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*Thank you for using our products.*

**INSTALLATION INSTRUCTIONS  
 SERIES DSM AND DSMX SYNCHRONIZATION (SYNC) MODULE**

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

**GENERAL:**

Wheelock's Dual Sync Modules (Series DSM) are uniquely designed to accept two independent strobe and audible inputs and convert them to a single output that connects to our Series AS and NS appliances. When interfaced with the DSM, the AS and NS produce the synchronized code 3 horn and synchronized strobe upon actuation. The audible portion of the AS and NS can be controlled independently from the strobe using only a 2-wire alarm circuit. They are the ideal choice for alarm systems where an audible silencing feature is required during an alarm condition. The DSM is designed for use with Class A or Class B wiring and they are capable of synchronizing multiple alarm circuits if required. They can be used with 12VDC or 24VDC systems. The DSM is UL Listed under Standard 1971 (Emergency Appliances for the Hearing Impaired) for indoor use, Fire Protective Service and ULC Listed under CAN/ULC-S525-99 for Audible Signaling Appliances for Fire Alarm Systems. All inputs are polarized for compatibility with standard reverse polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP).

<i>Table 1: Products Available for Use with DSM Sync Module</i>	
Series AH/AH-WP, NH, HS	Audible Horn
Series MT with Strobe	Multitone Horn with Sync Strobes
Series E70/90 with Strobe	E Speakers with Sync Strobe
Series ET70/90/1080/1081 with Strobe	ET Speakers with Sync Strobe
Series RSS/RSSP Strobes	Remote Sync Strobes
Series CH70 Strobes	Chimes with Sync Strobes
Series AS, NS, HS4	Audible Horn with Sync Strobes

**NOTE:** All CAUTIONS and WARNINGS are identified by the symbol . All warnings are printed in bold capital letters.

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

**NOTE:** All Canadian Installations should be in accordance with the Canadian Standard for the Installation of Fire Alarm Systems - CAN/ULC-S524-01 and Canadian Electrical Code, Part 1. Final acceptance is subject to Authorities Having Jurisdiction.

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

**SPECIFICATIONS:**

<i>Table 2: Ratings Per UL and ULC</i>				
Model	Regulated Voltage (VDC/VRMS)	Voltage Range Limit Per UL 1971 (VDC/VRMS)	Voltage Range Per CAN/ULC-S525-99 (VDC/VRMS)	Mounting Option
DSM-12/24	12/24	8.0-33.0	10.5-31.0	A
DSMX-12/24 *	12/24	8.0-33.0	10.5-31.0	----

\* DSMX is a UL recognized component, DSMX is a ULC model.

\* DSMX does not have a mounting plate.

**WARNING: FOR UL APPLICATIONS THESE APPLIANCES WERE TESTED TO THE OPERATING VOLTAGE LIMITS OF 8.0-33.0 VOLTS USING FILTERED (DC) OR UNFILTERED FULL-WAVE RECTIFIED (FWR). DO NOT APPLY 80% AND 110% OF THESE VOLTAGE VALUES FOR SYSTEM OPERATION.**

**WARNING: FOR ULC APPLICATIONS THESE APPLIANCES WERE TESTED TO THE OPERATING VOLTAGE OF 10.5-31.0 VOLTS USING FILTERED (DC) OR UNFILTERED FULL-WAVE-RECTIFIED (FWR). APPLY 80% AND 110% OF THESE VOLTAGE VALUES FOR SYSTEM OPERATIONS.**

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**⚠ 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.**

**Table 3: UL Current Ratings (AMPS)**

UL Voltage		Maximum RMS Current	
		In1/In2	Audible
DC	8-33VDC	0.045	0.010
FWR	8-33VRMS	0.062	0.012

\* See Figures 1A and 1B for the time duration of the peak and inrush current.

**Table 3A: ULC Current Ratings (AMPS)**

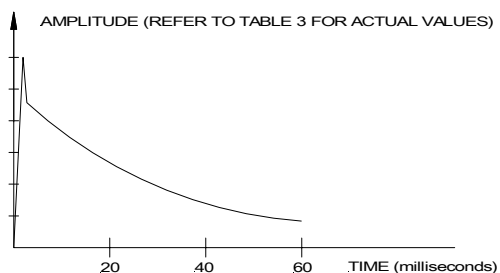
ULC Voltage	Rated Average Current		Rated Peak *		Rated Inrush *	
	In1/In2	Audible	In1/In2	Audible	In1/In2	Audible
10.5VDC	0.019	0.004	0.055	0.004	0.150	0.016
12.0VDC	0.020	0.004	0.064	0.004	0.170	0.019
24.0VDC	0.035	0.008	0.080	0.008	0.342	0.030
31.0VDC	0.045	0.010	0.090	0.010	0.470	0.040
10.5VRMS	0.028	0.005	0.107	0.008	0.210	0.016
12.0VRMS	0.030	0.006	0.103	0.009	0.240	0.019
24.0VRMS	0.048	0.010	0.145	0.015	0.480	0.033
31.0VRMS	0.062	0.012	0.175	0.022	0.685	0.056

**⚠ WARNING: MAKE SURE THAT THE TOTAL RMS CURRENT, TOTAL AVERAGE CURRENT AND TOTAL PEAK 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.**

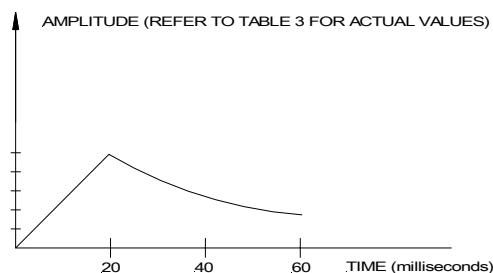
When calculating the total currents: Use Table 3 to determine the highest value of "RMS Current" for an individual strobe (across the expected operating voltage range of the strobe), use Table 3A to determine the highest value of "Rated Average Current" or "Rated Peak Current" of an individual strobe (across the expected 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.

If the peak current exceeds the power supplies' peak capacity, the output voltage provided by the power supplies may drop below the listed voltage range of the appliances connected to the supply and the voltage may not recover in some types of power supplies. For example, an auxiliary power supply that lacks filtering at its output stage (either via lack of capacitance and/or lack of battery backup across the output) may exhibit this characteristic.

**Figure 1A: Typical In-Rush Current Curve**



**Figure 1B: Typical Peak Current Curve**

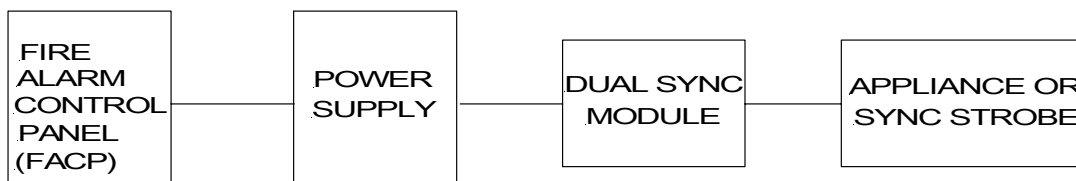


**WIRING INFORMATION:**

**NOTE:** Non-sync appliances can be installed before or after an SM or DSM. If the Non-Sync appliance requires audible silence, four wire connection is necessary with the strobe circuit connected before the SM or DSM NAC circuit, and the audible leads connected to a silenceable NAC circuit from the FACP.

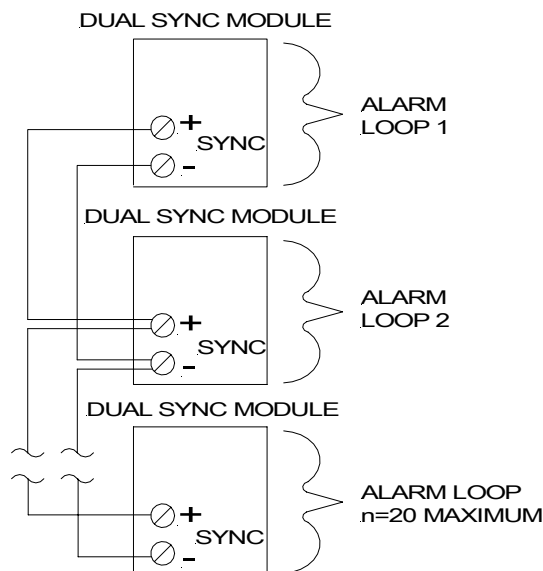
**⚠ CAUTION:** Power Supply may be used in conjunction with the DSM Sync Modules ***ONLY in the order*** shown in Figure 2. Only one DSM Sync Module shall be allowed on a signaling circuit. Do not connect the Power Supply to the signaling circuit after the one DSM Sync Module. Exception: The Wheelock PS-12/24-8 Power Supply (***UL Only***) can be connected either before or after the DSM Sync Module. Refer to Power Supply instruction manuals for proper application or installation.

**Figure 2: DSM Connection Diagram with Power Supply**



For applications that require synchronizing multiple alarm circuits together, daisy chain DSM's as shown in Figure 3 using the sync terminals, then follow the wiring diagrams for specific applications. Sync screw terminals can accept two #18 AWG wires for in-out wiring. Strip leads 3/8 inches for connection to screw terminals.

**Figure 3: Multiple Alarm Circuits Synchronization (Up to 20 DSM's)**



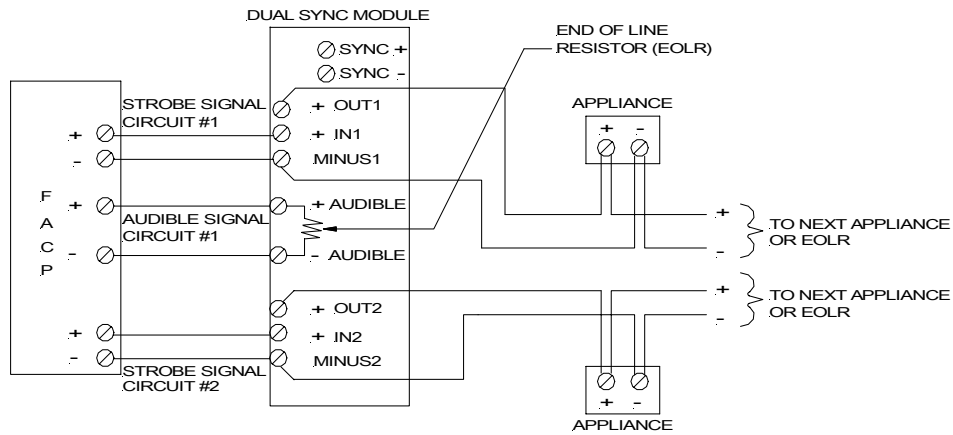
**NOTE:** The total length of wire connecting the DSM's SYNC terminals should not exceed 1,000 feet of #18 American Wire Gauge (AWG) overall between the first and last DSM. If this limit is exceeded, loss of synchronization between DSM's may result.

A. Class B Wiring:

A single DSM unit can be used with one or two Class B signal circuits. DSM terminals for appliance circuit 2 should be left open when only one appliance circuit is used.

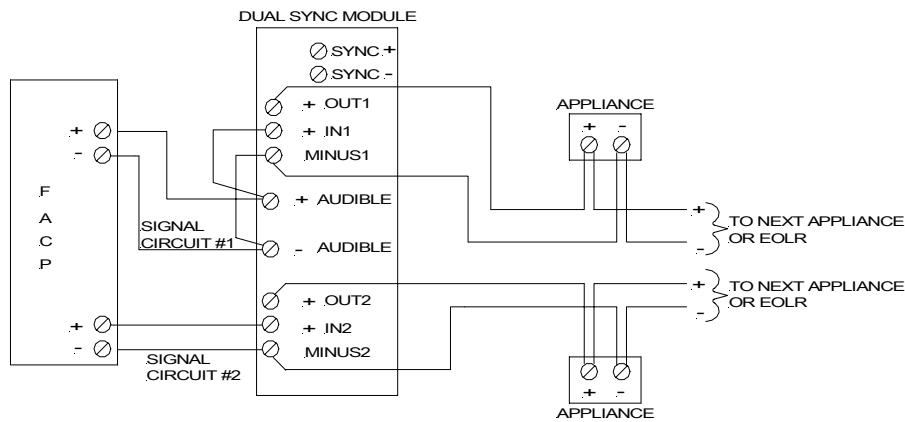
A.1) Wiring Diagrams for the appliances (Series AS, NS, AH and NH)

**Figure 4: Dual Class "B" Circuit with Audible Silence Feature.**



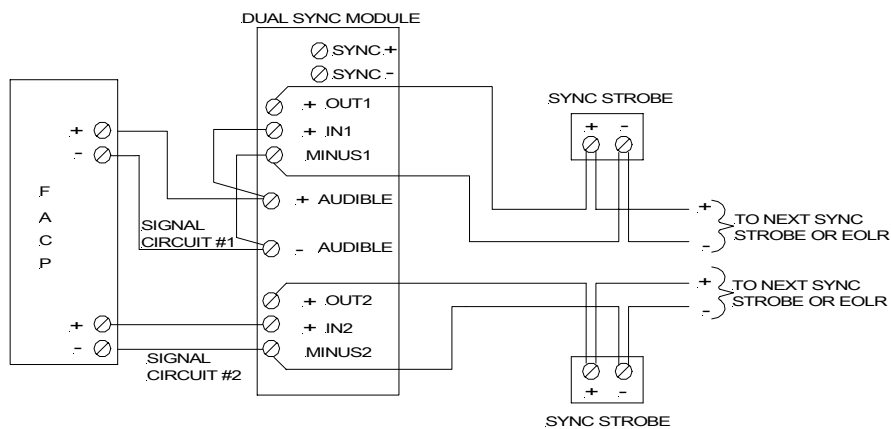
**Important: The appliances draw power from strobe appliance circuit only.**

**Figure 5: Dual Class "B" Circuit without Audible Silence Feature. Red and Black Shunt Wires are Supplied.**



A.2) Wiring Diagram for the Sync Strobes (Series RSS/RSSP, CH, MT and Series E/ET)

**Figure 6: Wiring Diagram for Sync Strobes. Red and Black Shunt Wires are Supplied.**

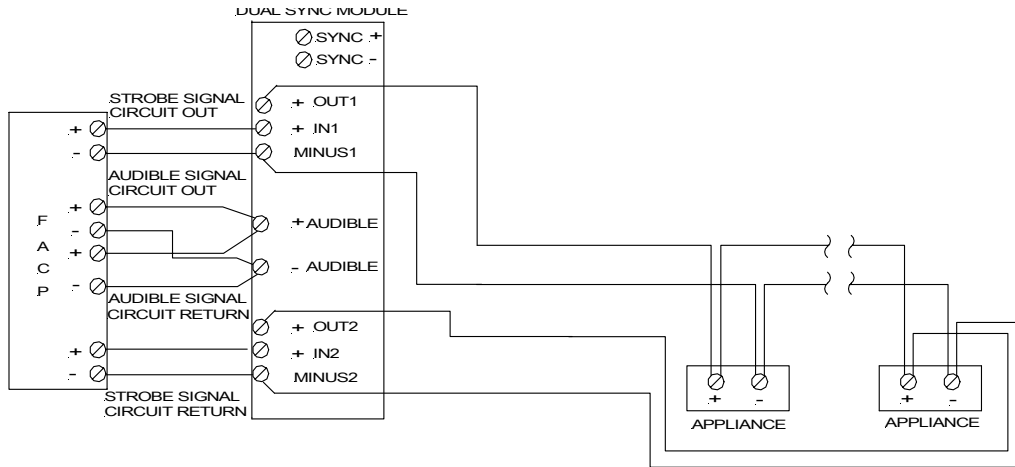


**⚠ WARNING: DO NOT CONNECT THE MT'S AUDIBLE INPUT TERMINALS (AUD) TO THE OUTPUT OF AN SM OR DSM. THE AUDIBLE MAY STOP SOUNDING AS A RESULT. A FOUR WIRE CONFIGURATION SHOULD BE USED WITH THE AUD TERMINALS CONNECTED TO A SEPARATE APPLIANCE CIRCUIT.**

B. Class A Wiring:

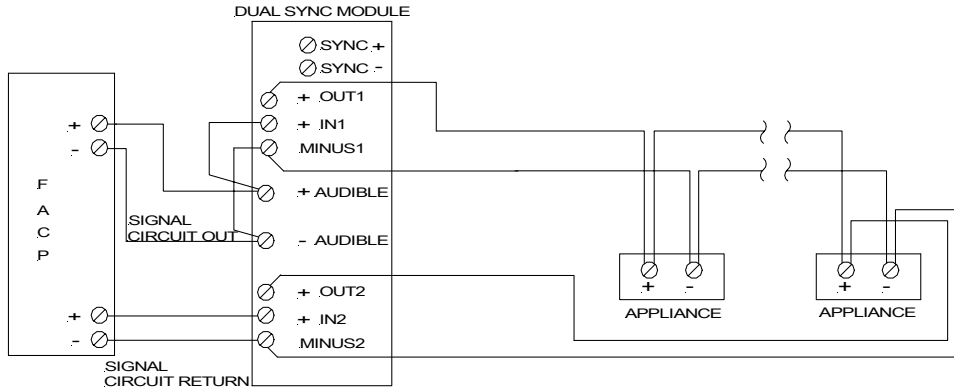
B.1) Wiring Diagrams for the appliances (Series AS, NS, AH and NH)

**Figure 7: Single Class "A" Circuit with Audible Silence Feature.**



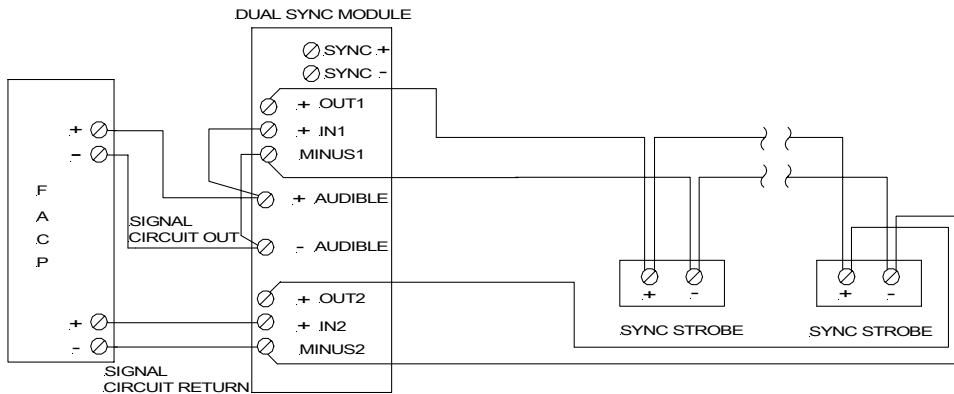
**Important:** The appliances draw power from the strobe appliance circuit only.

**Figure 8: Single Class "A" Circuit without Audible Silence Feature. Red and Black Shunt Wires are Supplied.**



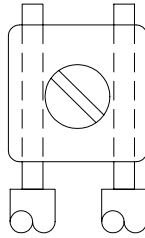
B.2) Wiring Diagram for the Sync Strobes (Series RSS/RSSP, MT, CH and Series E/ET)

**Figure 9: Wiring Diagram for Sync Strobes. Red and Black Shunt Wires are Supplied.**



**⚠ WARNING: DO NOT CONNECT THE MT'S AUDIBLE INPUT TERMINALS (AUD) TO THE OUTPUT OF AN SM OR DSM. THE AUDIBLE MAY STOP SOUNDING AS A RESULT. A FOUR WIRE CONFIGURATION SHOULD BE USED WITH THE AUD TERMINALS CONNECTED TO A SEPARATE APPLIANCE CIRCUIT.**

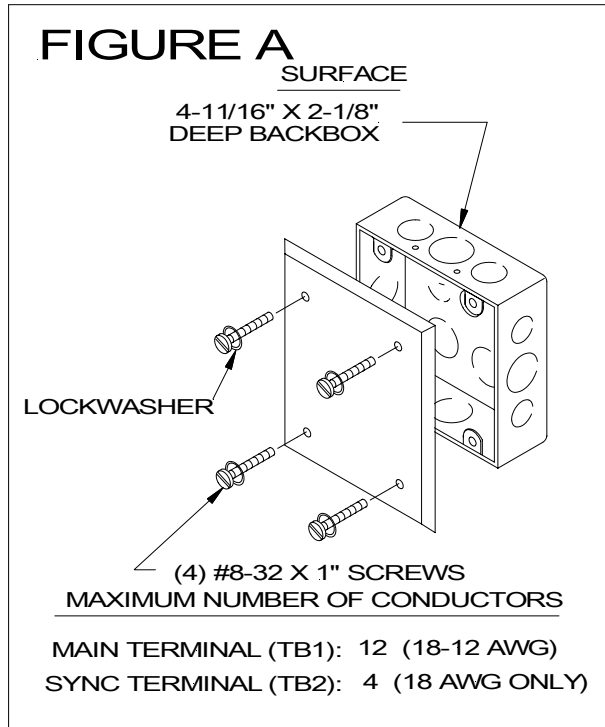
**Figure 10:**



Dual Sync Modules have in-out appliance circuit wiring terminals that accept two #12 to #18 AWG wires at each screw terminal. Strip leads 3/8 inches for connection to screw terminals. Break all in-out wire runs on supervised circuits to assure integrity of circuit supervision as shown in Figure 10. The polarity shown in the wiring diagrams is for the operation of the appliances. The polarity is reversed by the FACP during supervision.

**GROUNDING:** Install the appliance to a grounded backbox (Per NFPA 70, the National Electrical Code) using the lockwashers provided in hardware bag under the head of each mounting screw for the appliance.

**MOUNTING OPTION:**



**CAUTION:** Figure A shows the maximum number of field wires (conductors) that can enter the backbox used with this mounting option, per NFPA 70. If these limits are exceeded, there may be insufficient space in the backbox to accommodate the field wires. Stresses from the wires could damage the product.

## APPLICATION NOTES:

**⚠ 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. Mounting hardware is supplied with each product.
2. Conduit entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product.
3. When terminating field wires, do not use more lead length than required. Excess lead length could result in insufficient wiring space for the module.
4. Use care and proper installation 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.
5. Do not pass additional wires (used for other than the module) through the backbox. Such additional wires could result in insufficient wiring space for the module.
6. All models are UL Listed for indoor use with a temperature range of +32°F to +120°F (0°C to +49°C) and maximum relative humidity of 93%, ± 2%.

**⚠ CAUTION:** Use DSM Sync Module only on circuits with continuously applied voltage. Do not use DSM Sync Module on coded or interrupted circuits in which the applied voltage is cycled on and off.

**ANY MATERIAL EXTRAPOLATED FROM THIS DOCUMENT OR FROM 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 WHEELLOCK WILL NOT HAVE ANY LIABILITY FOR SUCH USE.**

**IMPORTANT: READ SEPARATE "GENERAL INFORMATION" SHEET FOR INFORMATION ON THE PLACEMENT, LIMITATIONS, INSTALLATION, FINAL CHECKOUT, AND PERIODIC TESTING OF NOTIFICATION APPLIANCES.**

**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.

**⚠ 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).

## **Limited Warranty**

Wheelock 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 and 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). Wheelock 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 repair or replacement shall be at Wheelock's sole discretion and shall constitute fulfillment of all obligations under this warranty. THE FOREGOING LIMITED WARRANTY SHALL IMMEDIATELY TERMINATE IN THE EVENT ANY PART NOT FURNISHED BY WHEELOCK IS INSTALLED IN THE PRODUCT. THE FOREGOING LIMITED WARRANTY SPECIFICALLY EXCLUDES ANY SOFTWARE REQUIRED FOR THE OPERATION OF OR INCLUDED IN A PRODUCT. WHEELOCK 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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