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*Thank you for using our products.*

**INSTALLATION INSTRUCTIONS  
 SERIES Z 2-WIRE FIELD SELECTABLE HORN,  
 STROBE, AND HORN/STROBE APPLIANCES  
 (WALL AND CEILING MOUNT )**

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

**GENERAL:**

The Cooper Wheelock Series Z horn, strobe, and horn/strobe appliances are designed for easy installation. The ZNS horn/strobes and ZRS strobes are for 24V operation and the ZNH horn is for 12V or 24V operation. The appliance comes in two main parts. The universal mounting back plate allows the appliance to be mounted to a single-gang, double-gang, four square backbox, 4" octagon backbox, or a 3 1/2" octagon backbox. Two wire appliance wiring is then connected to the mounting back plate. This allows a continuity check of the entire NAC circuit before any appliances are attached. It also allows the appliances to be installed after all finish work has been completed. The installer can snap or install the appliances when all other work is complete.

**⚠ 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.**

**SPECIFICATIONS:**

**Table 1: Models and Settings**

Model	Regulated Voltage (VDC/VRMS)	Voltage Range Limit per UL 1971 (VDC/VRMS)	Strobe (cd)	Horn	Current Draw See Table	Mounting
ZRS-MCW	24	16-33	15/30/75/110	-	3	Wall
ZRS-MCWH	24	16-33	135/185	-	3	Wall
ZRS-MCC	24	16-33	15/30/75/95	-	3	Ceiling
ZRS-MCCH	24	16-33	115/177	-	3	Ceiling
ZNS-MCW	24	16-33	15/30/75/110	X	4	Wall
ZNS-MCWH	24	16-33	135/185	X	4	Wall
ZNS-MCC	24	16-33	15/30/75/95	X	4	Ceiling
ZNS-MCCH	24	16-33	115/177	X	4	Ceiling
ZNH	12 24	8-17.5 16-33	-	X	5	Wall or Ceiling

**Strobe and Horn Strobe Appliances**

Cooper Wheelock's Series Horn Appliances provide a selectable Continuous or Code 3 Horn tone when connected directly to the Fire Alarm Control Panel (FACP). They can also provide a synchronized Code 3 Horn tone when used in conjunction with an FACP that incorporates the Wheelock sync protocol, a Wheelock Sync Module, or the Wheelock Power Supply. The Horn Appliances can be field set for High (HI) or Low (LO) dBA sound output. The Horn Appliances are UL Listed under Standard 464 for Audible Signal Appliances. They are listed for indoor use only. These models are 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 FACP. The ZNS Horn/Strobe is for 24V operation only. The ZNH Horn is for 12V or 24V operation.

**NOTE: The ZRS, ZNS, and ZNH are electrically identical to the corresponding RSS, NS, and NH models. Therefore, they carry the existing UL compatibility listings.**

**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.

**Table 2: ZNH and ZNS Horn Reverberant dBA per UL464**

		ZNH at 12V			ZNS and ZNH at 24V		
		8.0V	12V	17.5V	16.0V	24V	33.0V
Continuous Horn	High	78	83	86	83	87	90
	Low	72	76	80	77	81	83
Code 3 Horn	High	75	79	82	79	82	86
	Low	67	72	74	72	76	79

**CURRENT DRAW:**

**Table 3: ZRS Strobe Current Draw (Amps) at 16-33 Volts**

	Strobe Setting (cd)											
	MCW				MCWH		MCC				MCCH	
	15	30	75	110	135	185	15	30	75	95	115	177
DC	0.060	0.092	0.165	0.220	0.300	0.420	0.065	0.105	0.189	0.249	0.300	0.420
FWR	0.102	0.155	0.253	0.347	0.455	0.645	0.110	0.170	0.280	0.375	0.455	0.645

**Table 4: ZNS Horn/Strobe Current Draw (Amps) at 16-33 Volts**

	Horn Setting	Strobe Setting (cd)											
		MCW				MCWH		MCC				MCCH	
		15	30	75	110	135	185	15	30	75	95	115	177
DC	High*	0.074	0.107	0.184	0.244	0.350	0.477	0.082	0.124	0.209	0.275	0.350	0.477
	Low*	0.066	0.101	0.177	0.232	0.306	0.429	0.071	0.114	0.201	0.261	0.306	0.429
FWR	High*	0.133	0.189	0.285	0.383	0.491	0.681	0.141	0.204	0.312	0.411	0.491	0.681
	Low*	0.116	0.169	0.274	0.369	0.469	0.659	0.124	0.184	0.301	0.397	0.469	0.659

\* Current Draw is the same for the Continuous Horn and Code 3 Horn Settings.

**Table 5: ZNH Horn Current Draw (Amps)**

	Horn Setting	8-17.5 Volts	16-33 Volts
		DC	High*
Low*	0.012		0.018
FWR	High*	0.054	0.075
	Low*	0.030	0.045

\* Current Draw is the same for the Continuous Horn and Code 3 Horn Settings.

**NOTE: Candela and Horn Setting will determine the current draw of the product.**

When calculating the total currents use Tables 3-5 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.

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

**NOTE:** These notification appliances are UL Listed as “Regulated”. They are intended to be used with FACP’s 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.

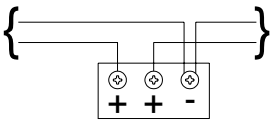
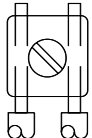
**NOTE: THESE APPLIANCES WERE TESTED TO THE REGULATED VOLTAGE LIMITS OF 16.0-33.0 VOLTS FOR 24V MODELS AND 8-17.5 VOLTS FOR 12V MODELS USING FILTERED DC OR UNFILTERED FULL-WAVE-RECTIFIED VOLTAGE. DO NOT APPLY VOLTAGE OUTSIDE OF THIS RANGE.**

**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, SM, DSM SYNC MODULES, OR COOPER 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.**

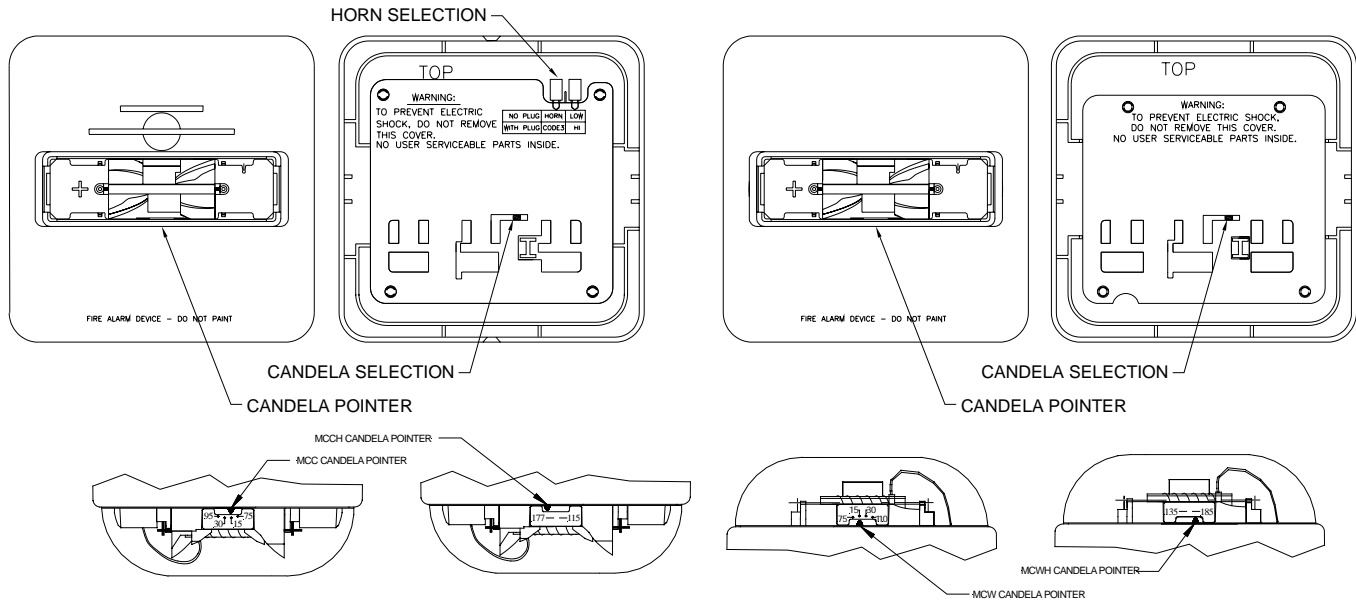
**WIRING AND MOUNTING BASE:**

<p>FROM PRECEDING APPLIANCE, FACP OR SYNC MODULE</p>  <p>Figure 1:</p>	 <p>Figure 2:</p> <ul style="list-style-type: none"> <li>All strobe appliances have in-out wiring terminals that accepts two #12 to #18 American Wire Gauge (AWG) wires at each screw terminal. Strip leads 3/8 inches and connect to screw terminals.</li> <li>Break all in-out wire runs on supervised circuits to ensure integrity of circuit supervision as shown in Figure 2. The polarity shown in the wiring diagrams is for the operation of the appliances. The polarity is reversed by the FACP during supervision.</li> </ul>
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**WIRING AND MOUNTING SETTINGS:**

**Note:** The ZNS and ZNH are factory set for the most common application of High dB and Code 3.

*Jumper Plug and Candela Selectors*



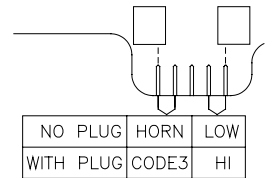
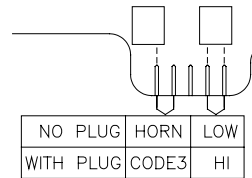
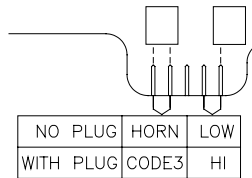
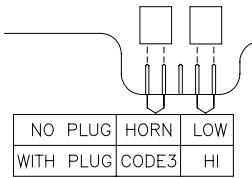
**NOTE:** Candela factory settings are shown in above illustrations.

*Jumper plug settings for High dB and Code 3.*

*Jumper plug settings for Low dB and Code 3.*

*Jumper plug settings for High dB and Continuous Horn.*

*Jumper plug settings for Low dB and Continuous Horn.*



**NOTE:** Use needle nose pliers to pull and properly set the jumper plugs. 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.

**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 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.

**CAUTION:** DO NOT OVER TIGHTEN MOUNTING SCREWS. EXCESSIVE TORQUE CAN DISTORT THE BASE AND MAY AFFECT OPERATION.

**Mounting Options:**

Figure 3: Installation

Figure 4: Removal (See step 8 below)

1. Install mounting plate as shown in figure 1 to a single-gang, double-gang, 4" square, 4" octagon, or a 3 1/2" octagon backbox with the provided pan head screws. To remove dust cover, place thumb and index finger on top edges of cover and pull off cover.
2. Connect field wiring per figures 2 and 3.
3. Address wires back into backbox.
4. Place dust cover over mounting plate to protect the terminals while performing wiring continuity check.
5. Remove dust cover before snapping or installing the appliance onto the mounting plate per fig 3.
6. Important: Device only has one mounting orientation. Match the top of the base to the top of the device.
7. If it is desired to further secure the device to the base, then two optional screws are provided. To install these screws punch out the screw holes located at the top and bottom of the device.
8. To remove the appliance, push a small flat-bladed screwdriver into the side opening. The screwdriver must clear the snap release opening by 1/4" to disengage the snap. Do not pry off housing with the screw driver. Apply pressure with screw driver, inserted in either side opening, as shown in Fig 4 to release the housing.

**⚠ WARNING: THESE APPLIANCES are 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.**

**⚠ 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 WHEELLOCK 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 WHEELLOCK 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).

**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.

**ANY MATERIAL EXTRAPOLATED FROM THIS DOCUMENT OR FROM COOPER WHEELLOCK MANUALS OR OTHER DOCUMENTS DESCRIBING THE PRODUCT FOR USE IN PROMOTIONAL OR ADVERTISING CLAIMS, OR FOR ANY OTHER USE, INCLUDING DESCRIPTION OF THE PRODUCT'S APPLICATION, OPERATION, INSTALLATION AND TESTING IS USED AT THE SOLE RISK OF THE USER AND COOPER WHEELLOCK WILL NOT HAVE ANY LIABILITY FOR SUCH USE.**

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Cooper Wheelock, Inc. products must be used within their published specifications and must be PROPERLY specified, applied, installed, operated, maintained, and operationally tested in accordance with these instructions at the time of installation and at least twice a year or more often in accordance with local, state and federal codes, regulations and laws. Specification, application, installation, operation, maintenance, and testing must be performed by qualified personnel for proper operation in accordance with all of the latest National Fire Protection Association (NFPA), Underwriters' Laboratories (UL), Underwriters' Laboratories of Canada (ULC), National Electrical Code (NEC), Occupational Safety and Health Administration (OSHA), local, state, county, province, district, federal and other applicable building and fire standards, guidelines, regulations, laws and codes including, but not limited to, all appendices and amendments and the requirements of the local authority having jurisdiction (AHJ). Cooper Wheelock, Inc. products when properly specified, applied, installed, operated, maintained, and operationally tested as provided above are warranted against mechanical and electrical defects for a period of three years from date of manufacture (as determined by date code). Correction of defects by Cooper Wheelock, Inc providing repairs or a replacement shall be at Cooper Wheelock, Inc.'s sole discretion and shall constitute fulfillment of all warranty obligations. The foregoing limited warranty shall immediately terminate in the event any part not furnished by Cooper Wheelock, Inc. is installed in the product. The foregoing limited warranty specifically excludes any software required for the operation of or included in a product. COOPER WHEELLOCK, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY OTHER KIND, EXPRESS, IMPLIED OR STATUTORY WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER.

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