

## INSTALLATION INSTRUCTIONS WHELOCK EXCEDER LED3 LOW FREQUENCY SOUNDER STROBES AND SOUNDERS (WALL MOUNT)

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

### GENERAL

The Wheelock Exceder LED3 series LFHNK3 Sounder and LFHSK3 Sounder Strobe appliances are designed for easy installation. All models are for 24V operation. The LFHNK3 Sounder and LFHSK3 Sounder Strobe are rated as low frequency devices per UL 464 suitable for sleeping areas per NFPA 72. The LFHNK3 sounder may be wall or ceiling mounted

**WARNING: Please read these instructions carefully before using this product. Failure to comply with any of the following instructions, cautions and warnings could result in improper application, candela setting, 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.**

The Wheelock Exceder LED3 Series meets NFPA 2016 20 millisecond light pulse duration code requirements. In addition, the Wheelock Exceder LED3 product line has been UL/ULC listed as compatible with all Fire Alarm Control Panels (FACP) and accessories that have been determined to be compatible with Wheelock model RSS Strobe based products including the RSS, CH, E, EH, ET,ST,HS,MT,S8, SA, STH and Z Series. The maximum number of LED3 devices per NAC is determined by dividing the maximum current rating of the FACP NAC divided by the total appropriate current rating for the selected candela output of the LED3 devices, with a maximum of 105 LED3 devices per NAC. Refer to FACP installation instructions for more detail. The Wheelock Exceder LED3 Series strobes may be installed in the same notification zone and field of view with any RSS Strobe based product.

**NOTE: WHEN USING HORN ONLY MODELS ON A FACP LISTED AS SPECIAL APPLICATION DO NOT EXCEED 85% OF MAXIMUM NAC CURRENT RATING.**

### SPECIFICATIONS

Table 1: Specifications	
Agency	LFHSK3: UL 1971,CAN/ULC-S526-16
	LFHSK3/LFHNK3: UL 464, CAN/ULC-S525-16
Environmental	Indoor Use Only. 0° C -49° C (32° F - 120° F) 93% R.H.
NAC Characteristics	Max. line resistance: 35Ω
Sounder Patterns	Continuous, Code 3, Code 4, Code 3/Code 4* (field selectable)
	Code 3 or Code 4 synchronized when using Cooper Wheelock Sync Module
Input Power	DC or FWR, 24V Regulated, 16 to 33V (All models)
Strobe Candela	110 cd

\* Code 3/Code 4 operation requires the use of the Cooper Wheelock DSM module.

### SOUNDER STROBE AND SOUNDER APPLIANCES

Wheelock Exceder LED3 series Low Frequency Sounder Strobe can provide a non-synchronized strobe appliance when connected directly to a Fire Alarm Control Panel (FACP), or provide a synchronized strobe appliance when used in conjunction with an FACP that incorporates the sync protocol, a Dual Sync Module (DSM) or a Wheelock Power Supply. When set to the T3/T4 setting, a Wheelock Sync Module can toggle the LFHSK3 and LFHNK3 between Code 3 for fire and Code 4 for carbon monoxide.

**NOTE:** The Code 3 temporal pattern (1/2 second on, 1/2 second off, 1/2 second on, 1/2 second off, 1/2 second on, 1-1/2 off and repeat) is specified by ANSI and NFPA 72 for standard emergency evacuation signaling.

**NOTE:** The Code 4 temporal pattern (100 ms on, followed by 100 ms off, for 4 cycles, followed by 5 seconds of silence and repeat), is specified by ANSI and NFPA 720 for carbon monoxide emergency signaling.

Description	LFHSK3 and LFHNK3 24V Reverberant dBA per UL 464			LFHSK3 and LFHNK3 24V Anechoic dBA per CAN/ULC-S525-16 For Dwelling Use Only		
	16.0V	24.0V	33.0V	16.0V	24.0V	33.0V
Continuous	80	80	80	80	80	80
Code 3	80	80	80	80	80	80
Code 4	80	80	80	80	80	80
Code 3/Code 4	80	80	80	80	80	80

-3dB	+ / -35 Degrees horizontal, +45 / -30 vertical
-6dB	+ / -90 Degrees horizontal, + / - 90 vertical

### CURRENT DRAW

When calculating the total currents use Table 3 to determine the highest value of RMS current for an individual appliance, then multiply these values by the total number of appliances. Be sure to add the currents for any other appliances, including audible signaling appliances powered by the same source, and to include any required safety factors.

		16.0-33.0 Volts	
Current	Sounder Settings	LFHSK3 Sounder Strobe Current (A) 110 cd	LFHNK3 Sounder Current (A)
DC	Continuous (CONT)	0.290	0.098
	Code 3 (T3)	0.290	0.098
	Code 4 (T4)	0.290	0.098
	Code 3/Code 4 (T3/4)	0.290	0.098
FWR	Continuous (CONT)	0.380	0.138
	Code 3 (T3)	0.380	0.138
	Code 4 (T4)	0.380	0.138
	Code 3/Code 4 (T3/4)	0.380	0.138

**NOTE:** These notification appliances are UL Listed as "Regulated". They are intended to be used with Fire Alarm Control Panels (FACPs) whose notification circuits are UL Listed as "Regulated." Refer to the FACP instructions or the Cooper Wheelock Strobe Compatibility Data Sheet (PN P85328) for special application and strobe synchronization compatibility.

**NOTE:** These appliances were tested to the regulated voltage limits of 16.0-33.0 Volts for 24 volt models using filtered DC or unfiltered DC. Do not apply voltage outside of this range.

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

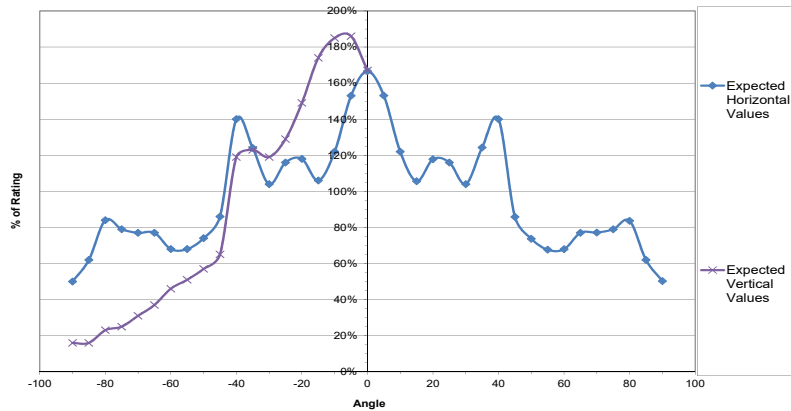
**NOTE:** Strobes are not designed to be used on coded systems in which the applied voltage is cycled on and off.

**NOTE:** Make sure that the total RMS current required by all appliances that are connected to the system's primary and secondary power sources, notification appliance circuits, DSM sync modules, or Wheelock power supplies does not exceed the power sources' rated capacity or the current ratings of any fuses on the circuits to which these appliances are wired.

**WARNING :Overloading power sources or exceeding fuse ratings could result in loss of power and failure to alert occupants during an emergency, which could result in property damage and serious injury or death to you and/or others.**

**NOTE:** Ensure the device is set for the proper application: Code 3 for fire emergency only, Code 4 for carbon monoxide emergency only.

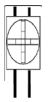
**LIGHT OUTPUT**



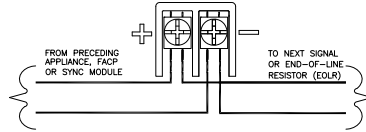
**Figure 1: LFHSK3 Expected Light Output**

**WIRING, SETTINGS AND MOUNTING**

- All strobe appliances 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.
- Break all in-out wire runs on supervised circuits to ensure integrity of circuit supervision as shown in Figure 2. The polarity shown in Figure 3, the wiring diagram, is for the operation of the appliances. The polarity is reversed by the FACP during supervision.



**Figure 2: Wire Connection**



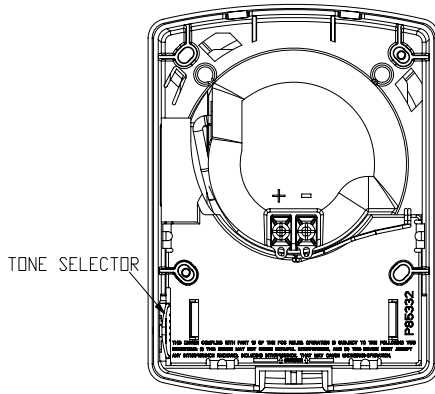
**Figure 3: LED Strobe Wiring**

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

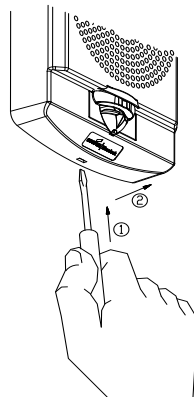
**NOTE:** Do not fully back out terminal screws.

**NOTE:** The LFHSK3 and LFHNK3 are factory set for the most common application of Code 3.

**NOTE:** Sounder setting Tone Selector switch is shown in Figure 4; settings are Cont, T3, T4, T3/4 for Continuous, Code 3, Code 4, and Code 3/Code 4 respectively.



**Figure 4: Tone Selector**



INSERT SCREW DRIVER INTO SLOT, PUSH IN TO RELEASE SNAP AND LIFT UP TO REMOVE THE COVER

**Figure 5: Cover Removal (See step 5)**

**CAUTION:** Check that the installed product will have sufficient clearance and with sheathed multiconductor cable or 3/4-inch conduit fittings are used.

Although the limits shown for the mounting option comply with the National Electrical Code (NEC), Cooper Wheelock recommends use of a 4-inch square backbox 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.

**CAUTION:** Do not over tighten mounting screws. Excessive torque can distort the base and may affect operation.

**CAUTION:** When using power tools to screw down the mounting plate to the electrical backbox, ensure the torque is set to the lowest setting available.

**MOUNTING OPTIONS**

**NOTE:** Remove the lens protector tape and the speaker protector before replacing the appliance cover grille.

1. Connect field wiring to contacts on back of device.
2. Dress wires back into backbox.
3. Install device as shown in Figure 6 to a 4-inch square backbox, Figure 7 to a surface mount backbox, or Figure 8 to a single-gang backbox, with the provided pan head screws.
4. Snap beauty cover over device.

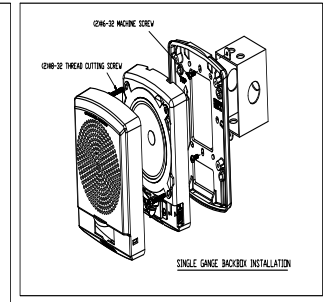
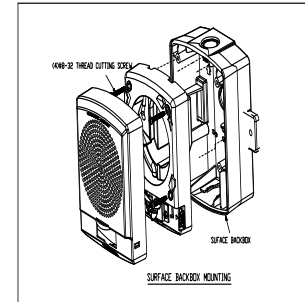
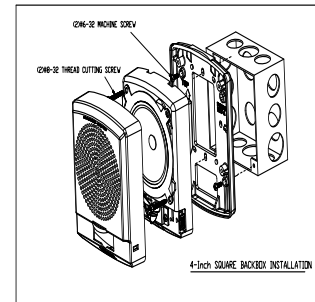
**NOTE:** backbox must be recessed or flush with the wall surface.

**IMPORTANT:** Device only has one mounting orientation. LED light element should be pointed towards ground.

5. To remove the appliance, insert a small flat-bladed screwdriver into the bottom opening 1/2" as shown in Figure 5. Then pry off beauty cover with the screw driver and then unscrew device.

**NOTE:** For the surface mount backbox, please use the LSPKBB (Red: CN110756; White: CN110757) accessory products.

**WARNING: DO NOT PAINT THIS DEVICE.**



**Figure 6: 4-Inch Square Backbox Installation** **Figure 7: Surface Backbox Installation** **Figure 8: Single Gang Backbox Installation**

**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 type of strobes being sufficient to make sure that the intended viewer is alerted by proper 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 Notification 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.

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

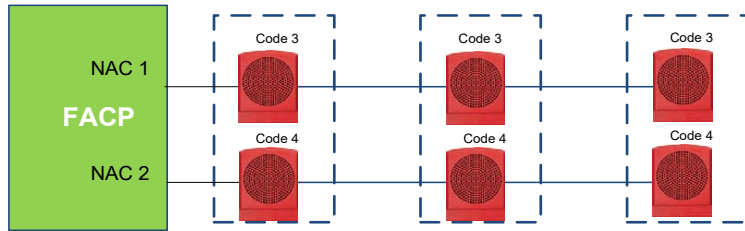
**NOTE:** Final acceptance is subject to Authorities Having Jurisdiction.

**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 immunity from electrical noise (e.g., audio crosstalk).

**APPLICATIONS AND COMPATIBILITY**

The following diagrams provide information with respect to configuring the NAC circuits and the Sounder and Sounder Strobe appliances for synchronization.

**Separate T3 and T4 Application  
Refer to Note 1**

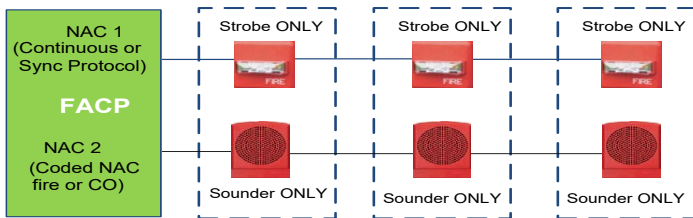


Sleeping Room Areas

Figure 9: Separate T3 and T4 Application

- FACP sends continuous signal to appropriate Sounder devices which are set to T3 or T4 operating mode.

**Coded Sounder Application  
Refer to Note 2**

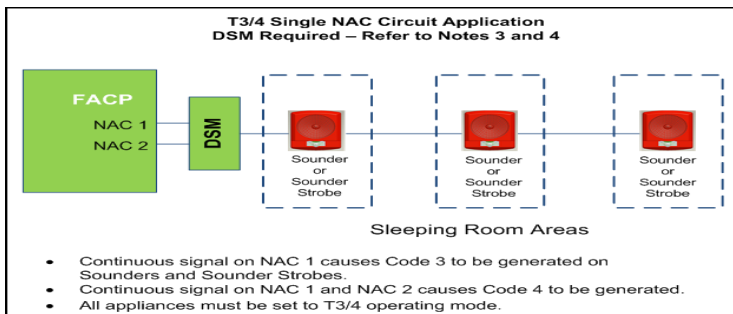


Sleeping Room Areas

Figure 10: Coded Sounder Application

- FACP's continuous signal sent to appropriate Strobe devices on NAC 1.
- FACP's coded mode is sent to Sounder devices only on NAC 2, which are set to cont operating mode.

**T3/4 Single NAC Circuit Application  
DSM Required – Refer to Notes 3 and 4**



Sleeping Room Areas

- Continuous signal on NAC 1 causes Code 3 to be generated on Sounders and Sounder Strobes.
- Continuous signal on NAC 1 and NAC 2 causes Code 4 to be generated.
- All appliances must be set to T3/4 operating mode.

Figure 11: T3/4 Single NAC Circuit Application

**APPLICATION NOTES:**

**Note 1:** FACP determines the alarm source (fire or CO) and activates the T3 or T4 tone pattern to the Wheelock Sounder.

**Note 2:** Coded mode operation allows the FACP to manage the code pattern by interrupting power to the device and shall not be used with strobes. Strobes are not designed to be used in coded applications. CONT mode shall be used with the LFHNK3 device only.

**Note 3:** For T3/4 Application, refer to the following Warnings:

**WARNING: BOTH NAC 1 AND NAC 2 MUST REMAIN ACTIVE FOR T4 OPERATION.**

**WARNING: WHEN USING THE T3/4 OPERATING CODE ON SOUNDER AND SOUNDER STROBES, THE DSM WILL PROVIDE SYNCHRONIZATION; THEREFORE, THE FACP'S NOTIFICATION APPLIANCE CIRCUITS CANNOT USE COOPER WHEELLOCK PROTOCOL.**

**Note 4:** Cooper Wheelock's Exceder LED Low Frequency Sounder Strobe can provide a non-synchronized strobe appliance when connected directly to a Fire Alarm Control Panel (FACP), or provide a synchronized strobe appliance when used in conjunction with an FACP that incorporates the Cooper Wheelock sync protocol, a Cooper Wheelock Sync Module or the Cooper Wheelock Power Supply.

**NOTE:** Refer to the Cooper Wheelock P83177, Installation Instructions, Series DSM Synchronization (Sync) Module for additional information regarding connection of a DSM.

**NOTE:** Audio silence function is available when using the Continuous, Code 3, and Code 4 settings.

**NOTE:** When using the LFHSK3 and LFHNK3 520 Hz Low Frequency Sounder and Sounder Strobes in the T3/T4 mode, connect a standard NAC circuit to the (+) and (-) Audible Inputs on the DSM. In the T3/T4 mode, the DSM utilizes NAC 1 and/or NAC 2 in conjunction with the Audible Input NAC signal to actively toggle between T3/fire and T4/CO. Refer to the Cooper Wheelock P83177, Installation Instructions, Series DSM Synchronization (Sync) Module for additional information and wiring diagrams when connecting to a DSM.

**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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