

**INSTALLATION INSTRUCTIONS**  
**EXCEDER LED CEILING MOUNT HIGH FIDELITY**  
**SPEAKER AND SPEAKER STROBES**  
**CLEAR AND AMBER LENS**

Use this product according to this instruction manual. Please keep this instruction manual for future reference.

**GENERAL**

The Wheelock Exceder LED LSPSTxC Series High-Fidelity Multi-Candela Speaker Strobes are UL Listed under Standard 1971 for Signaling Devices for the Hearing Impaired, UL Standard 1480 for Speaker Appliances and ULC Listed under Standard CAN/ULC-S541-07 and CAN/ULC-S526-07 for indoor Fire Protective Service. The Speaker Strobes with Amber lens are UL Listed under Standard 1638 (Visual Signaling Appliance) for Private Mode Emergency General Utility Signaling UL Standard 1480 for Speaker Appliances and ULC S526-07 Amber lens strobe appliances also comply with the polar distribution requirements in the UL Standard 1971 for Indoor Fire Protection Service and NFPA-72 for Mass Notification Systems. They are designed for multiple power requirements with high dBA output at each power tap, and are designed for ceiling mounting only. Series LSPKxC, High Fidelity Speakers, are UL Listed under UL Standard 1480 and ULC Listed under Standard CAN/ULC-S541-07 for Speaker Appliances; and can be ceiling or wall mounted. All models offer a choice of field selectable taps, 1/8W to 2W for either 25.0 V<sub>RMS</sub> or 70.0 V<sub>RMS</sub> audio systems. The design incorporates a high efficiency speaker for maximum output at minimum power across a frequency range of 300-8000Hz. The Speaker Strobes can provide non-synchronized strobe operation when connected directly to a Fire Alarm Control Panel (FACP), or provide synchronized strobe operation when used in conjunction with a Dual Sync Module (DSM), or Wheelock's Power Supplies. All models are Listed for indoor use only with the backboxes specified in these instructions (see Mounting Options). LSPSTC/LSPKC series speakers are UL rated to meet the NFPA 72 requirement for 520Hz signals in sleeping areas when used in conjunction with Wheelock Safepath products (see SP40S manual for more details)

**NOTE:** All Canadian Installations should be in accordance with the Canadian Standard for the Installation of Fire Alarm Systems – CAN/ULC-S524-01 and Canadian Electrical Code, Part 1. Final acceptance is subject to Authorities Having Jurisdiction.

**WARNING:** This appliance is a "FIRE ALARM DEVICE - DO NOT PAINT"

**WARNING:** Please read these instructions carefully. Failure to comply with any of the following instructions, cautions and warnings could result in improper application, installation and/or operation of these products in an emergency situation, which could result in property damage and serious injury or death to you and/or others.

**SPECIFICATIONS**

**Table 1: UL/ULC Listed Models and Ratings=**

| Speaker |         |  |     |     |    |    |                                  |     |     |    |    |
|---------|---------|--|-----|-----|----|----|----------------------------------|-----|-----|----|----|
| Model*  | Voltage | dBA at 10 Feet (Rated Watts) Reverberant Per UL 1480 |     |     |    |    | Anechoic dBA Per CAN/ULC-S541-07 |     |     |    |    |
|         |         | 1/8  | 1/4 | 1/2 | 1  | 2  | 1/8                              | 1/4 | 1/2 | 1  | 2  |
| LSPKxC  | 25/70   | 75   | 79  | 82  | 85 | 87 | 75                               | 79  | 82  | 85 | 87 |
| LSPSTxC | 25/70   | 75   | 79  | 82  | 85 | 87 | 75                               | 79  | 82  | 85 | 87 |

\* when ordering, "x" denotes the product color (W = White, R = Red) , LSPSTxC-A for amber lens.

**NOTES**

- Strobes will produce 1 flash per second over the "Regulated Voltage" range.
- All models are Listed for indoor use with a temperature range of +32°F to +120°F (0°C to +49°C) and maximum humidity of 93% RH. The effect of shipping and storage temperatures shall not adversely affect the performance of the appliance when it is stored in the original cartons and is not subjected to misuse or abuse.
- dBA is rated per UL Standard 1480 and ULC Standard ULC-S541-07 for Speaker Appliances. Frequency range of speakers is 300-8000Hz.
- These appliances were tested to the operating voltage limits of 16-33 volts using Filtered (DC) or unfiltered Full-Wave-Rectified (FWR). Do not apply 80% and 110% of these voltage values for system operation.
- Check the minimum and maximum output of the power supply and standby battery and subtract the voltage drop from the circuit wiring resistance to determine the applied voltage to the strobe.

**Table 2: Current Ratings for Strobe Only**

| Maximum RMS Current (AMPS) |               |                     |       |       |       |       |
|----------------------------|---------------|---------------------|-------|-------|-------|-------|
|                            |               | LSPSTxC , LSPSTxC-A |       |       |       |       |
|                            | Voltage Range | Regulated Voltage   | 15cd  | 30cd  | 75cd  | 95cd  |
| DC                         | 16-33VDC      | 24                  | 0.040 | 0.058 | 0.155 | 0.258 |
| FWR                        | 16-33VRMS     | 24                  | 0.056 | 0.078 | 0.195 | 0.330 |

**NOTE:** Candela setting will determine the current draw of the product.

**Table 3: ULC Directional Characteristics**

| 25/70V |  |  |
|--------|--|--|
| -3dBA  | +/- 75 degrees horizontal; +/- 70 degrees vertical |  |
| -6dBA  | +/- 90 degrees horizontal; +/- 90 degrees vertical |  |

**NOTE:** The maximum wire impedance between strobes shall not exceed 35 OHMS.

**PN P85445E**

**NOTE:** Make sure that the total RMS current required by all appliances that are connected to the system's primary and secondary power sources, NAC Circuits ,DSM Sync Modules or Wheelock Power Supplies do not exceed the power sources' rated capacity or the current ratings of any fuses on the circuits to which these appliances are wired.

**CAUTION:** Speaker Strobes are not designed to be used on coded systems in which the applied voltage is cycled on and off.

**WARNING: Overloading power sources or exceeding fuse ratings could result in loss of power and failure to alert occupants during an emergency.**

When calculating the total currents, use Table 2 to determine the highest value of "RMS Current" for an individual strobe (across the expected operating voltage range of the strobe), then multiply these values by the total number of strobes; be sure to add the currents for any other appliances, including audible signaling appliances, powered by the same source and include any required safety factors.

If the peak current exceeds the power supplies' peak capacity, the output voltage provided by the power supplies may drop below the listed voltage range of the appliances connected to the supply and the voltage may not recover in some types of power supplies. For example, an auxiliary power supply that lacks filtering at its output stage (either via lack of capacitance and/or lack of battery backup across the output) may exhibit this characteristic.

**CAUTION:** The following figures show the maximum number of field wires (conductors) that can enter the backbox used with each mounting option. If these limits are exceeded, there may be insufficient space in the backbox to accommodate the field wires and stresses from the wires could damage the product.

**WIRING INFORMATION**

A 1.5µF blocking capacitor for DC supervision of audio lines by the FACP is factory wired in series with the speaker input. Supervision voltage must not exceed 33 VDC.

1. Speaker and Speaker Strobe models have in-out wiring terminals that accept two #12 to #18 American Wire Gauge (AWG) wires at each screw terminal. Strip leads 3/8 inches and connect to screw terminals.
2. Break all in-out wire runs on supervised circuits to assure integrity of circuit supervision as shown in Figure 2. The polarity shown in the wiring diagrams is for operation of the appliances.
3. Connect speaker wires to common and positive of terminal block and select the power tap terminal for 1/8W, 1/4W, 1/2W, 1W or 2W; 25V or 70V as required (see Figures 1, 2, 3,5 and Table 4). Each doubling of rated Watts increases sound output by 3 dBA.
4. Using the slide switch shown in Figure 3, select voltage and wattage as shown in Table 4. Each letter corresponds to a position of the switch located on the printed circuit board.

Refer to Sync Module instruction sheets DSM (P83177) or Wheelock Power Supplies for additional information.

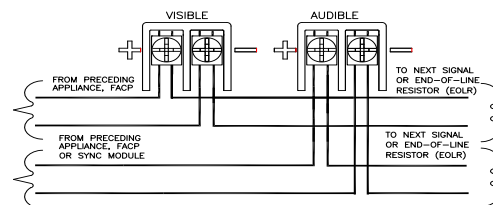


Figure 1 LED Strobe Wiring

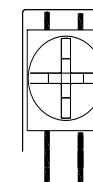


Figure 2 Wire Connection

**NOTE:** Check electrical ratings specified in Tables 1 and 2 (as appropriate) to ensure proper electrical input. Ensure the speaker wiring is connected to speaker terminals only, and strobe wiring is connected to strobe terminals only. Ensure the wiring at the FACP is correct.

**NOTE:** Wiring method shall be in accordance with CSA C22.1, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations, Section 32.

**WARNING: Improper electrical input can damage the product or cause it to malfunction.**

**NOTE:** The Speaker Strobe appliances must be set to the desired dBA sound output level before they are installed. This is done by properly setting the slide switch in accordance with these instructions.

**WARNING: Incorrect settings will result in improper performance. Factory setting is F: 70V @ 1/2 W.**



Figure 3: Speaker Selection Switch

**NOTE:** Slide the Switch Indicator selection switch to the desired tap setting.

| Position | 25V   | 70V   |
|----------|-------|-------|
| A        | 2     | ----- |
| B        | 1     | ----- |
| C        | 1/2   | ----- |
| D        | 1/4   | 2     |
| E        | 1/8   | 1     |
| F        | ----- | 1/2   |
| G        | ----- | 1/4   |
| H        | ----- | 1/8   |

**CAUTION:** Always operate audio amplifiers and speakers within their specified ratings. Excessive input may distort sound quality and may damage audio equipment. Improper input voltage can damage speaker. If distortion is heard, check for clipping of the audio appliance with an oscilloscope and reduce the amplifier input level or gain level to eliminate any clipping.

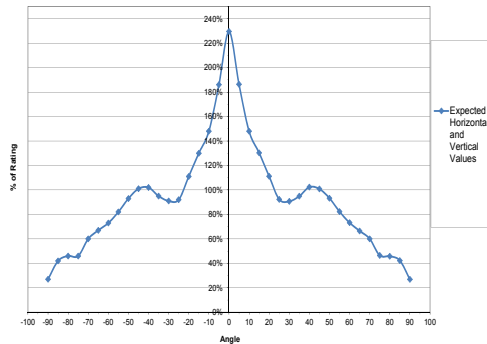


Figure 4: LED Ceiling Expected Candela Ratings

**NOTE:** The LSPSTxC candela setting comes pre-set at 15cd.

**CAUTION:** The candela select switch must be field set to the required candela intensity before installation. When changing the setting of the candela select switch make certain that it clicks in place. After changing the candela setting the appliance must be retested to verify proper operation. Improper setting of the candela select switch may result in operation at the wrong candela.

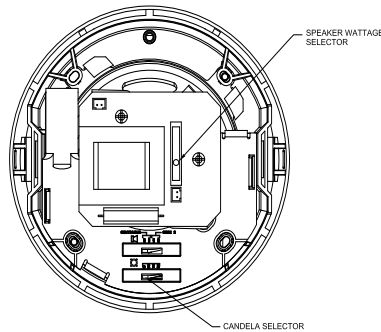


Figure 5: Speaker Switch and Candela Selectors

## MOUNTING OPTIONS

Although the limits shown for each mounting option comply with the National Electrical Code (NEC), Cooper Wheelock recommends use of the largest backbox option shown and the use of approved stranded field wires, whenever possible, to provide additional wiring room for easy installation and minimum stress on the product from wiring.

**NOTE:** Remove the Lens Protector Tape and cardboard speaker protector before replacing the Appliance cover grill.

**NOTE:** Speaker Strobe mounting are depicted in Figure 6 & 7. For non-strobe speaker surface mounting, use same surface box or backbox as depicted in Figure 6 and Figure 7.

**NOTE:** Surface backbox (LSPKBBxC) shown in Figure 7, is compatible with wiremold and conduit. Mounting holes are for single-gang, double-gang, and #10 wood screws for stud mounting. If metal conduit is installed onto top and bottom conduit entrances, then an insulated grounding wire (18 AWG, supplied) must be connected between the top and bottom plate by using thread cutting screws (supplied) to provide electrical continuity per UL 50.

## MOUNTING PROCEDURES

**CAUTION:** Check that the installed product will have sufficient clearance and wiring room prior to installing backboxes and conduit, especially if sheathed multiconductor cable or 3/4" conduit fittings are used.

1. LED Speaker and Speaker Strobe models have an integrated Speaker Mounting Plate.
2. First mount the Speaker Mounting Plate to the backbox. Next slide the grille over the Speaker Mounting Plate strobe until both snaps are engaged.
3. When terminating field wires, do not use more lead length than required. Excess lead length could result in insufficient wiring space for the signaling appliance.
4. Conduit entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product.
5. Do not pass additional wires (used for other than the signaling appliance) through the backbox. Such additional wires could result in insufficient wiring space for the signaling appliance.
6. Mounting hardware for each mounting option is supplied.
7. All models can be flush mounted to a 4" square by 2-1/8" deep backbox in the wall, refer to Figure 7.
8. Use care and proper techniques to position the field wires in the backbox so that they use minimum space and produce minimum stress on the product. This is especially important for stiff, heavy gauge wires and wires with thick insulation or sheathing.
9. Use care to prevent speaker cone damage when driving screws for speaker product mounting.
10. Spacing between mounting hole screws is 5 1/8".

**WARNING:** When installing strobes in an open office or other areas containing partitions or other viewing obstructions, special attention should be given to the location of the strobes so that their operating effect can be seen by all intended viewers, with the intensity, number, and illumination, regardless of the viewer's orientation.

**WARNING:** A small possibility exists that the use of multiple strobes within a person's field of view, under certain circumstances, might induce a photo-sensitive response in persons with epilepsy. Strobe reflections in a glass or mirrored surface might also induce such a response. To minimize this possible hazard, Cooper Wheelock strongly recommends that the strobes installed should not present a composite flash rate in the field of view which exceeds five (5) hz at the operating voltage of the strobes. Cooper Wheelock also strongly recommends that the intensity and composite flash rate of installed strobes comply with levels established by applicable laws, standards, regulations, codes and guidelines.

If this appliance is required to produce a distinctive three-pulse Temporal Pattern Fire Alarm Evacuation Signal (for total evacuation) in accordance with NFPA 72, the appliance must be used with a fire alarm control unit that can generate the temporal pattern signal. Refer to manufacturer's installation manual for details.

**NOTE:** NFPA 72/ANSI 117.1 conforms to ADAAG Equivalent Facilitation Guidelines in using fewer, higher intensity strobes within the same protected area.

**CAUTION:** Check the installation instructions of the manufacturers of other equipment used in the system for any guidelines or restrictions on wiring and/or locating Notification Appliance Circuits (NAC) and notification appliances. Some system communication circuits and/or audio circuits, for example, may require special precautions to assure electrical noise immunity (e.g., audio crosstalk).

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A 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.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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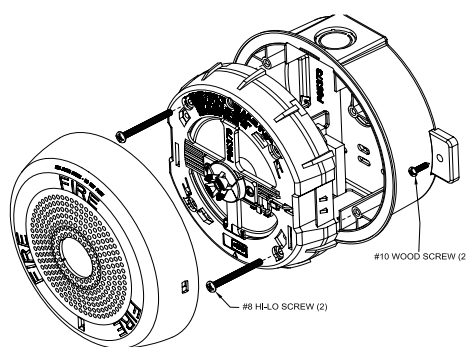


Figure 6: Ceiling Speaker or Speaker Strobe with Surface Mounting Box

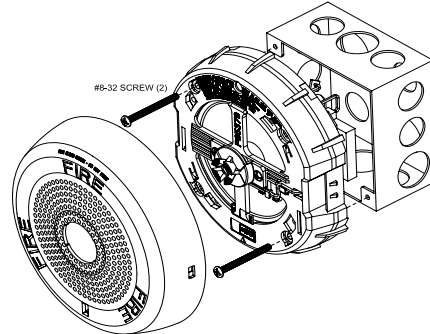


Figure 7: Speaker or Speaker Strobe with 4" Backbox

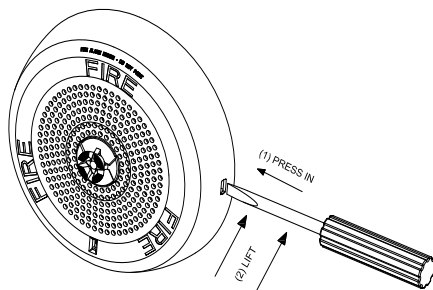


Figure 8: Removing a Speaker or Speaker Strobe