

*Thank you for using our products.*  
**INSTALLATION INSTRUCTIONS**  
**SERIES NS-24MCC/MCCH MULTI-CANDELA HORN/STROBE**  
**(CEILING MOUNT VERSION)**

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

**GENERAL:**

Cooper Wheelock's Series NS Multi-Candela ceiling mount Horn/Strobe (NS) requires only 2-wires for operation of the horn and strobe circuits and provides either four or two selectable candela settings (15, 30, 75, 95 or 115, 117). The NS is the ideal choice for applications where the audible silence feature is required. The NS is UL Listed under Standard 1971 for Signaling Devices for the Hearing Impaired and UL Standard 464 for Audible Signal Appliances for indoor use only. It is molded with a mounting plate for use with a 4" backbox or 100mm European backbox (See Figure A and mounting procedures). This strobe model is Listed for ceiling mounting only. The NS uses a xenon flashtube with solid state circuitry enclosed in a polycarbonate lens to provide maximum visibility and reliability for effective visible signaling.

The horn portion of the NS can be field set to provide either Continuous Horn or Code 3 Horn and can be field set for High (HI) or Low (LO) dBA.

**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. The Code 3 Horn should be used only for fire evacuation signaling and not for any other purpose.

The NS Horn/Strobe can be used with a Sync Module (SM), Dual Sync Module (DSM) or Wheelock power supplies to provide synchronized strobe and synchronized Code 3 signal.

The NS Horn/Strobe is designed for use with either filtered DC (VDC) or unfiltered full-wave-rectified (VRMS) input voltage. All inputs are polarized for compatibility with standard reverse polarity supervision of circuit wiring by a fire alarm control panel (FACP).

**⚠ WARNING: PLEASE READ THESE INSTRUCTIONS CAREFULLY. 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.**

**SPECIFICATIONS:**

Model	Regulated Voltage (VDC/VRMS)	Voltage Range Limit Per UL 464 and UL 1971 (VDC/VRMS)	Strobe Candela (cd)
NS-24MCC	24	16.0-33.0	15/30/75/95
NS-24MCCH	24	16.0-33.0	115/177

Description	Volume	Reverberant dBA Per UL 464		
		16.0VDC	24.0VDC	33.0VDC
Continuous Horn	Low	78	81	84
	High	84	88	90
Code 3 Horn	Low	73	77	79
	High	80	83	85

**NOTES:**

1. The strobe will produce 1 flash per second over the "Regulated Voltage" range.
2. This horn/strobe model meets the required light distribution patterns defined in UL 1971.
3. All models are UL Listed for indoor ceiling use with a temperature range of +32°F to +120°F (0°C to +49°C) and maximum humidity of 93% ± 2% 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 not subjected to misuse or abuse.

**⚠ WARNING: CANDELA SETTING WILL DETERMINE THE CURRENT DRAW OF THE PRODUCT.**

Maximum RMS Current with Hi dBA Setting							
Regulated Voltage	15cd	30cd	75cd	95cd	115cd	177cd	
DC	16.0-33.0VDC	0.082	0.124	0.209	0.275	0.350	0.477
FWR	16.0-33.0VRMS	0.141	0.204	0.312	0.411	0.491	0.681
Maximum RMS Current with Low dBA Setting							
Regulated Voltage	15cd	30cd	75cd	95cd	115cd	177cd	
DC	16.0-33.0VDC	0.071	0.114	0.201	0.261	0.306	0.429
FWR	16.0-33.0VRMS	0.124	0.184	0.301	0.397	0.469	0.659

When calculating the total current: Use Table 3 to determine the highest value of "RMS Current" for an individual NS then multiply the value by the total number of NS Appliances. Be sure to add the currents for any other appliances powered by the same source and to include any required safety factors.

**NOTE:** The maximum number of strobes on a single notification appliance circuit shall not exceed 50.

**⚠ CAUTION:** These notification appliances are UL Listed as "Regulated". They are intended to be used with FACPs whose notification circuits are UL Listed as "Regulated." These appliances shall not be used on UL Listed "Special Application" notification circuits unless the appliances are identified to be compatible in the installation instructions of the FACP or unless the FACP is identified to be compatible in this instruction manual.

**⚠ WARNING: THESE APPLIANCES WERE TESTED TO THE REGULATED VOLTAGE LIMITS OF 16.0-33.0 VOLTS FOR 24V MODELS USING FILTERED DC OR UNFILTERED FULL-WAVE-RECTIFIED VOLTAGE. DO NOT APPLY VOLTAGE OUTSIDE OF THIS RANGE.**

**⚠ WARNING: 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.**

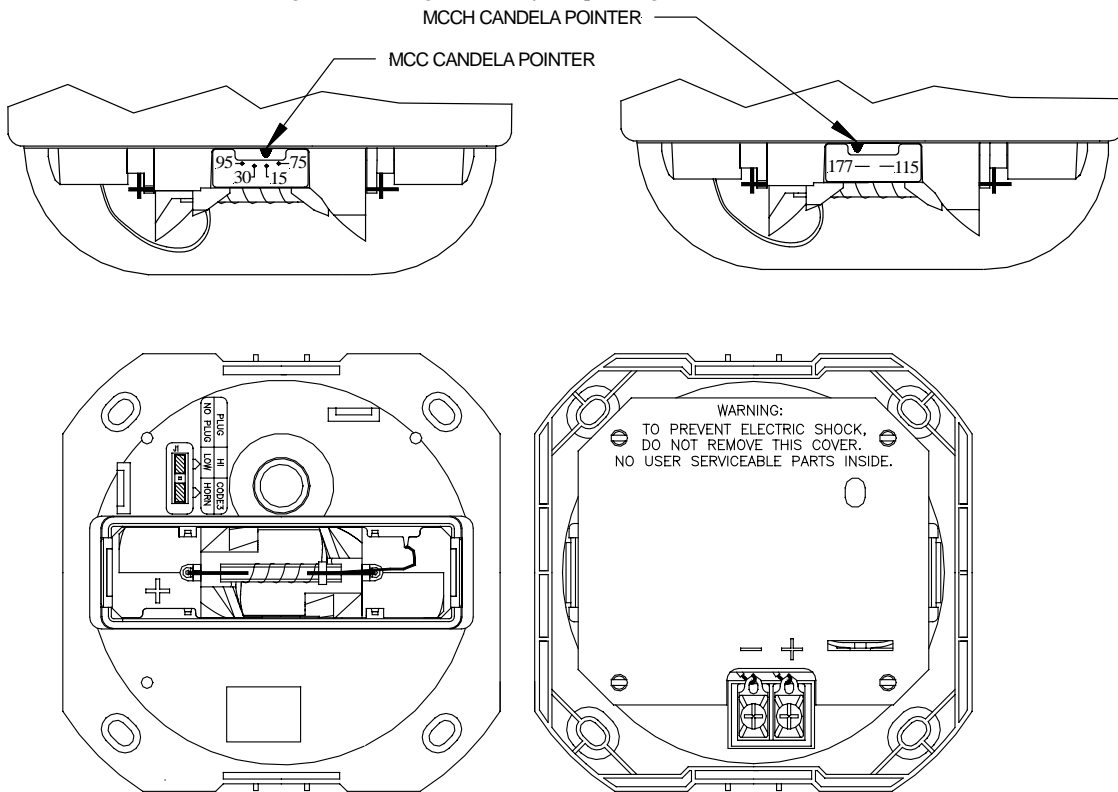
**⚠ WARNING: MAKE SURE THAT THE TOTAL RMS CURRENT REQUIRED BY ALL APPLIANCES THAT ARE CONNECTED TO THE SYSTEM'S PRIMARY AND SECONDARY POWER SOURCES, APPLIANCE CIRCUITS, SM, DSM SYNC MODULES AND WHELOCK POWER SUPPLIES DOES NOT EXCEED THE POWER SOURCES' RATED CAPACITY OR THE CURRENT RATINGS OF ANY FUSES ON THE CIRCUITS TO WHICH THESE APPLIANCES ARE WIRED. 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.**

**⚠ CAUTION:** The NS Series horn/strobes are not designed to be used on coded systems in which the applied voltage is cycled on and off.

**CANDELA AND SOUND OUTPUT SETTINGS:**

**⚠ WARNING: 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, WHICH COULD RESULT IN A CURRENT DRAW EXCEEDING THE POWER SUPPLY'S CAPACITY.**

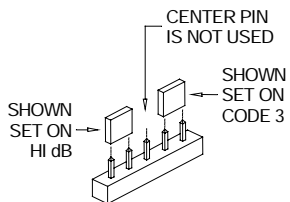
*Figure 1: Showing Location of Jumper Plug and Candela Selector.*



**NOTE:** Factory setting is on High dB, Code 3 and 15cd for MCC; 177cd for MCCH.

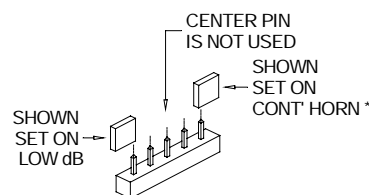
**NOTE:** The NS must be set for Code 3 horn when installed on a synchronized notification appliance circuit (NAC).

*Figure 2: Jumper plug settings for High dB and Code 3.*



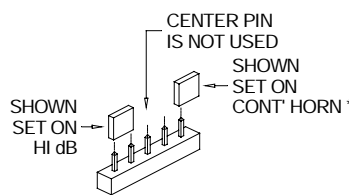
(Use needle nose pliers to pull and properly set the jumper plugs.)

*Figure 3: Jumper plug settings for Low dB and Continuous Horn.*

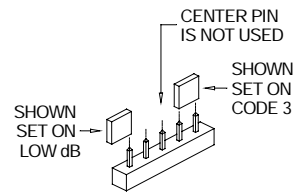


No jumper plugs are needed for Continuous Horn and low dB settings. However, it is recommended that the jumper plug be retained in the unit for future use (if needed) as shown.

*Figure 4: Jumper plug settings for High dB and Continuous Horn.*



*Figure 5: Jumper plug settings for Low dB and Code 3.*



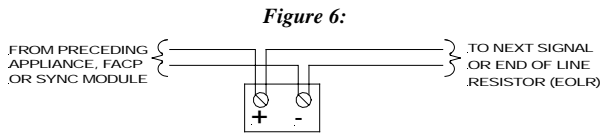
**⚠ WARNING: THE NS APPLIANCE MUST BE FIELD SET TO THE DESIRED TONE AND dBA SOUND OUTPUT LEVEL BEFORE THEY ARE INSTALLED. THIS IS DONE BY PROPERLY INSERTING JUMPER PLUGS IN ACCORDANCE WITH THESE INSTRUCTIONS. INCORRECT SETTINGS WILL RESULT IN IMPROPER PERFORMANCE, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

**WIRING AND MOUNTING INFORMATION:**

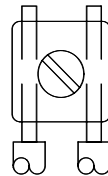
**⚠ CAUTION:** The following figure (A) shows the maximum number of field wires (conductors) that can enter the backbox used with each mounting option. If these limits are exceeded, there may be insufficient space in the backbox to accommodate the field wires and stresses from the wires could damage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

**⚠ 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.

Although the limits shown 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.

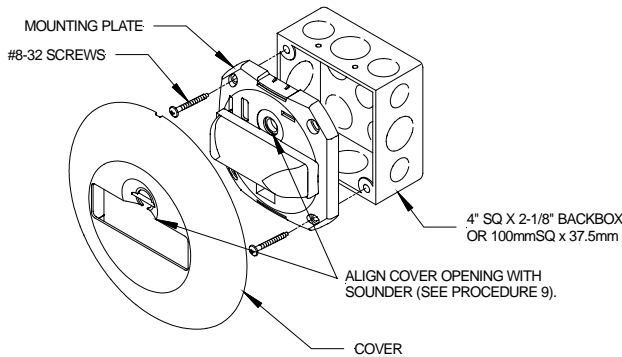


When the sync module is used, the audible tone will be the **code 3 sound only**. Refer to Sync Module installation instruction sheets for SM (P83123), DSM (P83177) or Wheelock's Power Supplies for additional information.



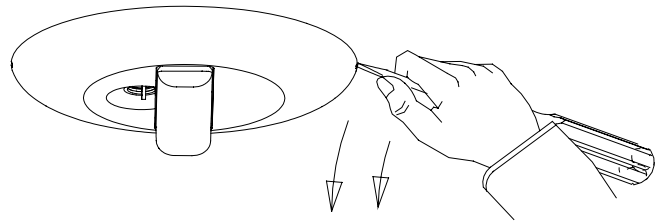
- The NS Appliance has in-out wiring terminals that accepts two #12 to #18 American Wire Gauge (AWG) wires at each screw terminal. Strip leads 3/8" inches for connection to screw terminals.
- Break all in-out wire runs on supervised circuit supervision as shown in Figure 7. The polarity shown in the wiring diagrams is for the operation of the appliances. The polarity is reversed by the FACP during supervision.

**Figure A: Flush Mounting**



<b>MAXIMUM NUMBER OF CONDUCTORS</b>			
<b>AWG#18</b>	<b>AWG#16</b>	<b>AWG#14</b>	<b>AWG#12</b>
<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>

**Figure 8: Cover Removal**



1. Hold flat screwdriver near the tip and insert the tip about 1/8" into one of the slots in the grille as shown.
2. Pull straight down as shown to pop off grille.

**⚠ CAUTION:** Prying, turning or pivoting with screwdriver in order to remove the grille may result in damage to ceiling.

**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. The mounting plate must be oriented correctly when it is mounted to the backbox.
2. NS models can be flush mounted to a 4" or 100mm backbox (Figure A). Mounting hardware is supplied.
3. Conduit entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product.
4. Move the selector switch to the desired candela setting. The setting is indicated by a pointer and can be seen on the bottom side of the lens (Figure 1).
5. 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.
6. 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.
7. 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.
8. Mount the mounting plate to the backbox.
9. **Make sure that the sounder openings on the mounting plate and cover are aligned (Figure A).** Next slide the cover over the mounting plate until the 2 side snaps of the NS cover engage with the mounting plate.
10. The NS cover can be removed from the mounting plate Mounting Plate assembly once engaged. First, gently insert a screwdriver into one of the slots located on the side edges of the NH cover. Second, gently pull away from the wall with the inserted screwdriver to disengage the snap (Figure 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 TYPE OF STROBES BEING SUFFICIENT TO MAKE SURE THAT THE INTENDED VIEWER IS ALERTED BY PROPER ILLUMINATION, REGARDLESS OF THE VIEWER'S ORIENTATION. FAILURE TO DO SO COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

**⚠ WARNING: THE NS HORN/STROBE IS A "FIRE ALARM DEVICE - DO NOT PAINT."**

**⚠ CAUTION:** If these appliances are operated within 15 inches of a person's ear, they can produce a sound pressure level that exceeds the maximum 120dBA permitted by ADA and OSHA rules. Exposure to such sound levels can result in damage to a person's hearing.

The 177 candela strobe setting is Listed for use in sleeping or non-sleeping areas when installed in accordance with appropriate NFPA Standards and the AHJ.

**⚠ 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.**

**NOTE:** NFPA 72/ANSI 117.1 conform 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 NACs 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).

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital appliance, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) Reorient or relocate the receiving antenna, 2) Increase the separation between the equipment and receiver, 3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected, and 4) Consult the dealer or an experienced radio/TV technician for help.

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