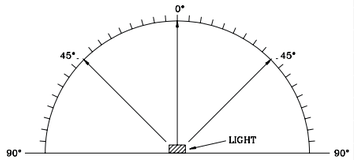
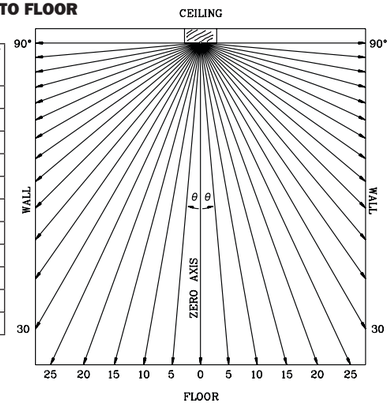
FIGURE 10. LIGHT OUTPUT - HORIZONTAL DISPERSION



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

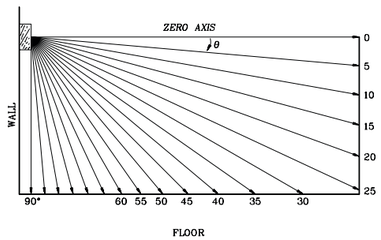
FIGURE 11. LIGHT OUTPUT - VERTICAL DISPERSION, CEILING TO WALLS TO FLOOR



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 10-12 list the minimum light output requirements per UL1971.

FIGURE 12. 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

Please refer to insert for the Limitations of Fire Alarm Systems

THE LIMITATIONS OF LOW FREQUENCY HORN/STROBES

⚠WARNING

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

The sounder may not be heard. The loudness of the sounder meets (or exceeds) current Underwriters Laboratories' standards. Studies have shown that the low frequency sounder (520Hz) is more effective at waking individuals in sleeping spaces, especially individuals that may have recently used drugs or drinking alcoholic beverages. The sounder 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 low frequency sounder may not be heard by persons who are hearing impaired.

NOTE: Strobes must be powered continuously for sounder 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 sounder 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 Low Frequency Sounder/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.

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

I56-3889-002R

Low Frequency Sounder/Strobes

For use with the following models: P2RH-LF, P2WH-LF, HR-LF, HW-LF

SIGNALING UL LISTED

PRODUCT SPECIFICATIONS

Operating Temperature:	32°F to 120°F (0°C to 49°C)
Humidity Range:	10 to 93% Non-condensing
Strobe Flash Rate:	1 flash per second
Nominal Voltage (Low Frequency Sounder):	Regulated 12VDC/FWR or regulated 24VDC/FWR
Nominal Voltage(Low Frequency Sounder/Strobe):	Regulated 24VDC/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

DIMENSIONS FOR PRODUCTS AND ACCESSORIES

PRODUCTS	LENGTH	WIDTH	DEPTH
Low Frequency Sounder/Strobes (including lens)	6.4″	4.7″	2.5″
	162 mm	119 mm	64 mm
Low Frequency Sounder	5.6″	4.7″	1.3″
	142 mm	119 mm	33 mm
Low Frequency Sounder Strobe with SBBR/SBBW Surface Mount Back Box	6.4″	4.7″	4.3″
	162 mm	120 mm	108 mm
Low Frequency Sounder with SBBR, SBBW Surface Mount Back Box Length 5.7″	5.7″	4.8″	3.0″
	145 mm	120 mm	76 mm

MOUNTING BOX OPTIONS

2-Wire Indoor Products
4 × 4 × 1½, Single Gang, Double Gang, 4″ Octagon

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

GENERAL DESCRIPTION

The SpectrAlert Advance low frequency series of notification appliances offers a range of low frequency sounder and low frequency sounder/strobe products for wall and ceiling applications. Studies have shown that low frequency audible devices that operate around 520Hz are more effective in waking individuals in sleeping areas. The sounder only version is designed for use in 12 or 24 volt, DC or FWR (full wave rectified) systems. Sounder/Strobe versions are only to be used with 24 volt, DC or FWR systems. These products are electrically backward compatible with the previous generation of SpectrAlert notification appliances. The 2-wire products fit systems where a single NAC controls both sounder and strobe. The System Sensor MDL3 module may be used to provide synchronization.

Models are approved for wall and ceiling installations.

FIRE ALARM SYSTEM CONSIDERATIONS

The National Fire Alarm Code, NFPA 72, requires that all sounders, 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. The National Fire Alarm Code, NFPA 72, will require effective Jan. 1, 2014 that audible appliances installed in sleeping areas produce a low frequency alarm signal that shall be a square wave or provide equivalent awakening ability. 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 (systemsensor.com/volt).

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.

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.

Removal of a notification device will result in an open circuit indication on the NAC.

MOUNTING INDOOR WALL OR CEILING PRODUCTS

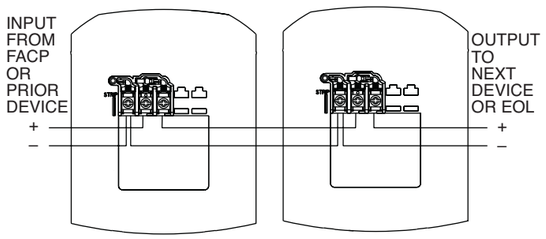
1. Attach mounting plate to junction box as shown in **Figures 3 and 4**. The mounting plate is compatible with 4-inch square, double gang, and 4-inch octagon junction boxes (2-wire products may be used with a single gang box).
2. Connect field wiring to terminals, as shown in **Figures 1** .
3. If the 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. 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.
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 plugs 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 and place the blade along the inner edge and work your way around the knockout as you strike the screwdriver, as shown in Figure 7. To remove the ¾ inch knockout place the blade of the screwdriver along the edge and work your way around the knockout as you strike the screwdriver, as shown in **Figure 8**.
5. V500 and V700 wiremold raceways are also provided. Use V500 for low profile applications and V700 for high profile applications.
6. To remove the wire mold 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 5 or 6**.
8. Follow steps 2-6 of the mounting indoor wall or ceiling products to wire and attach the product.

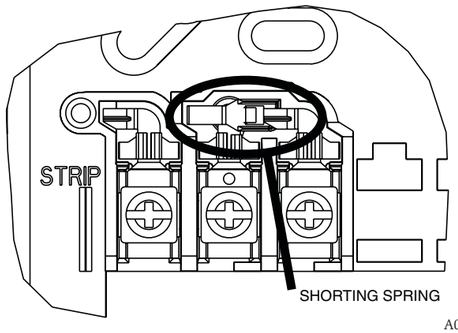
WIRING DIAGRAMS

FIGURE 1. WIRING 2-WIRE PRODUCTS:



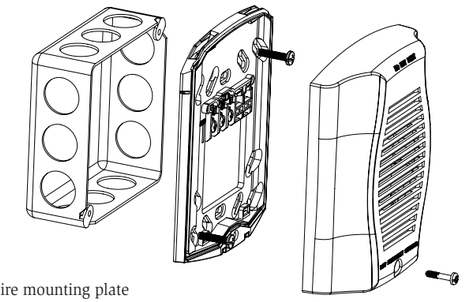
A0367-01

FIGURE 2. SHORTING SPRING:



A0368-00

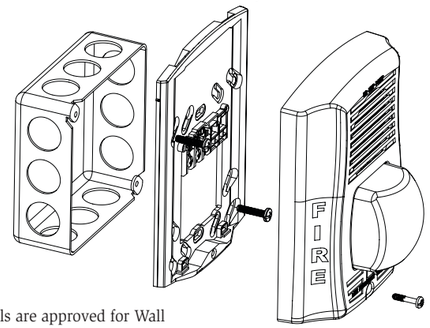
FIGURE 3. WALL MOUNT LF SOUNDER:



2-wire mounting plate

A0453-00

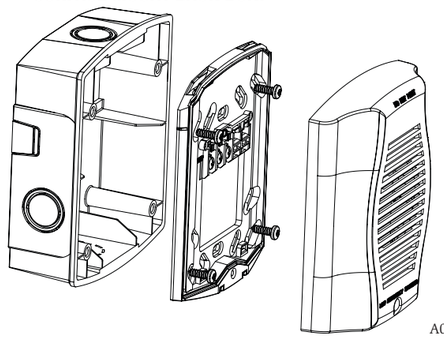
FIGURE 4. WALL MOUNT LF SOUNDER/STROBE PRODUCT:



Models are approved for Wall and Ceiling installations.

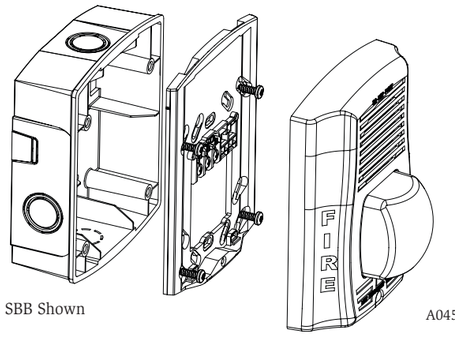
A0454-00

FIGURE 5. WALL MOUNT LF SOUNDER WITH SURFACE MOUNT BACK BOX:



A0455-00

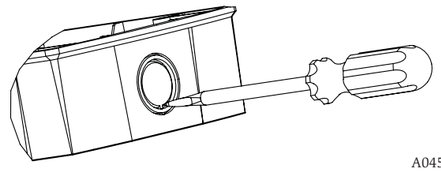
FIGURE 6. WALL MOUNT LF SOUNDER/STROBE WITH SURFACE MOUNT BACK BOX



SBB Shown

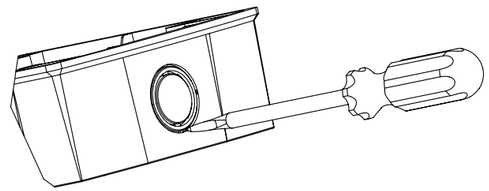
A0456-00

FIGURE 7. ½ INCH KNOCKOUT REMOVAL FOR SURFACE MOUNT BACK BOX



A0459-00

FIGURE 8. ¾ INCH KNOCKOUT REMOVAL FOR SURFACE MOUNT BACK BOX



A0460-00

TABLE 1. SOUNDER CURRENT DRAW (mA) FOR H-LF SERIES:

Position	Sound Pattern	8–17.5 Volts		16–33 Volts	
		DC	FWR	DC	FWR
1	Temporal	191	262	138	166
2	Continuous	292	384	138	208
3	Coded	292	388	153	205

NOTE: In position 3, temporal coding must be provided by the NAC. If the NAC voltage is held constant, the sounder output will remain constantly on. Coded ratings provided are for continuous voltage. Position 3 is not available on 2-wire low frequency sounder/strobe products.

TABLE 2. 2-WIRE LOW FREQUENCY SOUNDER/STROBE CURRENT DRAW (mA) FOR P2H-LF HIGH CANDELA RANGE SERIES:

Sound Pattern	16–33 Volts DC				16–33 Volts FWR			
	135 cd	150 cd	177 cd	185 cd	135 cd	150 cd	177 cd	185 cd
Temporal	277	292	325	344	296	309	343	351
Continuous	337	362	387	417	393	395	432	433

TABLE 3. LOW FREQUENCY SOUNDER OUTPUT (dBA) IN REVERBERANT (UL):**

Switch Position	Sound Pattern	8–17.5 Volts**		16–33 Volts**	
		DC	FWR	DC	FWR
1	Temporal	76	76	76	76
2	Continuous	80	80	80	80
3*	Coded	80	80	80	80

*Sounder ratings provided are for continuous voltage as provided by the NAC.
** Minimum dB rating for Operational Voltage Range as per UL 464.

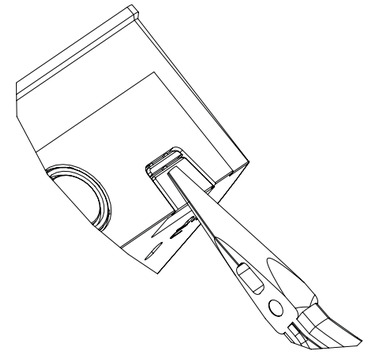
CANDELA SELECTION

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. Refer to **Figures 10-12**.

SOUNDER SELECTION

Turn the rotary switch on the back of the product to the desired setting. For sounder and sounder/strobe products (P2H-LF series), current draws are listed in **Tables 1** and **2**. The sound output measurement for each sounder setting is shown in **Table 3**.

FIGURE 9. V500 AND V700 WIRE MOLD REMOVAL FOR SURFACE MOUNT BACK BOX



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