

## INSTALLATION INSTRUCTIONS EXCEDER 2-WIRE FIELD SELECTABLE HORN, STROBE, AND HORN/STROBE APPLIANCES (WALL MOUNT)

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

### GENERAL

The Cooper Wheelock Exceder Series HN horn, ST strobe, and HS horn/strobe appliances are designed for easy installation. All models are for 12V or 24V operation. The appliance comes in two main parts. The universal mounting back plate allows the wall appliance to be mounted to a single-gang, double-gang, or four-inch square backbox. 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.**

**Table 1: Models and Settings**

Model	Regulated Voltage	Voltage Range per UL/ULC	Strobe	Horn	Current Draw See Table
ST	12 (VDC)	8.0-17.5	15/15-75	~	3
	24 (VDC/ $V_{RMS}$ )	16.0-33.0	15/15-75/30/75/95/110/135/185		
HS	12 (VDC)	8.0-17.5	15/15-75	X	4
	24 (VDC/ $V_{RMS}$ )	16.0-33.0	15/15-75/30/75/95/110/135/185		
HN	12 (VDC/ $V_{RMS}$ )	8.0-17.5	~	X	5
	24 (VDC/ $V_{RMS}$ )	16.0-33.0			

### STROBE AND HORN STROBE APPLIANCES

The Cooper Wheelock Exceder Multi-Candela Strobes 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 Wheelock patented sync protocol, Wheelock DSM sync modules, Wheelock power supplies, or SAFEPATH family of products. The Strobe Appliances are UL Listed under Standard 1971 (Signaling Devices for the Hearing Impaired) for indoor Fire Protection Service. They are listed for **indoor use only**. Cooper Notification's Exceder 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 patented sync protocol, Wheelock DSM sync modules, Wheelock power supplies, or SAFEPATH family of products. The Horn Appliances can be field set for High (HI), Medium (MED), 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**. All models are designed for use with either filtered DC (VDC) or unfiltered Full-Wave-Rectified ( $V_{RMS}$ ) input voltage. All inputs are polarized for compatibility with standard reverse polarity supervision of circuit wiring by a FACP. The ST Strobe, HS Horn/Strobe, and the HN Horn are for 12V or 24V operation. Strobe devices for 12V are only approved by UL to be set at 15cd, and 15-75cd, and only to be powered by DC not FWR.

**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 2A: HN and HS dBA Sound Output**

Description	Reverberant dBA Per UL 464						
	Volume	HN at 12V			HN and HS at 24V		
		8.0V	12.0V	17.5V	16.0V	24.0V	33.0V
Continuous Horn	High	83	88	91	91	93	96
	Medium	79	82	86	86	89	92
	Low	72	76	79	78	82	85
Code 3 Horn	High	80	84	86	86	89	91
	Medium	74	78	82	81	85	84
	Low	68	72	76	74	78	80

**Table 2B: HN and HS dBA Sound Output**

Description	Anechoic Per CAN/ULC-S525-07						
	Volume	HN at 12V			HN and HS at 24V		
		8.0V	12.0V	17.5V	16.0V	24.0V	33.0V
Continuous Horn	High	89	93	96	95	99	101
	Medium	85	89	92	91	95	97
	Low	79	84	87	86	90	92
Code 3 Horn	High	87	93	96	95	99	101
	Medium	85	89	92	91	95	97
	Low	79	84	87	86	90	92

**Table 2C: ULC Directional Characteristics**

Axis	dBA	Angle
Horizontal	-3dBA	80 degrees left and right
	-6dBA	85 degrees left and right
Vertical	-3dBA	80 degrees up and down
	-6dBA	90 degrees up and down

**Table 3A: ST Strobe Current Draw (Amps)**

Strobe Candela Settings (cd)										
16.0-33.0 Volts									8.0-17.5 Volts	
Current	15	15/75	30	75	95	110	135	185	15	15/75
DC	0.057	0.070	0.085	0.135	0.163	0.182	0.205	0.253	0.110	0.140
FWR	0.083	0.105	0.105	0.185	0.223	0.256	0.328	0.372		

**Table 4A: HS Horn/Strobe Current Draw (Amps)**

Strobe Candela Settings (cd)									
16.0-33.0 Volts									
Current	Horn Settings	15	15/75	30	75	95	110	135	185
DC	High*	0.082	0.095	0.102	0.148	0.176	0.197	0.242	0.282
	Med*	0.073	0.083	0.087	0.139	0.163	0.186	0.230	0.272
	Low*	0.065	0.075	0.084	0.136	0.157	0.184	0.226	0.267
FWR	High*	0.131	0.138	0.138	0.216	0.258	0.289	0.357	0.384
	Med*	0.112	0.126	0.126	0.201	0.247	0.272	0.340	0.378
	Low*	0.106	0.120	0.120	0.196	0.235	0.265	0.331	0.375

**Table 4B: HS Horn/Strobe Current Draw (Amps)**

Strobe Candela Settings (cd)			
8.0-17.5 Volts			
Current	Horn Settings	15	15/75
DC	High*	0.125	0.159
	Med*	0.122	0.153
	Low*	0.120	0.148
FWR	High*	~	~
	Med*	~	~
	Low*	~	~

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

Table 5: HN Horn Current Draw (Amps)			
Current	Horn Settings	8.0-17.5 Volts	16.0-33.0 Volts
DC	High*	0.047	0.064
	Medium*	0.026	0.044
	Low*	0.017	0.022
FWR	High*	0.073	0.086
	Medium*	0.048	0.074
	Low*	0.036	0.054

\* 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 Fire Alarm Control Panels (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.

**NOTE:** These appliances were tested to the regulated voltage limits of 16.0-33.0 Volts for 24 volt models and 8.0-17.5 Volts for 12 volt models using filtered dc for the 12 volt range and either filtered dc or unfiltered dc for the 24 volt range 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 Wheelock's 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.

#### LIGHT OUTPUT

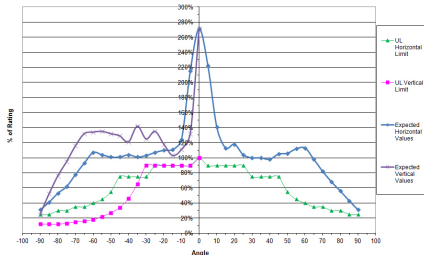


Figure 1: Expected Light Output

**NOTE:** Use 108% at zero degrees for 15/75cd setting.

#### WIRING AND MOUNTING BASE

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

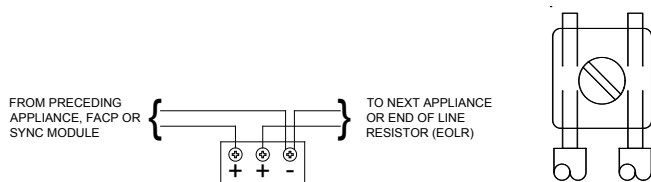


Figure 2 and Figure 3

- 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 the wiring diagrams is for the operation of the appliances. The polarity is reversed by the FACP during supervision 1.1.

#### WIRING AND MOUNTING SETTINGS

**NOTE:** The HS and HN are factory set for the most common application of Medium dB and Code 3. The HS and ST are set to 15 candela.

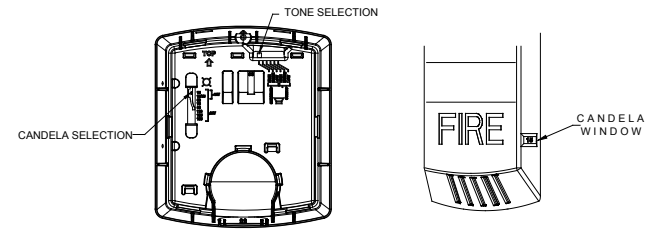


Figure 4: Candela Selector

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

**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 Notification 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.

**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

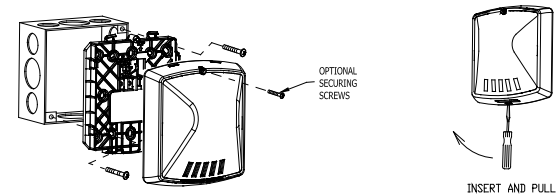


Figure 5: Installation

- Install mounting plate as shown in Figure 5 to a single-gang, double-gang, 4" square backbox with the provided pan head screws.
- Connect field wiring per Figures 2 and 3.
- Dress wires back into backbox.
- While performing wiring continuity check, leave terminal cover in place.
- Remove terminal cover before snapping or installing the appliance onto the mounting plate per Figure 5.
- Important: Device only has one mounting orientation. Match the top of the base to the top of the device. Engage both top hooks, then snap the bottom in place.
- If it is desired to further secure the device to the base, then one optional screw is provided. To install this screw punch out the screw hole located at the top of this device.
- To remove the appliance, insert a small flat-bladed screwdriver into the bottom opening 1/2" as shown in Figure 5. Then pry off housing with the screw driver.

**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 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 Notification 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 device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Compatible Wheelock Device:** DSM-12/24

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