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**INSTALLATION INSTRUCTIONS
 MULTITONE STROBE WEATHERPROOF APPLIANCES**

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

GENERAL:

The Multitone Strobe Weatherproof Appliances are UL Listed under Standard 1638 (Visual Signaling Appliances) and Standard 1971 (Signaling Devices for the Hearing Impaired) for indoor/outdoor use, Fire Protective Service and UL Standard 464 for Audible Signal Appliances. Models with amber, blue, green or red lens are not UL approved. The MTWP-2475W is ULC Listed under Standard CAN/ULC-S526-02 for Visual Signaling and under Standard CAN/ULC-S525-99 for Audible Signal Devices for Fire Alarm Systems Appliance. The Multi-High-Candela strobe provides two selectable light output intensities in one unit. An outdoor backbox is required for outdoor installation. The Multitone Strobe Appliances use a xenon flashtube with solid state circuitry enclosed in a polycarbonate lens to provide maximum visibility and reliability for effective visible signaling.

Multitone Strobe Appliances can be field set to produce any one of eight commonly used alarm tones. Sound output can be field set to provide either HIGH (HI) dBA or STANDARD (STD) dBA sound output level.

All Multitone Strobe models are designed for use with either filtered DC or unfiltered full-wave-rectified (FWR) input voltage. The Multitone Strobe Appliances have separate input terminals for alarm tone activation and strobe activation. Shunt wires are provided to operate both the alarm tone and the strobe simultaneously on a single input circuit (See Wiring Diagram). All inputs are polarized for compatibility with standard reverse polarity supervision of circuit wiring by a fire alarm control panel (FACP).

NOTE: All Canadian installations should be in accordance with the Canadian Standard for the Installation of Fire Alarm Systems, CAN/ULC-S524-01 and the Canadian Electrical Code, Part 1. Final acceptance is subject to authorities having jurisdiction (AHJ).

⚠ 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, 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.

⚠ CAUTION: NOT RECOMMENDED FOR USE AT REFRIGERATOR / FREEZER DOOR ENTRANCES OR OTHER AREA WITH PERSISTENT CONDENSATION.

SPECIFICATIONS:

Table 1: UL Listed Models and Ratings

Model	Regulated Voltage (VDC/VRMS)	Rated Voltage (VDC/VRMS)	Rated Strobe Candela (cd)		Reverberant dBA at 10 Feet
			At -40° C (UL1638)	(UL1971)	
MTWP-2475W	24	16.0-33.0	115	30/180*	76-94
MTWP-2475C	24	16.0-33.0	115	30/180*	76-94
MTWP-24MCCH	24	16.0-33.0	50/75	115/177	76-94
MTWP-24MCWH	24	16.0-33.0	65/90	135/185	76-94

*180 is on Axis only.

Table 1A: ULC Listed Models and Ratings

Model	Regulated Voltage (VDC/VRMS)	Rated Voltage (VDC/VRMS)	Rated Strobe Candela (cd)	Anechoic dBA at 10 Feet
MTWP-2475W	24	20-31.0	30	85-100

NOTES:

1. Strobes will produce 1 flash per second over the "Regulated Voltage" range.
2. All models are listed for indoor and outdoor use. UL 1971 is tested from a temperature range of 32°F to 120°F (0°C to 49°C). UL 1638 is tested from a temperature range of -40°F to +150°F (-40°C to +66°C) with a maximum humidity of 98% ±2% RH. The effect of shipping and storage temperatures shall not adversely affect the performance of the appliances when it is stored in the original cartons and is not subjected to misuse or abuse
3. Candela ratings in Table 1 are rated for clear lens. Derate approximately 24% for amber, 55% for green, 70% for blue and 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 IMPEDENCE BETWEEN STROBES SHALL NOT EXCEED 35 OHMS.

⚠ CAUTION: These notification appliances are UL Listed as "Regulated". They are intended to be used with FACPs whose notification circuits are ULListed 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.

Use Tables 2, 2A and 2B to determine the highest value of "Rated Current" for an individual Multitone Strobe (across the expected operating voltage range of the Multitone Strobe). Add strobe current from Table 2B a audible appliance current from Table 2 and Table 2A to obtain total current for each unit, if the strobe and

audible are wired to operate in unison on a single circuit. 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.

⚠ WARNING: MAKE SURE THAT THE TOTAL RATED CURRENT REQUIRED BY ALL APPLIANCES THAT ARE CONNECTED TO THE SYSTEM'S PRIMARY AND SECONDARY POWER SOURCES, APPLIANCE CIRCUITS, SM, DSM SYNC MODULES AND 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. 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.

Tone	Tone Description	Maximum RMS Current (AMPS)			
		16-33VDC		16-33VRMS	
		HI dBA	STD dBA	HI dBA	STD dBA
Horn	Broadband Horn (Continuous)	0.108	0.044	0.087	0.045
Bell	1560 Hz Modulated (0.07 Sec. ON/Repeat)	0.053	0.024	0.051	0.028
March Time	Horn (0.25 Sec. ON/0.25 Sec. OFF/Repeat)	0.104	0.087	0.087	0.045
Code 3 Horn	Horn (ANSI S3.41 Temporal Pattern)	0.091	0.035	0.087	0.045
Code 3 Tone	500 Hz (ANSI S3.41 Temporal Pattern)	0.075	0.025	0.056	0.029
Slow Whoop	500-1200Hz Sweep (4.0 Sec. ON/0.5 Sec. OFF/Repeat)	0.098	0.037	0.092	0.042
Siren	600-1200Hz Sweep (1.0 Sec. ON/Repeat)	0.104	0.036	0.092	0.040
HI/LO	1000/800 Hz (0.25 Sec. ON/Alternate)	0.057	0.025	0.058	0.032

Tone	HI/LO Volume	DC		
		20VDC	24VDC	31VDC
Horn	HI	0.036	0.040	0.050
	STD	0.021	0.023	0.029
Bell	HI	0.013	0.014	0.018
	STD	0.011	0.012	0.015
March Time	HI	0.036	0.040	0.050
	STD	0.021	0.023	0.029
Code 3 Horn	HI	0.036	0.040	0.050
	STD	0.021	0.023	0.029
Code 3 Tone	HI	0.025	0.028	0.035
	STD	0.015	0.017	0.021
Slow Whoop	HI	0.043	0.048	0.060
	STD	0.023	0.026	0.033
Siren	HI	0.032	0.036	0.045
	STD	0.021	0.023	0.029
HI/LO	HI	0.018	0.020	0.025
	STD	0.013	0.014	0.018

		Maximum RMS Current				
UL Voltage		2475	24115	24135	24177	24185
DC	16-33VDC	0.138	0.300	0.300	0.420	0.420
FWR	16-33VRMS	0.222	0.455	0.455	0.645	0.645

AUDIBILITY RATINGS:

Tone	HI/LO Volume	UL 24VDC dBA Reverberant Ratings Per UL 464 at 10 Feet			ULC 24VDC dBA Anechoic Ratings Per CAN/ULC S525-99 at 10 Feet		
		16V	24V	33V	20V	24V	31V
Horn	HI	89	92	94	97	99	100
	STD	84	87	90	91	93	94
Bell	HI	83	86	88	90	92	93
	STD	76	80	83	85	87	88
March Time	HI	86	89	91	97	99	100
	STD	80	84	87	91	93	94
Code 3 Horn	HI	85	88	90	97	99	100
	STD	79	83	86	91	93	94
Code 3 Tone	HI	81	85	86	93	95	96
	STD	76	80	82	88	90	91
Slow Whoop	HI	87	90	92	97	99	100
	STD	81	85	87	92	94	95
Siren	HI	86	89	92	96	98	99
	STD	81	84	87	91	93	94
HI/LO	HI	83	86	89	91	93	94

STD	77	81	84	86	88	89
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ULC Directional Characteristics:

At a voltage range of 20.0-31.0VDC. -3 dBA: 48 degrees left, 41 degrees right -6 dBA: 50 degrees left, 58 degrees right.

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.

WARNING: THE MULTITONE STROBE APPLIANCES MUST BE FIELD SET TO THE DESIRED dBA SOUND OUTPUT LEVEL AND ALARM TONE BEFORE THEY ARE INSTALLED. THIS IS DONE BY PROPERLY INSERTING A JUMPER PLUG AND ADJUSTING A FOUR POSITION SWITCH IN ACCORDANCE WITH THESE INSTRUCTIONS. INCORRECT SETTINGS WILL RESULT IN IMPROPER PERFORMANCE AND MAY DAMAGE THE PRODUCT, WHICH COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

LIGHT DISTRIBUTION:

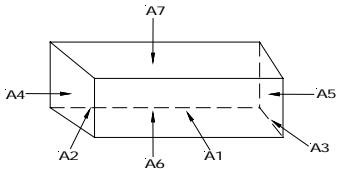
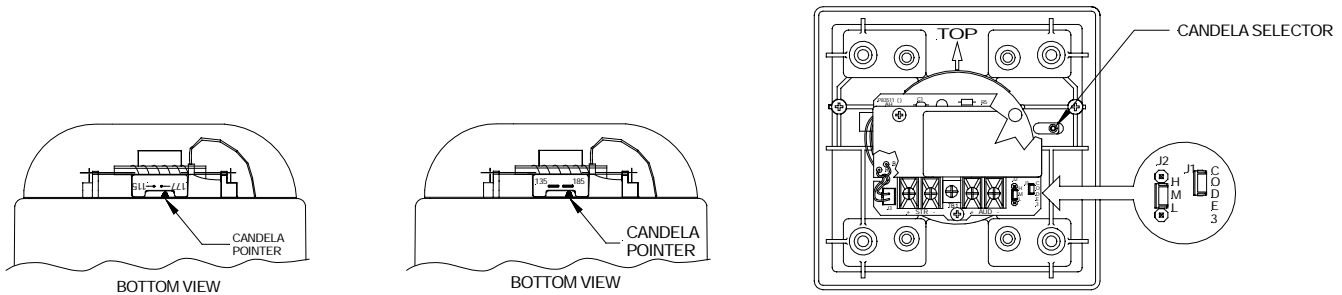


Table 4: Candela at Various Angles Per UL 1638

Model	Rated Candela		A1	A2	A3	A4	A5	A6/A7
	UL	ULC						
MTWP-2475W	75.0cd	180.0cd	180	16	16	15	15	8
MTWP-2475C	75.0cd	~	180	16	16	15	15	8

CANDELA SELECTION:

Figure 1: Showing Location of Candela Selector and Jumper Plugs



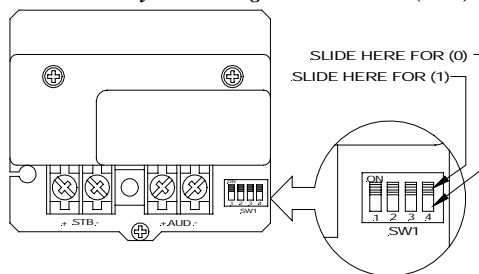
NOTE: The MT Multi High-Candela Ceiling comes preset at 177cd. The MT Multi-High-Candela Wall comes preset at 185cd. Factory setting is on Medium dB and Code 3.

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.

MULTITONE SETTINGS:

The Switch (SW1) of the Multitone Appliance, shown in Figure 2, is used to set the dBA sound output level and alarm tone. The factory settings are shown below. Read these instructions carefully before changing any of these factory settings.

Figure 2: PC Board Layout Showing Location Switch (SW1)



The factory settings for 24VDC models are: HIGH dBA SW1 POS 1 set on 1
HORN TONE SW1 POS 2, 3, 4 set on 1, 1, 1

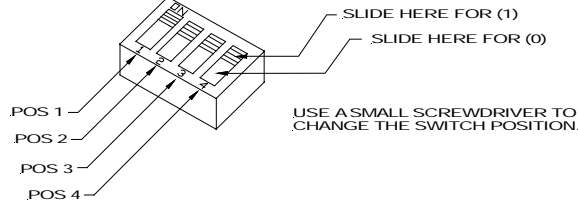
STEP 1:

Set desired dBA sound output level as follows (Refer to Figure 3). Multitone Strobe Appliances cannot be field set for input voltage. Multitone Strobe Appliances are field set for dBA sound output level by adjusting a four position Switch (SW1) as shown in Table 5 and Figure 2. Use SW1 Position 1 to select the dBA sound output level.

Table 5: dBA Sound Output Level Settings

Input Voltage and Decibel Level	SW1 Settings
24 VDC/HIGH dBA:	Set SW1 POS 1 on 1 (Factory Setting)
24 VDC/STD dBA:	Set SW1 POS 1 on 0

Figure 3: Switch Settings



⚠ WARNING: DOUBLE CHECK THE SWITCH (SW1) SETTINGS TO MAKE SURE THEY ARE CORRECT. IMPROPER SETTINGS CAN DAMAGE THE UNIT OR RESULT IN NO SOUND OUTPUT OR A dBA SOUND OUTPUT LEVEL THAT IS BELOW THE 75dB MINIMUM CODE REQUIREMENTS FOR PUBLIC MODE FIRE PROTECTION. THIS COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

STEP 2:

Set desired alarm tone as follows (refer to Figure 2 and Table 6). Multitone Strobe Appliances are field set for any one of eight alarm tones by setting a four-position switch (SW1) as shown in Figure 3 and Table 6. Use SW1 POS 2, 3, 4 to select the desired alarm tone.

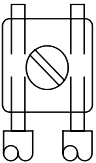
Table 6: Switch Settings			
Tone	POS 2	POS 3	POS 4
Horn	1	1	1
Bell	1	0	1
March Time Horn	0	0	1
Code 3 Horn	1	1	0
Code 3 Tone	0	1	1
Slow Whoop	0	1	0
Siren	1	0	0
HI/LO	0	0	0

NOTE: The Code 3 Horn and Code 3 Tone (set on HIGH dBA) incorporate the temporal pattern specified by ANSI/NFPA for standard emergency evacuation signaling. They should be used only for fire evacuation signaling and not for any other purpose. The Horn and Bell Tones can be used on coded systems with a minimum On-Time of 1/4 second if the audible and strobe are wired to operate independently. All other tones are recommended for use only on continuous (non-coded)

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

WIRING DIAGRAMS:

Figure 4:



1. Multitone Strobe models 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.
2. Break all in-out wire runs on supervised circuits to assure integrity of circuit supervision as shown in Figure 4. The polarity shown in the wiring diagrams is for operation of the appliances. The polarity is reversed by the FACP during supervision.

Figure 5:

Audible appliance and strobe operate independently.

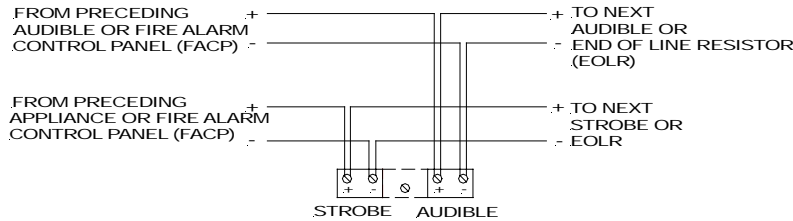
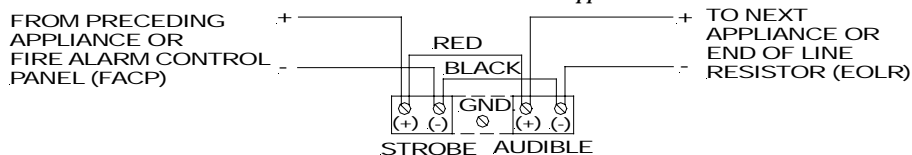


Figure 6:

Audible appliance and strobe operate in unison. Red and black shunt-wires are supplied.

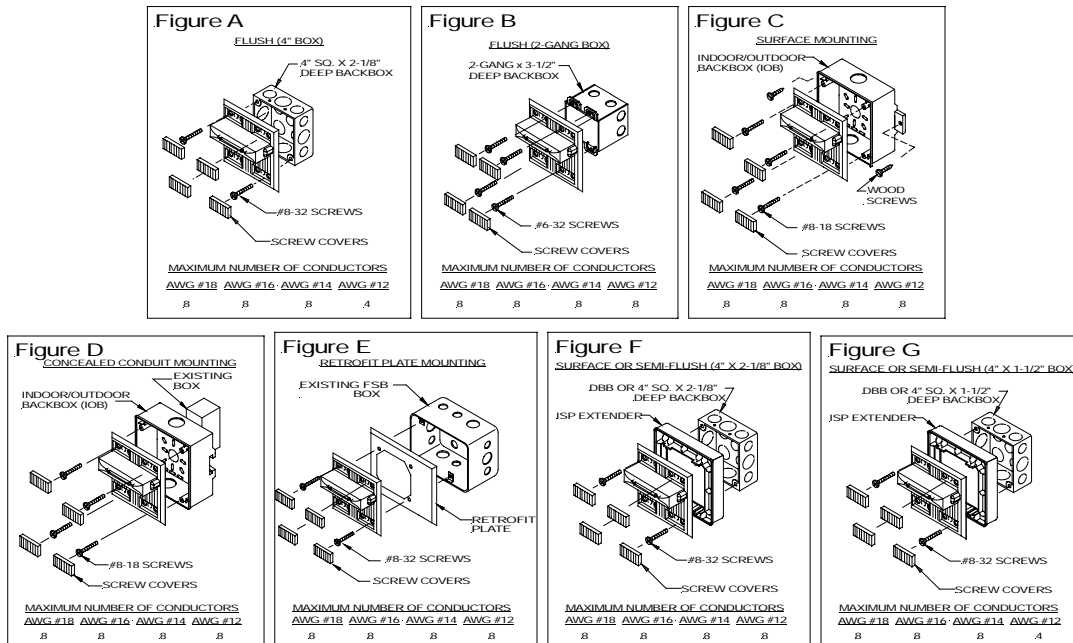


MOUNTING OPTIONS:

⚠ CAUTION: The following figures show 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 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.



MOUNTING PROCEDURES:

1. The MT can be flush mounted to a 100mm backbox (Fig. A) or double-gang backbox (Fig. B). It can also be surface mounted to a indoor/outdoor backbox (Figs. C & D). It can also be used with a retrofit plate (Fig. E) or with an ISP extender (Figs. F & G). Mounting hardware for each mounting option is supplied.
2. Conduit entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product. 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.
3. The knock-out opening on the outdoor backbox is sized for a 1/2" conduit and matching connector. Be sure that a proper watertight conduit fitting is used to connect the backbox for outdoor/severe environment applications.
4. When terminating field wires, do not use more lead length than required. Excess lead length could result in insufficient wiring space for the appliance.
5. 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.
6. Connect field wires to the MT terminal block (polarity must be observed). Bend the field wires up 90° at the connection to the terminal block.
7. Carefully push the field wires into the backbox by hand. Press the MT to the backbox, verifying that it is seated and aligned correctly.
8. Fasten the MT to the backbox using the screws supplied.
- 9.

⚠ WARNING: THIS UNIT MUST BE MOUNTED ON A FLAT SURFACE, SO THAT THE SURFACE COVERS THE ENTIRE BACK SURFACE OF THE BACKBOX. WHEN USED IN AN OUTDOOR APPLICATION OR A NEMA 3R APPLICATION, USE WEATHER PROOF RATED CONDUIT FITTING ON ALL KNOCKOUTS OF THE BACKBOX.

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

⚠ WARNING: THE 135cd, 185cd AND 177cd SETTINGS ARE LISTED FOR USE IN SLEEPING OR NON-SLEEPING AREAS WHEN INSTALLED IN ACCORDANCE WITH APPROPRIATE NFPA STANDARDS AND THE AHJ.

⚠ 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. FAILURE TO DO SO COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

⚠ 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, 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. 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.

These appliances can produce a distinctive three pulse Temporal Pattern Fire Alarm Evacuation Signal for total evacuation in accordance with NFPA 72.

⚠ 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).

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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.

Limited Warranty

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 WHEELOCK, 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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In no case will Cooper Wheelock, Inc.'s liability exceed the purchase price paid for a product.

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