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INSTALLATION INSTRUCTIONS
SERIES S8 EIGHT INCH SPEAKER AND MULTI-CANDELA SPEAKER STROBE (CEILING MOUNT VERSION)

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

GENERAL:

Series S8-70/25 Eight Inch Speaker, S8-24MCC Multi-Candela Eight Inch Speaker Strobe and S8-24MCCH Multi-High Candela are UL Listed under Standard 1971 (Signaling Devices for the Hearing Impaired) and Standard 1480 (Speakers for Fire Protective Signaling Systems) for indoor fire protection service. The S8-24MCC and S8-24MCCH with amber, red, blue or green lens is UL Listed under Standard UL1638 (Visual Signaling Appliance) for Private Mode Emergency and General Utility Signaling. The S8 Eight Inch Speaker is designed for multiple power requirements with high dBA output at each power tap and offers a choice of field selectable taps, 1/4W to 8W for either 25.0VRMS or 70.0VRMS audio systems. The speaker has a molded, flame retardant cone.

NOTE: In order to maintain proper UL 1480 listing, the CBB-8 Speaker Backbox (available separately) must be installed. The CBB-8 Backbox is required for use in ceiling plenums that are part of return air handling systems.

The S8-24MCC Strobe provides four selectable light output intensities (15,30,75,95cd) in one unit. The S8-24MCCH Strobe provides two selectable light intensities (115,177cd) in one unit. The 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 a Sync Module (SM), Dual Sync Module (DSM) or Wheelock's Power Supplies. The strobe uses a xenon flashtube with solid state circuitry enclosed in a polycarbonate lens to provide maximum visibility and reliability for effective visible signaling. The S8-70/25, S8-24MCC and S8-24MCCH are Listed for ***indoor use, ceiling mount only*** with the backboxes specified in these instructions (see wiring and mounting information). **S8 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).**

⚠ **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:

Table 1: UL Listed Models and Ratings

Models	Speaker								Strobe			Mounting Options
	Voltage (VRMS)	dBA at 10 Feet (Rated Watts)							Regulated Voltage (VDC/VRMS)	Voltage Range (VDC/VRMS)	Candela	
		1/8	1/4	1/2	1	2	4	8				
S8-70/25	25/70	75	78	81	84	87	90	93	-----	-------	--------	See Fig. 1
S8-24MCC	25/70	75	78	81	84	87	90	93	24	16.0-33.0	15/30/75/95	See Fig. 1
S8-24MCCH	25/70	75	78	81	84	87	90	93	24	16.0-33.0	115/177cd	See Fig 1

NOTES:

1. The strobe will produce 1 flash per second over the "Regulated Voltage" range.
2. Strobes with clear and amber lens meet the required light distribution patterns defined in UL 1971.
3. The Series S8-70/25, S8-24MCC and S8-24MCCH are UL Listed for indoor use with a temperature range of +32°F to +120°F (0°C to +49°C) and maximum humidity of 85% RH.
4. A 10µF blocking capacitor for DC supervision of audio lines by the FACP is factory wired in series with the speaker input. The maximum supervision voltage is 33 volts DC. Frequency range of speakers is 400-4000Hz.
5. Ratings listed in Table 1 are for clear lens. Derate approximately 25% for amber lens, 55% for green, 70% for blue, 80% for red.

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

Table 2: UL Current Ratings with Strobe Only

Maximum RMS Current (AMPS)							
UL Voltage		15cd	30cd	75cd	95cd	115cd	177cd
DC	16-33VDC	0.065	0.105	0.189	0.249	0.300	0.420
FWR	16-33VRMS	0.110	0.170	0.280	0.375	0.455	0.645

⚠ **WARNING: 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, SM, DSM SYNC MODULES OR WHEELOCKS 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. 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.**

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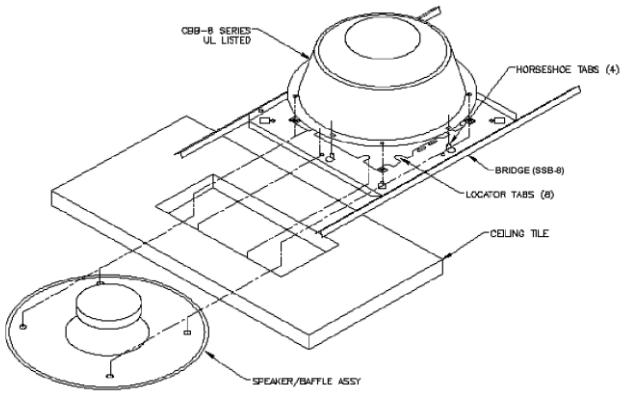
When calculating the total currents: Use Table 2 to determine the highest value of "RMS Current" for an individual strobe (across the expected operating voltage range of the strobe), then multiply these values by the total number of strobes; be sure to add the currents for any other appliances, including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

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

⚠ **CAUTION:** The Strobe is not designed to be used on coded systems in which the applied voltage is cycled on and off.

MOUNTING INFORMATION

Figure 1:



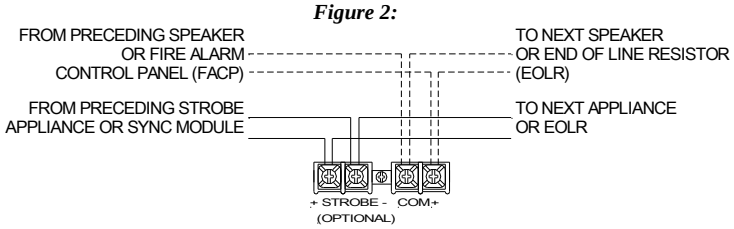
⚠ **CAUTION:** The maximum number of field wires (conductors) that can enter the CBB-8 or other listed equivalent backbox shall comply with the National Electrical Code (NEC). If this limit is exceeded, there may be insufficient space in the backbox to accommodate the field wires. Stresses from the wires could damage the product.

Cooper Wheelock also recommends 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.

The S8-70/25, S8-24MCC and S8-24MCCH models are designed to mount flush in a hung tile ceiling. The CBB-8 or other listed equivalent backbox is required per UL Standard 1480 Speakers for Fire Protective Signaling Systems. When the speaker and backbox cannot be installed directly through a ceiling tile, a support bridge must be used. Refer to P84239 and P81490 for additional mounting information.

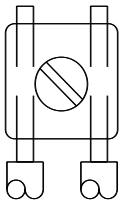
WIRING INFORMATION:

Figure 2:



* Refer to Sync Module instruction sheets SM (P83123), DSM (P83177) or Wheelock power supplies for additional information.

Figure 3:



1. The Low Profile Speaker Strobe model has 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 3. 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, 2W, 4W or 8W; 25V or 70V as required (see Figures 2, 3, 4, 5 and Table 4).

GROUNDING: Connect ground wire to backbox. Install signaling appliance to backbox using mounting screws provided.

⚠ **WARNING: THE SPEAKER STROBE APPLIANCE MUST BE FIELD SET TO THE DESIRED dBA SOUND OUTPUT LEVEL BEFORE IT IS 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.**

Figure 4: Jumper plug is used to select tap settings which = dBA loudness.

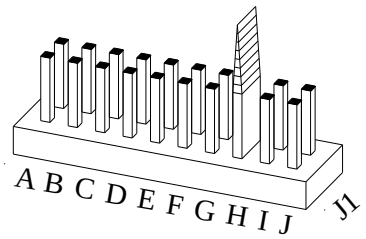
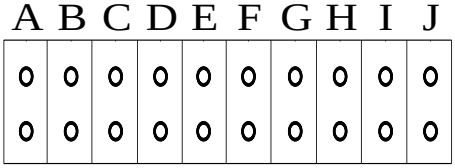


Figure 5: Tap Settings (Factory setting is 70V @ 0.5W (H))

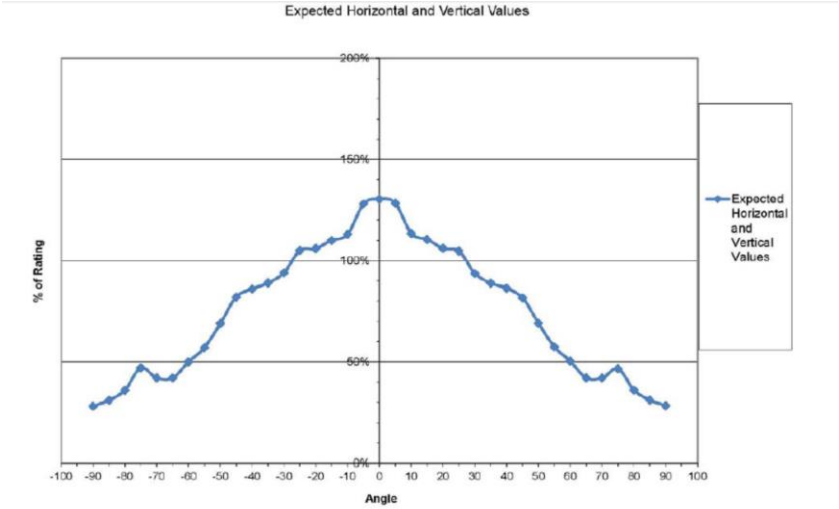


Each letter corresponds to a plug position of the header located on the printed circuit board. Select voltage and wattage as shown in Table 3.

NOTE: Use needle nose pliers to pull and properly insert the jumper plug to the desired tap setting.

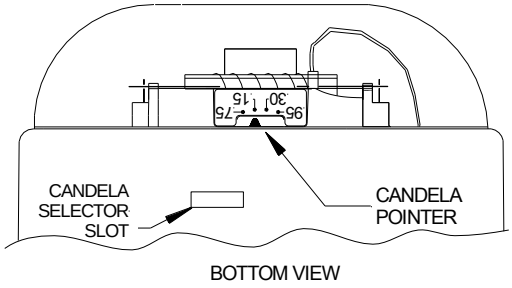
Table 3: Speaker Voltage and Wattage Connection Chart		
Position	25V	70V
A	8	------
B	4	------
C	2	------
D	1	8
E	1/2	4
F	1/4	2
G	1/8	1
H	------	1/2
I	------	1/4
J	------	1/8

Figure 6: Light Output Chart

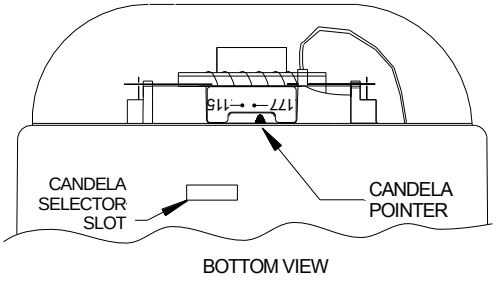


⚠**WARNING: CHECK ELECTRICAL RATINGS SPECIFIED IN TABLES 1 AND 2 (AS APPROPRIATE) TO ENSURE PROPER ELECTRICAL INPUT. BE SURE THAT SPEAKER WIRING IS CONNECTED TO SPEAKER TERMINALS ONLY AND STROBE WIRING IS CONNECTED TO STROBE TERMINALS ONLY. CHECK TO INSURE THAT WIRING AT FACP IS CORRECT. IMPROPER ELECTRICAL INPUT CAN DAMAGE THE PRODUCT OR CAUSE IT TO MALFUNCTION, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

Figure 7:



NOTE: The S8-24MCC comes pre-set at 15cd.



NOTE: The S8-24MCCH comes pre-set at 177cd

⚠**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 PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

NOTE: All cable splices and connections to Speaker/Transformer pigtails must be made inside of Listed enclosure.

WIRING 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. Set each speaker to the required wattage and voltage according to Table 3.
2. To insure proper speaker phasing, maintain a consistent color code to all speakers. To simplify phasing, use interconnecting cable with color coded wires.
   A. Connect the same color wire (in the interconnecting cable) to the amplifier output terminal marked COM (Common), and to the "COM" terminal of all speakers.
   B. Connect one other color wire (in the interconnecting cable) to the amplifier output terminal marked 25V or 70V and to all of the "+" terminals at each speaker input. The setting of "J1" must match the amplifier output of 25V or 70V.
   C. If shielded cable is used, then connect the shield (in the interconnecting cable) to the amplifier output terminal marked GND (Ground). The shield ***is not*** connected to the speakers. The shield is made continuous using wire nuts and taped off at the last speaker on the cable run.
3. The total system wattage requirement should not exceed 85% of the system amplifier's rated output. The total system wattage requirement is the summation of the wattage tap selections of all system speakers.
4. 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.
5. Set the strobe to the required candela. To move selector switch, insert screwdriver into slot shown on the side of the strobe. The setting is indicated by a pointer and can be seen on the side of the lens. See Figure 7.
6. Conduit entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product.
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. 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. 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 UL864 listed fire alarm control unit. Refer to manufacturer's installation manual for details.

⚠ **CAUTION:** Always operate audio amplifiers and speakers within their specified ratings. Excessive input may distort sound quality and may damage audio equipment. Do not exceed +100% of speaker input voltage per UL 1480. 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.

⚠ **WARNING: 1) THESE DEVICES ARE NOT INTENDED FOR USE IN HAZARDOUS LOCATIONS AS DEFINED BY THE NATIONAL ELECTRICAL CODE (NEC) AND BY THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). 2) THESE DEVICES ARE DESIGNED FOR INDOOR USE ONLY. DO NOT EXPOSE TO RAIN OR MOISTURE.**

⚠ **WARNING: THE SPEAKER STROBE APPLIANCE IS A "FIRE ALARM DEVICE - DO NOT PAINT."**

⚠ **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**

The S8-24MCCH's 177cd setting is Listed for use in sleeping or non-sleeping areas when installed in accordance with appropriate NFPA Standards and the Authority Having Jurisdiction.

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 conform to ADAAG Equivalent Facilitation Guidelines in using fewer, higher intensity strobes within the same protected area.

⚠ **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.**

⚠ **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 B digital device, 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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